OPPORTUNITY NEIGHBORHOODS
FOR LATINO AND AFRICAN AMERICAN CHILDREN

FINAL REPORT

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Opportunity Neighborhoods for Latino and African-American Children

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EXECUTIVE SUMMARY

The *Denver Child Study* explores the extent to which multiple dimensions of neighborhood context affect the physical and behavioral health, exposure to violence, risky behaviors, education, youth and young adult labor market outcomes, and marriage and childbearing of Latino and African-American children and youth from low-income families. The study uses a natural experiment involving the Denver, Colorado, Housing Authority (DHA), which since 1969 has operated public housing units located in a wide range of neighborhoods throughout the city and county of Denver. Because the initial assignment of households on the DHA waiting list to vacant public housing units (and, thus, to neighborhoods) mimics a random process, this program represents an unusual opportunity for reducing parental geographic selection bias and observing the unusual combination of low-income, minority youths raised for extended periods in advantaged (as well as disadvantaged) neighborhoods.

In this study, we analyze data from several administrative sources and data we have collected from telephone and in-person surveys with Latino or African-American current and former DHA tenants whose children were the appropriate ages when they lived in DHA housing. Our surveys provide retrospective information on a battery of youth outcomes, family characteristics, and residential histories. By merging this information we have created a pseudo-longitudinal panel providing for each year of children's lives detailed characteristics about their families, neighborhoods, and outcomes in many domains.

Research Questions

We analyze the *Denver Child Study* dataset with a variety of multivariate statistical models in an effort to answer the following research questions:

- *Among Latino and African-American children and youth who spent at least two years living in DHA public housing, are there statistically and economically significant differences in their outcomes in six domains (behavioral and physical health, exposure to violence, risky behaviors, education, employment, marriage and childbearing) that can be attributed to differences in their neighborhood environments (controlling for family and individual characteristics)?*
- *Does the answer depend on gender, ethnicity, or developmental stage?*
- *Does the answer depend on whether neighborhood environment is measured concurrently with the outcome or cumulatively throughout childhood prior to the outcome?*
- *Are the relationships between neighborhood context and child outcomes linear or nonlinear—that is, suggestive of thresholds past which neighborhood effects differ in magnitude?*

Research Methods

The Natural Experiment in Denver

In addition to its large-scale, conventional public housing developments, DHA has operated since 1969 a program providing approximately 1,500 low-income families with opportunities to live in scattered-site, single-family and small-scale, multi-family units. These units are located in a wide range of neighborhoods throughout the congruent city and county of Denver, whereas the conventional developments are typically located in less-advantaged neighborhoods. From 1987 onward, as applicants (who met certain basic eligibility criteria) came to the top of the public housing waiting list, they were offered a vacant DHA unit (in either conventional or scattered-site programs), with the number of bedrooms appropriate for their family size and gender of children. If they did not accept this unit, they were offered the next similarly sized unit that became available (typically after a nontrivial wait). If applicants did not accept this second unit, they dropped to the bottom of the queue, creating a wait of a year or more.

We conducted a variety of statistical tests to ascertain whether the initial assignment of households to a DHA dwelling unit (and neighborhood thereby) mimicked random assignment of household to neighborhood. These tests were based on the intuitively appealing notion that in a quasi-random assignment there would be few statistically significant correlations among observed DHA tenant characteristics and neighborhood characteristics, no more than might occur through chance. We found that only DHA tenant ethnicity generated associations with neighborhood conditions (in particular, aspects of neighborhood disadvantage). This indicates that, *conditioned on ethnicity*, the DHA allocation process produced a quasi-random initial assignment of households across neighborhood characteristics. Because we control for ethnicity in all our models, we are confident that unobserved tenant characteristics that might affect both neighborhood of residence and child outcomes are not seriously biasing our estimated neighborhood effect parameters.

The quasi-randomness of this initial DHA assignment potentially erodes over time as some residents selectively leave their initial locations while others stay. To investigate the degree to which selective moves subsequent to DHA residence and selective remaining in DHA residence may affect our measurement of neighborhood effects, we replicate our analyses using multiple (typically three) overlapping samples of children and youth (about whom we gained information through our survey) that differ in when they lived in DHA and the duration for which they did so. We report only those results that are robust across multiple samples.

A further important feature of our natural experiment is the comparatively long exposures children in DHA households had to their assigned neighborhoods, in part because we were considering site-based assisted housing, not vouchers. Our sample of households had a six-year mean (five median) DHA residential duration—approximately twice as long as reported for the seminal Moving To Opportunity (MTO) experimental group that used vouchers in low-poverty neighborhoods (mean = 2.7 years; median = 3.3 years). Recent scholarly work stresses the importance of taking into account the length of time children are exposed to particular neighborhood contexts, lest one underestimate the true effects that neighborhoods have on them. Natural experiments have become widely accepted among social scientists as a valid means of obtaining unbiased estimates of neighborhood effects. Yet their use inevitably raises questions about the generality of results. We believe that our findings can fairly be generalized to low-income, Latino, and African-American families who apply for and remain on the waiting list long enough to obtain public housing. As such, it may not be fully generalizable to the population of minority families who obtain subsidized rental housing or to the larger population of minority families who qualify for housing assistance. Nevertheless, it is similar to—yet considerably more general than—the populations forming the samples for the oft-cited MTO-based scholarly studies. We believe that our findings are generalizable for low-income minority households who have traditionally been the focus of subsidized housing policies in the United States.

Data Sources

Household and Child Information

We developed and fielded during 2006–2008 the *Denver Child Study* telephone survey, which collected retrospective and current information about the household, adults, and children. Detailed information related to multiple domains of outcomes was gathered for all eligible children associated with each household. Each household's residential mobility history was obtained so it could be associated with neighborhood developmental context for children. Study eligibility criteria were (1) presence of children in the home between 0 and 18 years of age, when they moved into DHA; (2) family remained in DHA housing for at least two years; (3) family first entered DHA in 1987 or later (when DHA's current quasi-random assignment process came into operation); and (4) Latino or African-American ethnicity identified. Ultimately, 711 households that were interviewed and whose surveys met our quality standards for reliable and complete information remained in the study. Children from these households constitute the subjects in the *Denver Child Study*.

Our *Denver Child Study* survey collected information on a wide variety of parental/caregiver ("caregiver" hereafter) and household characteristics that we employed as controls. The survey asked caregivers to supply information about all of their children with whom they had lived in DHA public housing for at least one year. In this manner, we collected detailed information about the children's gender, ethnicity, birth order, residential histories, health, exposure to violence, risky behaviors and activities, education, and (for older children) marriage and childbearing histories and labor market outcomes during adolescence and young adulthood.

Neighborhood Information

We obtained a wide variety of neighborhood data from four sources. The first source was the decennial U.S. Census, where we used census tract geographic scales from the 1970, 1980, 1990, and 2000 censuses. We employed the Neighborhood Change Database (NCDB) for this information, because it adjusts data to account for changes in tract boundaries between decennial censuses. For estimates of non-census year data, we used linear interpolation or extrapolation. We gathered indicators that have been widely employed in prior research on neighborhood effects, including percentages of households moving in during the prior year, female-headed households, families below the poverty line, unemployed adults, Latino population, non-Latino

African-American population,[1] foreign-born population, homes that are renter occupied, homes that were built during various periods, and mean occupational prestige (based on the General Social Survey prestige score weighted by the observed proportional distribution of occupations of employees in the tract). We used principal components analyses to derive an indicator of neighborhood social vulnerability, comprised of the equally weighted sum of census tract percentages of poor, unemployed, renters, and female-headed households.

The second source was subjective indicators based on responses of the caregivers interviewed in our *Denver Child Study*. For each neighborhood in which they lived while they were raising children, we asked the primary caregiver to respond to a battery of questions related to the location's assets and liabilities. From the responses, we devised three composite neighborhood indicators (social capital, social problems, and institutional resources) and a dichotomous measure of the presence of negative peer influences in the neighborhood. The social capital index (range: 0–6) was incremented by "one" for each of the following respondent descriptions of people in the neighborhood—(1) could get together to solve neighborhood problems; (2) would watch out for their children and property; (3) knew them and their children by name; (4) they and their children could look up to them; or (5) could be counted on in times of trouble—and whether the respondent participated in any organizations located in the neighborhood (for example, block clubs, tenant groups, religious organizations). The social problems index (range: 0–5) was incremented by a factor of "one" for each of the following neighborhood conditions: (1) people selling drugs; (2) gang activity; (3) homes broken into by burglars; (4) people being robbed or mugged; and (5) people being beaten or raped. We used Item Response Theory analysis to generate a latent factor score of neighborhood resources present during childhood. Resources included parks, recreation centers, mentoring or counseling centers for children, subsidized day care facilities, and good police protection. All of these composite indicators proved reliable.

The third source of neighborhood information was the Denver-based Piton Foundation's *Community Facts database,* which provided small area-based, annually measured information culled from Denver administrative databases that are not provided by the Census. We employed violent crimes reported to police per 1,000 population, property crimes reported to police per 1,000 population, and confirmed cases of child abuse and neglect per 1,000 children. The Piton Foundation data are aggregated to 77 named areas consisting of two census tracts, on average, and thus are measured at a larger spatial scale than our census-based data. Piton series data are available only for the city and county of Denver.

The fourth source for data on toxic airborne pollutants coded to census tracts was the U.S. Environmental Protection Agency. Specifically, we employed their summary index of respiratory health risk associated with the combined concentrations of 124 toxic airborne compounds as well as their neurological risk index, identifying the concentrations of lead pollutants.

[1] The ethnic makeup of Denver in 2000 was 52 percent non-Latino whites, 11 percent non-Latino African Americans, and 32 percent Latinos.

Statistical Modeling Approaches

Our core modeling approach employs two complementary empirical strategies. The first explores the predictors of whether a child *ever* experienced a certain outcome (either by the time of our survey or by 18 years of age, whichever came first). It employs various techniques for modeling dichotomous outcomes: logit with clustered robust standard errors, multilevel mixed-effects logit, and mixed effects Bayesian analyses. The second explores the predictors affecting the *timing* when the onset of a particular outcome occurred. It employs Cox proportional hazard models with clustered robust standard errors or accelerated failure time frailty analyses. For our core modeling efforts in both approaches, we measure time-varying predictors contemporaneously with the onset of outcome being modeled. We also explore how results differ when we measure cumulative exposures to neighborhood context. Moreover, we investigate whether relationships observed across the full sample are robust across males and females and across Latino and African-American ethnic groups. Finally, we investigate potential nonlinear neighborhood effects using spline regression analysis.

All of our analytical strategies yield “reduced form” estimates of the degree to which neighborhood indicators correlate with the particular developmental outcome being investigated through unspecified intervening causal pathways. We intentionally omit from our models any endogenous or predetermined covariates that may themselves be affected by neighborhood environment. In this fashion, we avoid “overcontrolling” and thus minimizing the apparent relationships between neighborhood indicators and the particular outcome.

Primary Findings

Overview

Many aspects of neighborhood context proved statistically and substantively important predictors of child and youth outcomes in all domains, though sometimes in unexpected ways. Aspects of the neighborhood’s safety, physical environment, social status, ethnic mix, and nativity mix were associated with large differences in the odds and timing of virtually all outcomes investigated. In particular, neighborhoods with higher occupational prestige and percentages of foreign-born populations as well as lower property crime rates and scores on a social problems index had more favorable outcomes for children across the board. The consequences of higher neighborhood percentages of Latino and African-American ethnic composition and lower percentages of pre-1940 vintage housing also were generally favorable though more mixed depending on the outcome. Particular indicators seemed to exert their influence only on selected child outcomes: Higher respiratory risk index predicted poorer health outcomes, more risky behaviors and inferior education outcomes; negative peers in the neighborhood predicted more exposure to violence and risky behaviors.

The magnitudes of most of the aforementioned apparent neighborhood influences typically appeared to be contingent on the gender and ethnicity of the child or youth. The evidence did not suggest, however, that any particular gender or ethnicity was generally more sensitive to neighborhood context. Instead, the relative sensitivity depended on the outcome in question. Differences in magnitudes of neighborhood effects across developmental stages were exhibited for several outcomes and could be substantial. At which stage neighborhood effects appear stronger varied both by outcome in question and sometimes whether neighborhood context was measured contemporaneously or cumulatively. We thus caution against making broad generalizations about “for whom and at which developmental stage are neighborhood influences most important,” given the apparent multicontingent nature of the answer.

Neighborhood effects on health measured as cumulative exposures appeared stronger, on average, than those measured contemporaneously, but only when the outcome in question was observed during the middle school developmental stage. Quite a different pattern emerged for educational outcomes. With these outcomes, there was no clear pattern of cumulative measures being stronger; indeed, if anything, for the high school stages the contemporaneous measures appeared marginally stronger for some outcomes. Our results suggest that no general conclusion can be reached about the comparative strength of contemporaneous and cumulative measures of context; it appears to depend on outcome.

Nonlinear neighborhood effects did not appear to be the norm, though for some indicators (especially violent crime) they were consistently manifested. Observed nonlinear patterns were often dissimilar across indicators, although a few (respiratory risk, occupational prestige, social vulnerability) often exhibited theoretically supported minimum thresholds. Others (of particular note, violent crime) exhibited V-shaped or inverse V-shaped relationships with particular outcomes. Once again, no generalizations can be made: Nonlinear relationships appear to be contingent on neighborhood indicator and outcome in question.

Physical and Behavioral Health

We investigated five outcomes: diagnoses of asthma, neurodevelopmental disorders, obesity, internalizing behaviors, and behavioral health service utilization. Aspects of the neighborhood’s safety, ethnic and nativity mix, social status, resources, and environmental quality all provided substantial predictive power for these outcomes. We caution, however, that whether these relationships were manifested by causal links, though the probability of a child having a health problem or the probability of having a set of symptoms medically diagnosed was sometimes not entirely clear. We believe that the most convincing way to interpret the neighborhood property crime, social problems index, occupational prestige, resources, environmental pollution, and housing stock vintage relationships is that they represent causal forces that directly affect child health. Thus, we conclude that low-income Latino and African-American children will demonstrate one or more comparatively superior health outcomes if they live in a neighborhood with a lower property crime rate, social problems index, and respiratory and neurological pollution risk and with a higher occupational prestige score, public resource factor score, and degree of walkability and land use mixes. Further, we believe that results for violent crime; child abuse and neglect rates; neighborhood social vulnerability score; local medical facility; and foreign-born, Latino, and African-American population percentages can best be interpreted as influences on the odds of a given set of adverse child symptoms generating parental actions leading to a medical diagnosis. Thus, we conclude that potential health problems of low-income Latino and African-American children will be less likely to be diagnosed if they live in a neighborhood with a higher violent crime rate; child abuse and neglect rate; social vulnerability score; and foreign-born, Latino, or African-American population percentage and one in which there are no medical facilities.

Exposure to Violence

We investigated five outcomes: witnessing violence in the neighborhood, school, and home and being victimized by violence in the neighborhood and school. Aspects of the neighborhood's safety, ethnic and nativity mix, social status, and housing stock all provided substantial predictive power for these outcomes. Exposure to violence in the neighborhood, at school, or at home was generally less likely in neighborhoods with lower rates of property crime, social problems, and pre-1940–vintage housing stock and higher rates of violent crime (up to a point), child abuse and neglect rates, occupational prestige, and neighborhood social vulnerability. We believe that relationships observed for child abuse rates and social vulnerability were likely reflecting neighborhood effects that yield systematic underreporting. Higher percentages of immigrants, Latinos, and African Americans in the neighborhood were also linked to lower odds of witnessing violence, although the effects of neighborhood composition depended on the outcome in question and again may be more suggestive of forces associated with underreporting of such violence. The magnitudes of most of these apparent influences (especially property crime), however, appeared to be only modestly contingent on gender and ethnicity of youth, although for some aspects of context cross-strata differences were substantial. Nonlinear neighborhood effects appeared often; several indicators exhibited minimum thresholds, and others demonstrated V-shaped relationships.

Risky Behaviors

We investigated five outcomes: smoking tobacco, drinking alcohol, using marijuana or other drugs, running away from home, and engaging in violent or aggressive behaviors. Aspects of the neighborhood's safety, social status, ethnic and nativity mix, physical environment, and peer and social capital dimensions exhibited substantial predictive power for these outcomes. One or more risky behaviors were generally less likely in neighborhoods with higher violent crime rates (up to a point); foreign-born, African-American, and Latino residential percentages; and occupational prestige and lower property crime rates, social problems index and social vulnerability, percentages of pre-1940–vintage dwellings, and respiratory risks from air pollution and negative peer influences. The magnitudes of most of these apparent influences were only modestly contingent on gender and ethnicity, although for some aspects of context cross-strata differences were substantial. Nonlinear neighborhood effects appeared often and were often dissimilar across indicators, although several exhibited minimum thresholds that can be easily interpreted theoretically.

Educational Outcomes

We investigated five outcomes placement in special education classes, participating in advanced or gifted classes, repeating a grade, being suspended or expelled, and dropping out of school before earning a diploma. Aspects of the neighborhood's violent and property crime rates, physical environment, social status, and ethnic and nativity mix exhibited substantial predictive power in predicting these outcomes. Educational outcomes were generally more favorable in neighborhoods that had higher occupational prestige and percentages of foreign-born and Latino residents as well as lower rates of property crime and pre-1940–vintage dwellings. Outcomes generally were better in neighborhoods that had moderate rates of violent crime than with none but grew progressively worse as violent crime rates exceeded average levels. The magnitudes of most of these apparent influences typically were contingent on gender and ethnicity of the student. Nonlinear neighborhood effects did not appear to be the norm, though violent crime consistently manifested a V-shaped relationship, with the odds of educational outcomes and respiratory risk exhibiting a theoretically defensible minimum threshold before negative outcomes were manifested.

Labor Market Outcomes

We investigated six outcomes: being employed, employed more than 20 hours weekly, hours worked before 18 years of age, young adult full-time employment, postsecondary education, and neither working nor attending school. Aspects of the neighborhood’s safety, ethnic and nativity mix, social status, and housing stock all exhibit substantial predictive power for these outcomes. In general, teen employment will be more likely when living in neighborhoods with lower violent crime rates and occupational prestige, higher percentages of pre-1940–vintage housing, and higher property crime and child abuse rates. Young adult full-time employment will be more likely for those raised during high school in neighborhoods with higher percentages of foreign-born residents and lower percentages of Latino residents. Postsecondary education will be more likely for those raised during high school in neighborhoods with lower property crime and child abuse rates but higher shares of socially vulnerable populations and higher violent crime rates. These apparent influences appeared more complicated and nuanced than conventionally posited, however. Especially noteworthy is the typical contingency of the neighborhood effect magnitude based on gender and ethnicity. Indeed, virtually no neighborhood indicator employed had consistently significant predictive power across more than two strata. We also note that the importance for young adults of contexts experienced while they were in high school speaks to the temporal durability of these neighborhood effects during the teenage developmental stage.

Marriage and Childbearing

We investigated three outcomes: cohabiting or marrying as a teen or young adult, giving birth to or fathering a child as a teen, and childbearing before marriage as a young adult. Aspects of the neighborhood’s safety, social status, ethnic and nativity mix, and physical environment exhibited substantial predictive power for these outcomes. Risks for one or more of these outcomes (for at least one stratum or more) diminish when living in neighborhoods that have higher violent crime rates; occupational prestige; and percentages of foreign-born, Latino, or African-American residents. The risks increase when living in neighborhoods with higher rates of property crime, caregiver reports of neighborhood social problems, and percentages of dwellings built before 1940. These relationships were manifested particularly strongly and generally for African-American youth, and no noteworthy nonlinear relationships emerged.

Supplemental Investigations

We first investigated whether context played a more powerful role during certain developmental stages in the period before onset by considering a variety of health and educational outcomes that frequently occurred in our sample during more than one developmental stage. Our exploration confirmed the conventional wisdom that such differences exist and can be substantial. Moreover, we found that at which stage neighborhood effects appear stronger varied both by outcome in question and sometimes whether neighborhood context is measured contemporaneously or cumulatively.

Second, we investigated the degree to which neighborhood context had stronger impacts on child and youth development if exposure persisted over a sustained period by computing cumulative measures of exposure to neighborhood conditions through the time of onset using the same selected health and educational indicators. A consistent pattern emerged for our health outcomes. Neighborhood effects measured as cumulative exposures appeared stronger, on average, than those measured contemporaneously but only when the outcome in question was observed during middle school. Quite a different pattern emerged for our educational outcomes. With these outcomes, there was no clear pattern of cumulative measures being stronger; indeed, if anything, the contemporaneous measures appeared marginally stronger for some outcomes during high school or late adolescence. Our results suggest that no general conclusion can be reached about the comparative strength of contemporaneous and cumulative measures of context; it appears to depend on outcome.

Discussion of Effects From Residential Context

Neighborhood Safety

Indicators of neighborhood safety provided the most consistent explanatory power across our domains of child and youth well-being. Some of the relationships manifested were to be expected; others were surprising but revealing. As expected, our social problems index (a caregiver assessment of disorder, property, and especially violent crime in the immediate environs) and property crime rate (measured at the approximate scale of two encompassing census tracts) were strongly associated with a wide range of negative outcomes in virtually every domain investigated. Unexpectedly, violent crime rates (also measured at the approximate scale of two encompassing census tracts) exhibited the opposite associations, especially in places with below-average violent crime rates. We think that this finding reflects the net effects produced by the conflicting forces impinging on children arising from violent crime in the broader neighborhood, controlling for crime in the immediate environs: negative direct effects from crime and alterations in caregiver actions in response to such that are intended to ameliorate them. Caregivers may respond in several ways in an effort to shield their children from violent crime in the wider environs, such as limiting youths' activity spaces closer to home and expanding caregiver monitoring activities. So long as violent crime stays below average, these compensatory actions apparently yield net positive outcomes for children that manifest themselves as reduced exposure to violence (as caregivers would hope), fewer risky behaviors, and improved educational performance (as caregivers would like but perhaps not have expected). Unfortunately, our findings suggest that the efficacy of such compensatory caregiver responses will be overwhelmed in neighborhoods with above-average violent crime rates. In such cases more crime is, as conventionally predicted, associated with poorer child outcomes in health, exposure to violence, risky behaviors, and educational performance. Our results here provide implicit testimony to the importance of both measuring neighborhood characteristics at different geographic scales and probing for nonlinear relationships.

Neighborhood Social Status

Residing in a higher-occupational-prestige neighborhood was one of the most consistent predictors of favorable child outcomes in almost every domain. These results have intuitive appeal and are consistent with prior scholarship on the importance of local networks, norms, and role models in transmitting neighborhood effects. Neighborhoods that surround their children with higher-prestige workers likely expose them to norms and role models and provide access to networks of richer information that ultimately promote better health, less exposure to violence, fewer risky behaviors, better educational performance, and less nonmarital childbearing. There are theoretical reasons why neighborhood social status could directly affect each of these outcomes; many mediated causal pathways are also possible. For example, better child health outcomes, less exposure to violence, and fewer risky behaviors should provide clear educational payoffs for children and youth; better secondary educational achievement, in turn, might deter nonmarital childbearing as young adults.

Another measure of neighborhood status, our social vulnerability score (summed percentages of poor, unemployed, renter, and female-headed households) also proved a consistently predictive aspect of context. As would be expected, our evidence suggests that a more socially vulnerable neighborhood will generate (through potentially a variety of mechanisms) several negative outcomes for children and youth: more risky behaviors and less likelihood of marriage (for African Americans). The evidence also supports the notion that in places that have above-average concentrations of vulnerable populations, caregivers are less likely to seek medical treatment when their children present with symptoms and less likely to know about and report their children's exposure to violence.

Neighborhood Nativity and Ethnic Composition

Our evidence implies that higher percentages of foreign-born residents create a collective socialization context that supports the positive development of low-income minority children and youth in many ways: less likelihood of being victimized by neighborhood violence (for boys), fewer risky behaviors (with the exception of smoking), superior educational performance, better employment rates as young adults, and increased chances of marriage (for young women). Less positively, our findings also suggest that high immigrant concentrations can discourage parents from seeking diagnoses of adverse health symptoms, raise the chances of boys witnessing neighborhood violence, and reduce the chances that young adult African Americans will marry. A similar portrait emerges for the Latino percentage in the neighborhood that we also believe can best be explained by their distinctive normative and cultural structures. Low-income minority children raised among more Latino neighbors experienced better outcomes in terms of witnessing neighborhood violence, risky behaviors, educational performance, and teen childbearing. As in the case of immigrants, however, the portrait of neighborhood effects is not uniformly positive. Our findings suggest that high Latino concentrations can discourage parents from seeking diagnoses of adverse health symptoms, raise the chances of being victimized by neighborhood violence or witnessing school violence, and reduce the chances that young adults will be employed full time.

By contrast, the percentage of African-American neighbors rarely predicted child outcomes, and when it did the results again were mixed. Higher concentrations of African-American residents apparently reduced the chances of running away and women having children as teenagers but decreased the chances of young women and African Americans getting married and discouraged parents from seeking diagnoses of their children's adverse health symptoms.

Neighborhood Physical Characteristics

We believe that our findings offer persuasive evidence that neighborhoods built before 1940 in Denver have distinctive design, structural, and land use features that independently engender a variety of effects on resident children and youth. It appears that most of these effects are detrimental for children: greater exposure to violence, larger likelihood of risky behaviors, weaker educational performance, and higher odds of bearing children outside of marriage as young adults. Some outcomes, however, are more positive: lower incidence of obesity, greater chance of working as a teen, and greater chance of being married as a young adult.

The quality of the ambient environment also seems to have a powerful impact on several child outcomes, at least after pollution concentration thresholds have been surpassed. This strongly suggests a biological mechanism through which this neighborhood effect is transmitted. High levels of neighborhood respiratory risk pollutants apparently led to substantially heightened chances of asthma exacerbations, smoking, and weak educational performance. High levels of neurological risk pollutants also apparently produced several detrimental health outcomes for female and African-American youth.

Contributions of the *Denver Child Study*

Our study contributes to the measurement of neighborhood effects in at least four ways. First, because parents of our sampled children were quasi-randomly assigned to neighborhoods, the challenge of parental geographic selection bias is largely overcome. We believe that our observed statistical associations can be treated as indications of causal effects. Second, we evaluate a wide variety of measures of neighborhood environment, both objective and subjective, measured at different spatial scales. Third, because of the unusual nature of the site-based housing assistance provided by DHA, we are able to observe how low-income minority children and youth respond to a wide range of contexts after often extensive degrees of exposure. Fourth, ours is one of the few studies to examine neighborhood impacts on the outcomes of low-income Latino children and youth.

Perhaps because of these innovative features of our study, we have observed dramatic and consistent evidence of powerful neighborhood effects on a wide range of outcomes for low-income Latino and African-American children and youth. These results stand in contrast to some of those produced by the recently completed MTO demonstration. We believe that the differences can be explained through one or more of the following reasons:

- There are differences in the samples of low-income families investigated.
- The neighborhood “treatments” differ substantially on several grounds.
- They have different (though overlapping) sets of outcome indicators that are sometimes measured differently.
- The study sites are different metropolitan contexts demographically and geographically.

Our study also contributes to the formulation and reform of assisted housing and community development policy. Our findings suggest that well-formulated assisted housing and urban revitalization programs can yield substantial payoffs in multiple outcome domains by changing the developmental context of low-income minority children and youth, either by changing the character of neighborhoods or by changing the neighborhoods in which these children reside.

Our study has pinpointed particular attributes of the residential environment that seem most predictive for a wide variety of positive outcomes, thus giving a strategic guide to policymakers as to what directions and investments are likely to yield the greatest social gains.

I. INTRODUCTION

Policy and Scholarly Context for Neighborhood Effects on Children

Rarely has the attention of scholars and housing policymakers alike been so simultaneously focused on the same topic: neighborhood effects on children. To what degree are the life chances of children and youth influenced by the environs in which they are raised?

Since seminal writings a quarter-century ago (Wilson, 1987; Jencks and Mayer, 1990; Galster and Killen, 1995), a veritable explosion of scholarly publications devoted to probing this topic from multiple disciplinary perspectives has occurred. Compare the reviews in Gephart (1997); Leventhal and Brooks-Gunn (2000); Sampson, Morenoff, and Gannon-Rowley (2002); Ellen and Turner (2003); Newburger, Birch, and Wachter (2011); Galster (2012); and Foster and Brooks-Gunn (2013). Despite the impressive volume of investigations, heated scholarly debates over the nature and quantitative importance of neighborhood effects persist (Van Ham et al., 2012; Ludwig, 2012). Undoubtedly, much of this controversy stems from disagreements over which studies sufficiently surmount the daunting obstacles impeding the accurate measurement of neighborhood effects on individual residents' outcomes. In Chapter II, we will discuss these obstacles and how our study overcomes them.

Despite disagreements among scholars, official federal, state, and local pronouncements suggest that many policymakers believe that neighborhood effects are important. Illustrative is this January 10, 2014, statement by President Barack Obama, made while announcing new "Promise Zones" in five cities:

> "[Our goal is that] a child's success be determined not by the ZIP code she lives in but by the strength of her work ethic and the scope of her dreams."
> (cited in Shear, 2014)

Numerous programmatic initiatives have emerged that aim to encourage or require changes within neighborhoods or where assisted households live as an antidote to the perceived social evils associated with "concentrated disadvantage" (Briggs, 2005). Examples include:[2]

- The HOPE VI Program, which replaces dilapidated concentrations of public housing with more diverse housing stocks occupied by a broader mix of income groups and tenures.
- Public housing management and tenant allocation reforms promulgated by legislation and regulations that are designed to encourage a greater diversity of income mixes within the developments.
- Supportive services for those receiving tenant-based assistance through the federal Housing Choice Voucher program that are aimed at helping voucher holders move into superior neighborhood environments.

[2] See the special issues of *Evidence Matters* (2013) and *Cityscape: A Journal of Policy Development and Research*, 2013, volume 15(2), both published by the U.S. Department of Housing and Urban Development Office of Policy Development and Research.

- The Promise Neighborhoods federal initiative, which intends to develop a robust set of educational, recreational, training, and other supportive institutions in previously disadvantaged neighborhoods where subsidized housing was located.
- Local and state land-use planning rules requiring mixed-income developments.

This U.S. policy direction and programmatic particulars have been challenged on conceptual and empirical grounds (for example, Goetz, 2003; Joseph, 2006; Joseph, Chaskin, and Webber, 2006; Galster, 2013)[3]. Perhaps most fundamental to this critique is the argument that disadvantaged households and their children economically fare about the same, regardless of their residential environments. Perhaps the most widely cited evidence buttressing this critique was provided by the recently released final report of the Moving To Opportunity (MTO) demonstration (Sanbonmatsu et al., 2011).[4] The MTO research design randomly assigned public housing residents in extremely disadvantaged neighborhoods in Baltimore, Boston, Chicago, Los Angeles, and New York who volunteered to participate to one of three experimental groups: (1) controls that did not receive a rental housing voucher but could remain in public housing in disadvantaged neighborhoods if they wished, (2) recipients of rental vouchers, and (3) recipients of rental vouchers and relocation assistance who had to move to neighborhoods with less than 10 percent poverty rates and remain for at least a year. Analyses of MTO data collected over a decade uncovered some mental and physical health benefits to parents and children who moved to low-poverty neighborhoods but no substantial neighborhood effects on adult labor market outcomes, youths' educational attainments, or a variety of other behaviors (Ludwig, 2012). Based on these modest findings, it has been claimed that "MTO is the gold standard . . . [and] its results . . . have proven discouraging . . . neighborhood quality . . . [therefore has] little effect on desirable and measurable outcomes" (Smolensky, 2007, p. 1016).

Such a sweeping conclusion is inappropriate given the substantial debate over the power of MTO as a test of neighborhood effects (compare Clampet-Lundquist and Massey, 2008; Sampson, 2008; Burdick-Will et al., 2010; Briggs, Popkin, and Goering, 2010; Briggs et al., 2008, 2011; Sanbonmatsu et al. 2011; Ludwig, 2012). The debate focuses on five domains relevant to child and youth outcomes. First, although MTO randomly assigns participants to treatment groups, it neither randomly assigns characteristics of neighborhoods initially occupied by voucher holders (except maximum poverty rates for the experimental group) nor characteristics of neighborhoods in which participants in all three groups may move subsequently. Thus, there remains considerable question about the degree to which geographic selection on unobservable household characteristics persists. Second, MTO may not create adequate duration of exposure to neighborhood conditions by any group at any location to observe much treatment effect from the new neighborhood context.[5] Third, MTO overlooks the potentially long-lasting and indelible effects that disadvantaged neighborhoods had upon older youth in the experimental group who spent their early childhoods in such places. Fourth, it appears that even experimental MTO movers rarely moved out of predominantly African American–occupied neighborhoods near those of concentrated disadvantage and achieved only modest changes in school quality, social

[3] Also see the special issue of *Cityscape***,** 2013, 15(2).
[4] See also Orr et al. (2003); Goering and Feins (2003); Kling, Liebman, and Katz (2007); Ludwig et al. (2008); Briggs, Popkin, and Goering (2010); and the special issue of *Cityscape*, 2012, 14(2) devoted to MTO.
[5] For example, nonexperimental analysis focusing on MTO families who resided for a majority of the study period in low-poverty or higher education neighborhoods revealed their substantially better adult employment and earnings than in the control group (Turner et al., 2012).

networks, and job accessibility. As a result, they may not have experienced sizable enhancements in their neighborhood context. Fifth, MTO involves vague and heterogeneous treatments within and among the three groups; besides initial poverty rate, the rest of the residential environment remains an unmeasured, unstandardized "bundle." It is impossible to discern when groups' outcomes differ or do not and which particular aspects of neighborhood context are responsible. Thus, its theoretical promise and conventional wisdom notwithstanding, MTO may not have provided definitive evidence about the potential effects on low-income children from prolonged residence in multiply advantaged neighborhoods.

Purpose and Contributions of Our *Denver Child Study*

The *Denver Child Study* explores the extent to which multiple dimensions of neighborhood context affect the physical and behavioral health, exposure to violence, risky behaviors, education, youth and young adult labor market, educational outcomes, and marriage and fertility behaviors of Latino and African-American children and youth from low-income families. The study takes advantage of a natural experiment involving the Denver, Colorado, Housing Authority (DHA), which since 1969 has operated public housing units located in a wide range of neighborhoods throughout the city and county of Denver. Because the initial assignment of households on the DHA waiting list to vacant public housing units (and, thus, to neighborhoods) mimics a random process, this program represents an unusual opportunity for reducing parental geographic selection bias and observing the unusual combination of low-income, minority youths raised for extended periods in advantaged (as well as disadvantaged) neighborhoods.

In this study, we analyze data from several administrative sources and data we have collected from telephone surveys with Latino or African-American current and former DHA tenants whose children were the appropriate ages when they lived in DHA housing. Our surveys provide retrospective information on a battery of youth outcomes, family characteristics, and residential histories. By merging this information, we have created a pseudo-longitudinal panel providing for each year of children's lives detailed characteristics about their families, neighborhoods, and outcomes in many domains.

We analyze this dataset with a variety of multivariate statistical methods in an effort to answer the following research questions:

- *Among Latino and African-American children and youth who spent at least two years living in DHA public housing, are there statistically and economically significant differences in their outcomes in six domains (behavioral and physical health, exposure to violence, risky behaviors, education, employment, marriage and childbearing) that can be attributed to differences in their neighborhood environments (controlling for family and individual characteristics)?*
- *Does the answer depend on gender, ethnicity, or developmental stage?*
- *Does the answer depend on whether neighborhood environment is measured concurrently with the outcome or cumulatively throughout childhood prior to the outcome?*

- *Are the relationships between neighborhood context and child outcomes linear or nonlinear—that is, suggestive of thresholds past which neighborhood effects differ in magnitude?*

Our study contributes to advancing the scientific measurement of neighborhood effects in at least four ways. First, because parents of our sampled children were quasi-randomly assigned to neighborhoods, the challenge of parental geographic selection bias is largely overcome. Second, we evaluate an unprecedented variety of measures of neighborhood context, both objective and subjective, measured at different spatial scales. Third, because of the unusual nature of the site-based housing assistance that DHA provided, we are able to observe how low-income, minority children and youth respond to a wide range of contexts after often-extensive durations of exposure.[6] Fourth, ours is one of the few studies to examine neighborhood impacts on the outcomes of Latino youth.

Our study also contributes to the formulation and reform of assisted housing and community development policy. We are implicitly investigating the degree to which housing and urban revitalization programs can yield substantial payoffs in multiple outcome domains by changing the geographic developmental context of low-income, minority children and youth.

Structure of the Report

Our report is organized into 11 chapters. Chapter II discusses the theoretical and empirical foundation for the current study. It reviews the contemporary scholarly understandings of the numerous causal mechanisms through which neighborhood context may influence the development of children and youth. Then, it delineates the major challenges that empirical research faces in trying to obtain an accurate measure of how much neighborhood context affects a variety of child and youth outcomes. Finally, it explains how our *Denver Child Study* offers important advantages in overcoming these challenges.

Chapter III describes the data that we gathered for this study and how we analyze it. It explains the nature of the natural experiment involving DHA and how it offers a rare opportunity to investigate neighborhood effects. It discusses in detail the household survey that we conducted and the other, secondary sources of data we drew on to provide a rich and comprehensive set of neighborhood indicators. Descriptive statistics of our analysis sample are provided here. Finally, this chapter introduces our primary statistical models (mixed-effect logistic regression and hazard and accelerated failure time models) employed to discern predictors of if outcomes ever occur for children and youth and, if so, how soon they occur in their lives.

Chapters IV through IX present our findings related to six domains of outcomes for children and youth: physical and behavioral health, exposure to violence, risky behaviors, education, employment, and marriage and childbearing. In each chapter, we explore the degree to which our results seem general across gender and ethnic strata and whether they exhibit any important nonlinear relationships.

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[6] In our *Denver Child Study* sample, we observe a six-year mean (five-year median) residential duration in DHA housing, approximately twice as long as reported for the MTO experimental group (mean: 2.7 years; median: 3.3 years).

Chapter XI provides a holistic summary of our major findings and their significance. It compares and contrasts our results to other major studies of neighborhood effects (especially MTO) and offers potential explanations for any differences.

II. HOW NEIGHBORHOOD CONTEXT MAY INFLUENCE CHILDREN AND HOW CAN WE MEASURE IT

Potential Causal Mechanisms of Neighborhood Context

Our theoretical framework for understanding links between neighborhood contexts and children's and youths' outcomes draws from widely accepted ecological models of child development. As explicated by Bronfenbrenner and Morris (1998), children's development is shaped by both the proximal (for example, family) and distal (for example, neighborhood) contexts in which children live and interact. There is broad theoretical agreement about potential causal pathways connecting neighborhood context and various outcomes for children and youth. We therefore list these mechanisms and describe them only briefly here. Our synthesis of the social science and public health literatures suggests that 15 distinctive linkages can be identified. It is useful to group these 15 mechanisms of neighborhood effects under four broad rubrics: social–interactive, environmental, geographical, and institutional.[7]

Social–Interactive Mechanisms

This set of mechanisms refers to social processes endogenous to neighborhoods. These processes include:

- *Social Contagion.* Behaviors, aspirations, and attitudes may be changed by contact with peers who are neighbors. Under certain conditions, these changes can take on contagion dynamics that are akin to "epidemics."
- *Collective Socialization.* Individuals may be encouraged to conform to local social norms conveyed by neighborhood role models and other social pressures. This socialization effect is characterized by a minimum threshold or critical mass being achieved before a norm can produce noticeable consequences for others in the neighborhood.
- *Social Networks.* Individuals may be influenced by the interpersonal communication of information and resources of various kinds transmitted through neighbors. These networks can involve either "strong ties" or "weak ties."
- *Social Cohesion and Control.* The degree of neighborhood social disorder and its converse—"collective efficacy"—may influence a variety of behaviors and psychological reactions of residents.
- *Competition.* Under the premise that certain local resources are limited and not pure public goods, this mechanism posits that groups within the neighborhood will compete for these resources among themselves. Because the outcome is a zero-sum game, residents' access to these resources (and their resulting opportunities) may be influenced by the ultimate success of their group in "winning" this competition.

[7] By contrast, Manski (1995) groups mechanisms into endogenous, exogenous, and correlated categories. Ellen and Turner (1997) group them into five categories: concentration, location, socialization, physical, and services. Leventhal and Brooks-Gunn (2000) use the rubrics "institutional resources," "relationships," and "norms/collective efficacy." For multiple perspectives on how neighborhood may affect children and youth, see Jencks and Mayer (1990); Brooks-Gunn, Duncan, and Aber (1997); and Booth and Crouter (2001).

- *Relative Deprivation.* This mechanism suggests that residents who have achieved some socioeconomic success will be a source of disamenities for their less well-off neighbors. The latter, it is argued, will view the successful with envy or will make them perceive their own relative inferiority as a source of dissatisfaction.
- *Parental Mediation.* The neighborhood may affect (through any of the mechanisms listed under all categories here) parents' physical and mental health, stress, coping skills, self-efficacy, behaviors, and material resources. All of these, in turn, may affect the home environment in which children are raised.

Environmental Mechanisms

Environmental mechanisms refer to natural and human-made attributes of the local space that may directly affect the mental or physical health of residents without affecting their behaviors. As in the case of social–interactive mechanisms, the environmental category can also assume distinct forms:

- *Exposure to Violence.* If people sense that their property or person is in danger, they may suffer psychological and physical responses that may impair their *functioning* or perceived well-being. These consequences are likely to be even more pronounced if the person has been victimized.
- *Physical Surroundings.* Decayed physical conditions of the built environment (for example, deteriorated structures and public infrastructure, litter, graffiti) may impart psychological effects on residents, such as a sense of powerlessness. Noise may create stress and inhibit decisionmaking through a process of "environmental overload."
- *Toxic Exposure.* People may be exposed to unhealthy levels of air-, soil-, or water-borne pollutants because of current and historical land uses and other ecological conditions in the neighborhood.

Geographical Mechanisms

Geographic mechanisms refer to aspects of spaces that may affect residents' life courses yet do not arise within the neighborhood but rather purely because of the neighborhood's location relative to larger scale political and economic forces, such as:

- *Spatial Mismatch.* Certain neighborhoods may have limited accessibility (in either spatial proximity or as mediated by transportation networks) to job opportunities appropriate to the skills of their residents, thereby restricting their employment opportunities. Teen job-seekers who lack their own vehicle may be especially affected.
- *Public Services.* Some neighborhoods may be located within local political jurisdictions that offer inferior public services and facilities because of their limited tax base resources, incompetence, corruption, or other operational challenges. These, in turn, may adversely affect the personal development and educational opportunities of residents.

Institutional Mechanisms

The last category of mechanisms involves actions by individuals or organizations (typically not located in the given neighborhood) that control important institutional resources in the neighborhood or points of interface between neighborhood residents and vital markets:

- *Stigmatization.* Neighborhoods may be stigmatized on the basis of public stereotypes held by powerful institutional or private actors about its current residents. In other cases, this may occur regardless of the neighborhood's current population because of its history, environmental or topographical disamenities, style, scale and type of dwellings, or condition of their commercial districts and public spaces. Such stigma may reduce the opportunities and perceptions of residents of stigmatized areas in a variety of ways, such as job opportunities and self-esteem.
- *Local Institutional Resources.* Some neighborhoods may have access to few high-quality private, nonprofit, or public institutions and organizations, such as social services, day care facilities, schools, and medical clinics. The lack of the same may adversely affect the personal development opportunities of residents.
- *Local Market Actors.* There may be substantial spatial variations in the prevalence of certain private market actors that may encourage or discourage certain behaviors by neighborhood residents, such as liquor stores, fresh food markets, fast food restaurants, and illegal drug markets.

Summary of Previous Evidence About Potential Neighborhood Effect Mechanisms

Scholars have reviewed the empirical literature related to causal processes potentially connecting neighborhood contexts with child outcomes (see especially Leventhal and Brooks-Gunn, 2000; Galster, 2012; and Foster and Brooks-Gunn, 2013). With the caveat that firm conclusions are elusive here, given the incomplete and sometimes inconsistent state of scholarship and the complexity of the topic, this previous work provisionally suggests the following.

First, the fact that neighborhood poverty rates appear consistently related to a range of outcomes in a nonlinear, threshold-like fashion further suggests that the social contagion (peers) and the collective socialization (roles models, norms) forms of causal linkages are transpiring. There also may be some selectivity involved, as some socially weaker groups in the United States seem more vulnerable to these contexts than stronger ones.

Second, the presence of affluent neighbors appears to provide positive externalities to their less well-off neighbors, seemingly working via social controls and collective socialization. Social networks and peer influences between affluent and poor neighbors, by contrast, do not appear as important in this vein. There is evidence to suggest thresholds here as well, though the precise threshold is unclear and likely varies by outcome being considered. Finally, most evidence indicates that the influence on vulnerable individuals of advantaged neighbors is smaller in absolute value than the influence of disadvantaged neighbors, whatever the mechanism(s) at play.

Third, studies have consistently found that there is relatively little social networking between lower and higher socioeconomic status households or children in the same neighborhood, and this lack is compounded if there are also racial differences involved. Thus, there is little to support the version of neighborhood effects that advantaged neighbors create valuable “weak ties” for disadvantaged ones.

Fourth, local environmental differences appear substantial and likely produce important differentials in physical and behavioral health. There are huge differences in exposure to violence across neighborhoods, and this undoubtedly produces important and durable psychological consequences for children that, in turn, likely have numerous but difficult-to-quantify added effects. Exposure to environmental pollutants, at least past some threshold concentrations, undoubtedly produces significant consequences for the health of children and youth through biological processes.

Fifth, there is probably a substantial indirect effect on children and youth than transpires through the combined effects of the social–interactive, environmental, geographic, and institutional dimensions of the neighborhood context on their parents. This mediation of neighborhood effects through parents is likely to affect a broad range of outcomes for their offspring, though there have been no attempts to measure comprehensively such effects.

Finally, there is a contingent aspect to the foregoing conclusions. Different neighborhood mechanisms likely play a more or less salient role depending on the gender, ethnicity, and developmental stage of the children in question. Moreover, certain mechanisms may be the predominant vehicles for transmitting context to particular outcomes but not others.

Temporal Dimensions of Neighborhood Effects

The temporal dimensions of neighborhood effects must also be considered, because it is likely that different mechanisms operate distinctively in terms of how quickly an effect transpires after exposure, whether a minimum duration of exposure is required before any impact ensues, and the degree to which prior exposures create durable impacts that are not easily altered by current environments (Galster, 2012). First, consider how quickly a neighborhood effect might occur after a child has been exposed to it (either by moving into a new neighborhood or by having the current neighborhood change substantially). Socialization processes, for example, likely take time before wielding influence. Therefore, it might be deduced that those who are exposed only briefly to an environment that is trying to re-shape their behaviors will experience little if any effect from it compared with those who are exposed to the same socializing environment for a longer period. A similar deduction holds for the impacts that operate through local social networks; it takes time for these networks to develop after an individual moves in (or evolve if the neighborhood is changing around the individual). It thus follows that some minimum duration of exposure to this new context will be required before new local social networks produce any measurable differences in educational, employment, or other information conveyed by them. Finally, effects of local institutions like job placement agencies, counseling centers, and health centers will be felt only after some period elapses, insofar as the services provided have slow, cumulative impacts on the human capital of those assisted. This implies that recent, short-term neighborhood exposures will yield smaller impacts compared with sustained durations producing substantial cumulative exposure, as has been argued before (Leventhal and Brooks-Gunn, 2000; Wheaton and Clarke, 2003).

However, whereas socialization processes, the development of social networks and local institutions likely takes some time before a noticeable effect can be expected; the impacts of contextual changes in stigmatization, social disorder, and accessibility may manifest themselves more rapidly. A person's move to a stigmatized neighborhood may imply that the image of the neighborhood will be immediately connected by external decisionmakers to the person concerned. Similarly, the psychological and behavioral impacts from social disorder may be felt quickly. Finally, geographic challenges for unemployed and underemployed youths in gaining information about and easily commuting to higher paying jobs should manifest themselves almost immediately if the accessibility characteristics of a neighborhood in which they reside change. Yet, even through these faster acting mechanisms, a stronger cumulative effect may be expected from sustained, longer term exposure.

The final consideration relates to the persistence or durability of impact. Another way to frame this issue is whether the neighborhood effect mechanism is reversible. This seems especially plausible with some mechanisms—namely, socialization, networks, accessibility, and stigmatization. It is reasonable to posit that a change in any of these contextual dimensions could produce a comparable (in absolute value) change in outcome, regardless of the starting value and the direction of change. This implies that the impact from any given environment will not persist if that environment changes in a radically different direction. However, for other mechanisms, this symmetric reversibility is less likely. For example, if one replaces a weak institutional education-training infrastructure that had retarded resident youths' economic opportunities with a far superior one, one would expect (likely after a lag) an improvement in their human capital, thus rendering the initial impact transitory. By contrast, the opposite situation of a superior institutional structure producing strong human capital is likely to produce persistent effects, because a hypothetical, new, inferior set of institutions may do little to erode the human capital previously attained. As another example, the benefits to behavioral health produced by a violence-free environment will quickly dissolve if the context turns violent. In contrast, the psychological harms caused by exposure to a violent environment can persist for a considerable period, even when the individual is placed in a safe environment. Of course, we recognize that even if in principle the mechanism is reversible (either symmetrically or asymmetrically), the impact may not be reversible if the initial context triggered behavioral changes that were durable. Should an initial neighborhood context result in individuals making decisions that adversely affected their education, job training, or criminal record, for instance, the economic consequences could be long lasting, even when the current neighborhood environment had changed dramatically.

Unfortunately, there have been few rigorous investigations of the above temporal dimensions of neighborhood effects. Nevertheless, a consensus has emerged that several sorts of outcome: neighborhood indicator relationships appear stronger when measured as cumulative exposures instead of contemporaneous exposures (see Aaronson,1998; Wheaton and Clarke, 2003; Turley, 2003; Sampson, Sharkey, and Raudenbush, 2008; and Musterd, Galster, and Andersson, 2012). The evidence on whether some minimum exposure duration is required for an effect to occur and whether effects are durable over the long run seem more contingent on the particular relationships being investigated (cf. Turley, 2003; Kaupinnen, 2007; Sampson, Sharkey, and Raudenbush, 2008; and Musterd, Galster, and Andersson, 2012). We thus concur with the recent admonition by Briggs and Keys (2009: 451) that more research on the temporal aspects of neighborhood effects is required. We hope to contribute to this effort in this report.

Gender and Ethnic Differences in Neighborhood Effects

Recent work not only suggests that there is no uniformly "dominant" neighborhood effect mechanism producing many sorts of consequences for children, but the influence of each mechanism may vary across residential groups within any given neighborhood depending on their social identity and the degree to which they are embedded in local social life (Pinkster, 2012). Several of the above mechanisms suggest that effects are heterogeneous by gender and ethnic group, though not necessarily in unambiguous ways (Galster, Andersson, and Musterd, 2010). The key linkages rely on the notion that intraneighborhood mechanisms have effects only to the extent that children and youth (1) spend a substantial amount of time in the neighborhood, (2) are locally oriented in their social interactions, and (3) do not marshal sufficient resources to insulate themselves from these effects. Gender and ethnic characteristics may be related to each of these three conditions. We would expect, for example, that local social control in ethnic areas with more traditional, patriarchal norms would limit the geographic scale of girls' interactions (Pinkster, 2008). However, these same social controls may produce strict monitoring of the behaviors of girls, thus potentially insulating them from neighborhood peer effects and negating their greater time spent in the neighborhood (Pinkster, 2008). We would predict that girls would be more vulnerable to neighborhood social disorder; though in certain ethnic groups young males' "coming of age" rituals may expose them to serious risks of violence. The evidence from nonexperimental and experimental quantitative studies indeed suggests that different mechanisms may have varying salience across different groups (Crowder and South, 2003; Turley, 2003; Burdick-Will et al., 2010; Galster, Andersson and Musterd, 2010; Clampet-Lundquist et al., 2011; Ludwig, 2012; Musterd, Galster, and Andersson, 2012).

Methodological Challenges of Quantifying Neighborhood Effects

The methodological concerns associated with empirical investigation of the behavioral and psychological impacts of neighborhoods have been the subject of several excellent treatises; see especially Manski (1993, 1995, 2000); Duncan, Connell, and Klebanov (1997); Duncan and Raudenbush (1999); Sampson, Morenoff, and Gannon-Rowley (2002); Durlauf and Cohen-Cole (2004); Oakes (2004); Galster (2008); and Foster and Brooks-Gunn (2013). Perhaps four of the most vexing obstacles identified are (1) measuring neighborhood context, (2) measuring exposure to neighborhood context, (3) geographic selection bias, and (4) endogeneity.

As noted above, there are numerous potential mechanisms through which neighborhood context may exert causal influence on children and youth. The challenge is directly measuring the attributes associated with these mechanisms. Rarely, if ever, do investigators have access to the appropriate data for doing so in a comprehensive fashion. As a result, the standard (if not wholly satisfying) practice is to employ neighborhood indicators that are readily available (most often from the Census) and argue that they serve as proxies for one or more of the underlying causal processes.

The second issue relates to the intensity, duration, and consistency with which children are exposed to neighborhood context. Researchers can readily identify the neighborhoods in which subjects reside, but it is a far greater challenge to identify the degree to which they are exposed to the processes thought to convey neighborhood effects, whether these processes work instantaneously to generate outcomes for individuals or only after substantial cumulative impact. As is the case with so much of research design in the context of neighborhood effects, what is appropriate depends on which underlying process is assumed to operate. If, for example, stigmatization were the predominant mechanism through which neighborhood effects transpired, one could reasonably posit that the effect would apply equally to all youths residing in the stigmatized place and that the effect would occur almost immediately upon a new resident's arrival. If socialization via peers were the predominant mechanism, however, the intensity of exposure to such an influence would depend on the degree to which youths' social networks and routine activity spaces were contained within the neighborhood. Moreover, the degree to which such a socialization process would change the youths' behavior would be directly related to the duration of their exposure to a consistent set of peers. Thus, within the context of the socialization mechanism, we would expect neighborhood effects to be strongest for those who have mainly intraneighborhood social relationships, undertake most of their activities there, and have lived there an extended time. The empirical challenge is to operationalize these exposure effects and allow for the measured neighborhood effect to be contingent upon them.

The geographic selection issue is that different types of parents who have distinct (sometimes unmeasured) characteristics will be more or less likely to move from or to certain types of neighborhoods. It is conceivable that several of these unmeasured characteristics of parents not only affect their residential mobility behavior but also affect the outcomes for children that are being investigated. This raises the possibility that an observed statistical relationship between individual child outcomes and neighborhood context is not indicative of a neighborhood's independent effect but may be merely spurious in the extreme. Unmeasured (and not controlled statistically) parental characteristics may be affecting both children's outcomes and their observed neighborhood characteristics as well.[8]

Finally, the methodological challenge related to endogeneity is that some household characteristics and associated neighborhood characteristics may be mutually causal, in which case the independent impacts of neighborhood may be obscured if the endogenous household characteristics affect the same child outcome being investigated. To be more specific, individuals jointly make decisions about neighborhood characteristics, whether to own or rent their dwelling, and how long they plan on residing there. For example, those who wish to buy a home and remain in it an extended time will, to the extent feasible, try to avoid neighborhoods with a poor quality of life and gloomy prospects for home appreciation. So, if neighborhood, tenure, and household residential mobility are simultaneously determined and all have some impact on the given child outcome, to what extent is the measured relationship for neighborhood an unbiased estimate of its *independent* impact?

[8] The direction of this bias has been the subject of debate, with Jencks and Mayer (1990) and Tienda (1991) arguing that measured neighborhood impacts are biased upwards and Brooks-Gunn, Duncan, and Aber (1997) arguing the opposite. The challenge is to overcome this geographic selection bias, whatever its direction.

Implications for the *Denver Child Study*

The *Denver Child Study* takes seriously the implications of the prior summary of scholarship related to mechanisms and quantification of neighborhood effects. Although details are provided in the next chapter, we offer an overview here. First, in an effort to measure virtually all of the foregoing potential causal mechanisms, we employ an unusually wide variety of neighborhood indicators. Some indicators come from administrative data and are objectively measured; others represent subjective assessments by parents and caregivers ("caregivers," hereafter) of the neighborhoods in which they were raising children. Our battery of neighborhood indicators includes multiple proxies for causal processes in each of the social–interactive, geographic, environmental and institutional domains described above. Many of these offer direct measures for such processes as peers, social networks, exposure to violence, institutional facilities, and pollutants.

Second, we confront the issue of temporal exposure to neighborhood by measuring it in two ways. We first conduct all our analyses based on *contemporaneous* measures of neighborhood—that is, exposure to conditions measured at the time when a particular child or youth outcome occurred (for the first time, if repeat events are possible), such as being diagnosed with a particular condition or disease, engaging in a particular behavior, dropping out of school, or having a baby. We then conduct analyses based on *cumulative* measures of neighborhood—that is, exposure to conditions measured as averages over the entire period from birth to onset of a particular outcome.

Third, we investigate the potential heterogeneity of neighborhood effects by conducting stratified versions of our analyses. We replicate models for males, females, African Americans, and Latinos, comparing patterns of parameter magnitudes and statistical significance.

Fourth, we deal with potential geographic selection bias through the quasi-random assignment process embodied in our Denver Housing Authority (DHA) natural experiment, a method that has been touted for the study of neighborhood effects (Oakes, 2004) and has been widely employed internationally in this vein; see, for example, Oreopoulos (2003); Edin, Fredricksson, and Åslund (2003); Piil Damm (2009; 2014); and DeLuca et al. (2010). We also analyze alternative samples in an effort to bound the "true" neighborhood effect estimate.

Fifth, our natural experiment also helps us overcome potential endogeneity bias. The simultaneity of decisions regarding location, tenure, and mobility expectations is effectively broken by the eligibility and assignment processes that DHA employs. All DHA housing is rental, so homeownership options are removed from consideration. Length of residency is less influenced by tenants while they reside in DHA housing, because their leases can be terminated involuntarily for a variety of lease infractions or as the result of economic success that renders them ineligible for continued housing assistance.

III. DATA AND METHODOLOGY

The Natural Experiment in Denver

In addition to its large-scale, conventional public housing developments, the Denver Housing Authority (DHA) has operated since 1969 a program providing approximately 1,500 low-income families with opportunities to live in scattered-site, single-family and small-scale, multi-family units. These units are located in a wide range of neighborhoods throughout the congruent city and county of Denver. By contrast, DHA conventional developments are typically located in less advantaged neighborhoods. From 1987 onward, as applicants (who met certain basic eligibility criteria) came to the top of the public housing waiting list, they were offered a vacant DHA unit (in either conventional or scattered-site programs) with the number of bedrooms appropriate for their family size and gender of children. If they did not accept this unit, they were offered the next similarly sized unit that became available (typically after a nontrivial wait). If applicants did not accept this second unit, they dropped to the bottom of the queue, creating a wait of at least a year before a subsequent offer.[9]

As detailed in Appendix A, we conducted a variety of statistical tests to ascertain whether the initial assignment of households to a DHA dwelling unit (and neighborhood thereby) mimicked random assignment of household to neighborhood. These tests were based on the intuitively appealing notion that in a quasi-random assignment there would be few statistically significant correlations among observed DHA tenant characteristics and neighborhood characteristics, no more than might occur through chance. Were this to prove the case, we would be secure in assuming that unobserved DHA tenant characteristics would also be uncorrelated with neighborhood characteristics. We found that only DHA tenant ethnicity generated associations with neighborhood conditions (in particular, aspects of neighborhood disadvantage). This indicates that, *conditioned on ethnicity*, the DHA allocation process produced a quasi-random initial assignment of households across neighborhood characteristics. The empirical implication is that our models reported here control for ethnicity to avoid geographic selection bias. We also carried out a test that gives us added confidence that there are unlikely to be any unobserved DHA tenant characteristics that are both highly correlated with neighborhood characteristics initially assigned and strongly predict child and youth outcomes. This test involved a Monte Carlo simulation of the correlations that would be observed between neighborhood characteristics and typically unobserved household characteristics based purely on chance and compared these with actual correlations observed in our dataset; see Appendix A for details.

The quasi-randomness of this initial DHA assignment potentially erodes over time, as some residents selectively leave their initial locations while others stay. Three potential sources of geographic selection based on caregiver unobservables might arise after initial assignment. First, DHA households can voluntarily transfer between scattered-site and conventional public housing

[9] Our independent evaluation of DHA records showed that 88.3 percent of the applicants accepted their first or second offers; 7.9 percent ended up rejecting both offers and taking a third offer; 3.8 percent rejected three or more offers.

developments, although this occurred rarely.[10] Second, a substantial part of our information comes from households no longer residing in DHA housing, and their subsequent locations were likely not randomly chosen.[11] In these cases, cumulative contextual exposures will be a combination of randomly assigned and (to some degree) selectively chosen neighborhood characteristics. To the extent that the former contexts are sufficient to rupture the correlation between unobservable caregiver characteristics affecting child outcomes and neighborhood characteristics they experienced, estimates of neighborhood effects will not be substantially biased. A third potential source of selection relates to those who do *not* move out of their DHA housing for an extended period. Perhaps their unwillingness or inability to move out of DHA is related to some unobservable caregiver characteristics that may also be connected to child outcomes being investigated.

To investigate the degree to which selective moves subsequent to DHA residence and selective remaining in DHA residence may affect our measurement of neighborhood effects, we replicate our analyses using three overlapping samples of children and youth about whom we gained information through our survey (described below), what we label "ever," "mostly," and "currently" in DHA:

- *"Ever in DHA" Sample*. This sample includes children and youth whose onset of the outcome being investigated occurred since their family was assigned to its first randomly assigned DHA dwelling.
- *"Mostly in DHA" Sample*. This sample includes children and youth who spent a majority of the years between onset of the outcome being investigated and when their family was first randomly assigned to its DHA dwelling.
- *"Currently in DHA" Sample*. This sample includes children and youth whose onset of the outcome being investigated occurred while they were living in their first randomly assigned DHA dwelling.

Most of the contextual exposure that the "mostly in DHA" sample of "stayers" had accumulated involved the randomly assigned neighborhood; this is not necessarily true in the "ever in DHA" sample, because it includes some "movers" who selected out of the DHA-assigned location before the neighborhood exposure period under investigation. The "currently in DHA" sample encompasses children both from households that have remained in DHA for long periods prior to the time of observation as well as those whose families may have been assigned as recently as two years prior to observation. We believe that the "true" neighborhood effect parameters likely fall within the range of estimates for these samples based on the above arguments. We will emphasize results that are robust across multiple samples.

A further important feature of our natural experiment is the comparatively long exposures children in DHA households had to their assigned neighborhoods. Our sample of households had a six-year mean (median: 5 years) DHA residential duration, approximately twice as long as

[10] Of the post-1986–vintage tenants residing in conventional public housing developments at the time of the *Denver Child Study* interviews, 99 percent were originally placed in such; only 1 percent moved in from dispersed housing. Of the post-1986–vintage tenants residing in dispersed housing at that time, 94 percent were originally placed in such, while 6 percent moved in from the conventional developments. Moreover, an unknown number of these transfers were involuntary, required by regulations after changes in family size or composition.

[11] Slightly more than one-third of all caregivers interviewed in the study were former DHA residents.

reported for the Moving To Opportunity (MTO) experimental group (mean: 2.7 years; median: 3.3 years). Recent work by Wodtke et al. (2011); Crowder and South (2011); and Moulton, Peck, and Dillman (2012) stresses the importance of taking into account the length of time children are exposed to particular neighborhood contexts, lest one underestimate the true effects that neighborhoods have on them.

The use of natural experiments inevitably raises questions about the generality of results. We believe that our findings can fairly be generalized to low-income, Latino, and African-American families that apply for and remain on the waiting list long enough to obtain public housing. As such, it may not be fully generalizable to the population of minority families that obtain subsidized rental housing and certainly may not be to the larger population of minority families that qualify for housing assistance. Nevertheless, it is similar to—yet considerably more general than—the populations forming the samples for the oft-cited MTO-based scholarly studies noted above. Finally, we believe that our findings are generalizable to low-income minority households that have traditionally been the focus of subsidized housing policies in the United States.

Denver Child Study Household Survey

We developed and fielded during 2006–8 the *Denver Child Study* telephone survey (conducted in person for about 20 percent of the sample, who had no landline phones) that collected retrospective and current information about the household, adults, and children. Detailed information related to multiple domains of outcomes was gathered for all eligible children associated with each household (see Appendix B). Each household's residential mobility history was obtained so it could be associated with neighborhood developmental context for children. Study eligibility criteria were (1) presence of children in the home between birth and 18 years of age when they moved into DHA housing, (2) family remained in DHA housing for at least two years, (3) family first entered DHA in 1987 or later (when DHA's current quasi-random assignment process came into operation), and (4) were of Latino or African-American ethnicity.

Attempts to recruit subjects for the study were made by mail and phone in both English and Spanish, when appropriate. Compensation for participation took the form of either a cash or gift card. We estimate an overall participation rate of 56.5 percent (85 percent for those still residing in DHA housing), with most nonparticipation the result of our inability to locate the household; less than 6 percent refused to participate when contacted. Our team successfully completed 711 interviews with the primary caregivers of eligible households, whose surveys subsequently passed our rigorous data verification and reliability checks. Children and youth analyzed in our study were current or past members of these 711 households, who spent two or more years residing in DHA housing before reaching 19 years of age.

Characteristics of Caregivers and Households

Our *Denver Child Study* survey collected information on a wide variety of parental/caregiver ("caregiver," hereafter) and household characteristics that we employed as controls; these are listed in Exhibit III-1. This included information about caregiver national origin, education, economic status, disability status, marital status, fertility and employment histories, and access to health insurance. Less conventionally, our survey asked respondents whether they had used alcohol, marijuana, or other illegal drugs since becoming a parent and, if so, how often. The survey also asked questions that permitted us to compute a reliable indicator of depressive symptomatology (Center for Epidemiologic Studies Depression [CES-D]).[12] We were also able to measure a series of household events (like eviction, inability to pay bills, insufficient food), from which we created a "household economic stressors index." All of these time-varying characteristics were measured for the period during which the observed youth resided in the household.[13] We recorded the birth order of the focal child, number of siblings, and other behaviors of older siblings. Finally, residential history information permitted us to compute the number of moves the household had undertaken during the childhood of the observed youth. We believe that this battery of characteristics controls for key dimensions of household context related to economic and intellectual resources; caregiver and sibling role modeling; supervision and monitoring of children; and parenting behaviors, attitudes, and norms that would likely affect a variety of outcomes experienced as children and youth.

Children and youth in the *Denver Child Study* live in households that have many characteristics reflecting their disadvantaged household circumstances. For illustrative purposes, we present the characteristics of caregivers and households for our "ever in DHA" analysis sample used to model the diagnosis of asthma, because this outcome may occur throughout childhood. For these descriptive analyses, we restrict our sample of children to those who resided in DHA housing at the time of diagnosis and for whom we had complete information on all core covariates. The average age of caregivers at time of diagnosis was 39 but ranged from 19 to 79 years of age.[14] Nearly one out of seven caregivers was an immigrant. One 1 of 10 caregivers was disabled. Eleven percent of caregivers were married or cohabiting, and the average number of siblings present in households was 1.9. Prior to asthma diagnosis, children had moved, on average, 2.6 times. Approximately 38 percent of caregivers had no diploma, 39 percent had only a high school diploma or General Education Development (GED) certification, and the remaining 23 percent had completed some postsecondary education at the time of asthma diagnosis. Slightly more than half (54.9 percent) of all caregivers were employed full time. Average annual caregiver earnings were $12,069. About 39 percent of caregivers were able to monitor their children on a full-time basis; another 6 percent could monitor their children part time, while the remaining 55 percent were not available because of full-time work responsibilities. Three-quarters of all households had access to some form of health insurance at the time of diagnosis. Nonetheless, many of these households faced challenges: 13 percent reported regular alcohol, marijuana, or drug use since becoming caregivers; 24 percent reported depressive symptomatology at the time of survey; and they faced on average 1.4 incidents of acute financial crisis while raising their children.

Characteristics of Children and Youth

Our *Denver Child Study* survey asked caregivers to supply information about all their children with whom they had lived in DHA public housing for at least one year. In this manner, we

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[12] We use a dummy variable indicating whether the parent exhibited subclinical or clinical depressive symptomatology (that is, scored at least 16 on the CES-D scale).
[13] The exception was the caregiver depressive symptomatology scale, which was measured at the time of survey and serves as a control for affect when responding to survey questions, not necessarily caregiver emotional state during onset of a particular child outcome.
[14] Many of the caregivers whom we interviewed were grandparents or guardians of the child, not biological parents.

collected detailed information about the children's gender, ethnicity, birth order, residential histories, health, exposure to violence, behaviors and activities, education, and (for older children), marital or fertility histories and labor market outcomes during early adolescence and young adulthood.

Exhibit III-1. Characteristics of caregivers and households*

	Mean or Percent	*SD*	Min	Max
Caregiver reported depressive symptomatology	24.1	0.43	0	1
Caregiver age	39.1	9.84	19.54	79.13
Caregiver immigrant status	13.9	0.35	0	1
Caregiver history of substance abuse	13.1	0.34	0	1
Caregiver disability status	9.8	0.30	0	1
Caregiver educational attainment				
No degree or certification	33.7	0.47	0	1
Technical certificate (no high school diploma)	4.2	0.20	0	1
GED (high school equivalency)	13.0	0.34	0	1
High school diploma	25.5	0.44	0	1
Technical certificate (post–high school)	13.7	0.34	0	1
Two-year college degree (A.A., A.S., A.A.S.)	7.4	0.26	0	1
Four-year college degree (B.A, B.S.)	2.5	0.16	0	1
Married or cohabiting	10.8	0.31	0	1
Average caregiver earnings (in dollars)	12,069	12,935	0	66,352
Caregiver not available to monitor or supervise children	54.9	0.50	0	1
Caregiver available to monitor or supervise children full time	39.3	0.49	0	1
Caregiver available to monitor or supervise children part time	5.8	0.23	0	1
Household stressor scale score	1.41	1.19	0	5
Household had health insurance	76.8	0.42	0	1
Total number of moves from birth through onset	2.64	2.39	0	14
Number of siblings in household	1.91	1.36	0	7

* For this table, all time-varying household characteristics were measured contemporaneously to time of diagnosis of asthma or 18 years of age (or time of survey, whichever younger) if no such diagnosis.

N = 814

We will present descriptive statistics for the various outcomes that we analyze in subsequent chapters, because the analysis samples are often considerably different because of the age range that would be relevant for a specific outcome (for example, including only school age children in educational outcome analyses but all ages for health outcomes and exposure to violence in the neighborhood and home analyses).

The descriptive statistics for child and youth characteristics used as control variables are listed in Exhibit III-2. The children and youth in the *Denver Child Study* reflect the overall composition of children residing in DHA public housing: 31.4 percent are Latino males, 28.9 percent are Latina females, 20.9 percent are African-American males, and 18.8 percent are African-American females. Approximately 31 percent were the first-born children in their households.

Exhibit III-2. Characteristics of children and youth

	Percent	*SD*	Min	Max
Gender and ethnicity				
Latina female	28.9	0.45	0	1
Latino male	31.4	0.46	0	1
African-American female	18.8	0.39	0	1
African-American male	20.9	0.41	0	1
First born in family	31.2	0.46	0	1

N = 814

Characteristics of Neighborhoods Experienced by Children and Youth

It is generally accepted that "neighborhood" has both objective "space" dimensions (that is, economic, demographic, social indicators associated with geographies) and subjective "place" dimensions (that is, the human experience of territory; Fitzpatrick and LaGory, 2000). We obtained a wide variety of neighborhood data about both dimensions from four sources.

The first source was the decennial U.S. Census, where we used census tract geographic scales from 1970, 1980, 1990, and 2000 censuses. We employed the *Neighborhood Change Database* (a Geolytics proprietary product) for this information, because it adjusts data to account for changes in tract boundaries between decennial censuses. For estimates of non–census-year data, we used linear interpolation or extrapolation. We gathered indicators that have been widely employed in prior research on neighborhood effects, including percentages of households moving in during the prior year, female-headed households, families below the poverty line, unemployed adults, Latino population, non-Latino African-American population, [15] foreign-born population, homes that are renter occupied, homes that were built during various periods, and mean occupational prestige based on the General Social Survey prestige score weighted by the observed proportional distribution of occupations of employees in the tract. Given high correlations among several of these variables, we conducted four principal components analyses, one for a comparable set of variables for each of the 1970–2000 censuses.[16] For each census year, the analysis produced a single component (with an eigenvalue greater than unity) that consistently consisted of the roughly equally weighted sum of census tract percentages of poor, unemployed, renters, and female household heads. We call this our *neighborhood social vulnerability score.*

The second source was subjective indicators based on responses of the caregivers interviewed in

[15] The ethnic makeup of Denver in 2000 was 52 percent non-Latino whites, 11 percent non-Latino African Americans, and 32 percent Latinos.
[16] The creation of our linked database occurred prior to the release of the 2010 Census and the five-year average *American Community Survey* data.

our *Denver Child Study*.[17] For each neighborhood in which they lived while they were raising children, we asked the caregivers to respond to a battery of questions related to the location's assets and liabilities.[18] From the responses, we devised three indicators (neighborhood social capital, social problems, and institutional resources) and a dichotomous measure of the presence of bad peer influences in the neighborhood. The social capital index (range: 0–6) was incremented by "one" for each of the following respondent descriptions of people in the neighborhood: could get together to solve neighborhood problems; would watch out for their children and property; knew them and their children by name; they and their children could look up to them or could be counted on in times of trouble; and whether the respondent participated in any organizations located in the neighborhood (for example, block clubs, tenant groups, religious organizations). The social problems index (range: 0–5) was incremented by a factor of "one" for each of the following neighborhood conditions: people selling drugs; gang activity; homes broken into by burglars; people being robbed or mugged; and people getting beaten or raped. We used Item Response Theory analysis to generate a latent factor score denoting neighborhood resources present during childhood. Resources included parks, recreation centers, mentoring or counseling centers for children, subsidized day care facilities, and good police protection. Higher values indicate a higher probability of having these resources within the neighborhood. These indicators proved reliable; additional details about their properties are available from the authors.

The third source of neighborhood information was the Denver-based Piton Foundation's *Neighborhood Facts Database*, which provided small area-based, annually measured information culled from Denver administrative databases on characteristics that the Census does not provide. These included violent crimes reported to police per 1,000 population, property crimes reported to police per 1,000 population, and confirmed cases of child abuse and neglect per 1,000 children. The Piton Foundation data are aggregated to 77 named community areas consisting of two census tracts, on average, and thus are measured at a larger spatial scale than our Census-based data. Moreover, Piton series are available only for the city and county of Denver, which produced shrinkage in our analysis sample because some former DHA households interviewed had moved out of the county.

The fourth source for data on toxic airborne pollutants coded to census tracts was the U.S. Environmental Protection Agency. In particular, we employed their summary index of respiratory health risk associated with the combined concentrations of 124 toxic airborne compounds as well as their neurological risk index, identifying the concentrations of lead pollutants.[19]

Descriptive statistics for all these neighborhood indicators are presented in Exhibit III-3. At the

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[17] Recent research has shown that such subjective information based on residents' perceptions of neighborhoods provide important additional explanatory power in modeling a variety of economic outcomes (Furtado, 2011).
[18] This similar to the oft-used approach to obtain subjective neighborhood indicators; see Muhajarine et al. (2008).
[19] The respiratory and neurological risk indices are generated from tract-level estimates of 124 air toxics (listed at http://www.epa.gov/ttn/atw/nata2002/02pdfs/2002polls.pdf). These estimates are then aggregated based on a "risk per million" index, with the number representing the likelihood that one person out of 1 million equally exposed people would develop the respiratory or neurological health issue if exposed continuously to the specific concentration over a 70-year lifetime. Source and further information: http://www.epa.gov/ttn/atw/nata2002/natafaq.html#A6. In our analyses, we have rescaled the neurological risk index by a factor of 100.

time of the reported asthma diagnosis, the typical child was residing in a neighborhood that was 59 percent Latino and 13 percent African American. Approximately 28 percent of the residents were foreign born with the majority coming from Mexico. Children lived in neighborhoods characterized by a high degree of residential instability—one out of four residents had moved into the neighborhood in the preceding 12 months—as well as moderate levels of social vulnerability (mean: 128). They also resided in neighborhoods populated with adults working in less prestigious occupations (mean: 37). Children also tended to live in neighborhoods with older housing: Approximately one-quarter of the neighborhood housing stock was built before 1940 and slightly less than one-half was built between 1940 and 1970. Caregiver subjective measures of neighborhood quality suggest that children lived in neighborhoods with moderate levels of social capital (mean: 3.4), modest levels of resources (mean: 0.18), but good access to medical facilities. At the same time, children lived in neighborhoods that experienced, on average, 2.2 problems and were exposed to negative peers. When compared with the city of Denver as a whole, the typical child in our study was exposed to higher than average child abuse and neglect rates (mean: 11.4 per 1,000), violent crime rates (mean: 11.5 per 1,000), and property crime rates (mean: 51.65 per 1,000). The average neurological hazards index was 8.01, while the average respiratory hazards index was 5.29, suggesting that children in our study were exposed to nontrivial levels of air and lead pollutants.

The Issue of Neighborhood Scale

There has never been a scholarly consensus on how *neighborhood* should be defined conceptually or operationalized empirically (Galster, 2001; Coulton, 2012; Taylor, 2012). Many scholars have employed a purely ecological or geographic perspective, some a purely perceptual or social–interactive perspective, while others have attempted to integrate both perspectives. The upshot is that, whatever *neighborhood* is, it undoubtedly has distinct social, economic, and psychological meanings to residents at various geographic scales, as was first observed by Suttles (1972) and Birch et al. (1979). Moreover, the various causal processes presented in Chapter II that transmit neighborhood effects on residents undoubtedly operate across different spatial scales (Galster, 2012).

Exhibit III-3. Characteristics of neighborhoods Experienced by children and youth*

	Mean or Percentage	*SD*	Min	Max
Census neighborhood indicators				
Percentage of African-American residents	13.4	15.67	0.16	77.3
Percentage of Latino residents	59.4	20.24	6.60	91.9
Percentage of foreign-born residents	27.9	13.72	4.42	62.41
Social vulnerability score (range: 0–400)	127.90	63.87	26.50	288.97
Occupational prestige score (range: 0–100)	37.23	3.58	31.36	47.90
Percentage of residents who moved in the preceding 12 months	25.3	10.37	2.44	55.11
Age of housing stock				
Percentage of housing built before 1940	25.9	19.42	0	85.08
Percentage of housing built between 1940 and 1969	47.5	22.53	0.86	97.16
Denver Child Study neighborhood indicators				
Social capital index (range: 0–6)	3.40	1.73	0	6
Social problems index (range: 0–5)	2.16	1.91	0	6
Living in neighborhood with negative peers	54.1	0.50	0	1
Living in neighborhood with hospitals and clinics	86.1	0.35	0	1
Resource factor score	0.18	0.70	−1.74	1.02
Piton neighborhood indicators				
Violent crime rate per 1,000	11.49	7.30	1.01	34.59
Property crime rate per 1,000	51.65	30.10	9.09	153.74
Child abuse and neglect rate per 1,000	11.39	7.38	1.92	30.14
Environmental Protection Agency neighborhood indicators				
Neurological hazards index (rescaled by 100)	8.01	1.38	4.66	14.77
Respiratory hazards index	5.29	0.53	3.83	6.91

* For this table, all time-varying household characteristics were measured contemporaneously to time of diagnosis of asthma or 18 years of age (or time of survey, whichever is younger) if no such diagnosis.

N = 814

The implication for empirical researchers of neighborhood effects that logically follows from the above is that neighborhood context should be operationalized at *multiple scales*. This proves challenging for several reasons, however. First, data are typically available only for a few neighborhood geographies (often just one: census tracts) that have been defined administratively.[20] These geographies may not correspond well with boundaries either perceived by residents or the scales over which causal processes imparting neighborhood effects vary. Second, even if researchers can in principle generate their own boundaries through geographic information system technologies (Coulton, 2012), the appropriate bounding is unclear. There is a great deal of interpersonal variance in resident-defined boundaries of neighborhoods, and there may be multiple causal processes at work at distinctive spatial scales to produce the observed neighborhood effect. Finally, variables measuring similar aspects of neighborhood context but at different scales can easily be too highly correlated to produce distinct statistical estimates of neighborhood-effect parameters.

The most direct way of answering the question, "What scale(s) of neighborhood matter most in generating individual resident outcomes," is to conduct parallel analyses of a particular outcome, where neighborhood context is measured at different scales and their parameter estimates are compared. Several studies have taken this tack: Buck (2001); Bolster et al. (2007); and Andersson and Musterd (2010). All find statistically significant relationships at various scales but stronger correlations between economic outcomes and neighborhood variables when the latter are measured at smaller spatial scales.

Our *Denver Child Study* addresses the issue of neighborhood scale in the following ways. As noted above, we employ a battery of neighborhood indicators measured at three spatial scales: the Denver community area (about two census tracts on average), census tracts, and survey respondent–defined neighborhoods. Because the former two geographies are typically considered "too large" from the standpoint of residents' intense neighborly social interactions (Suttles, 1972), we believe that estimated parameters of neighborhood indicators measured at these larger scales will be biased downward. Unfortunately, because few indicators are available at more than one spatial scale, we cannot conduct parallel analyses of a particular outcome where neighborhood context is measured at different scales.

Creation of Analytical Databases

We spent considerable effort cleaning, reconciling, and augmenting the survey data. When our audits revealed inconsistencies or omissions in the responses, we attempted to contact respondents again and seek clarifications. Information respondents provided on their residential histories was cross-checked with residential location information contained in the DHA administrative databases, U.S. Postal Service, Lexis-Nexis, Intelius address files, and several additional online search engines.

[20] The neighborhood effects literature is replete with alternative specifications of neighborhood geography, because data are collected at various scales by different institutions (Galster, 2008). The United States–based studies typically employ the census tract, an area bounded by local planners who employ transportation routes or topographical features to create as demographically homogeneous an area as possible, containing roughly 4,000 inhabitants, on average.

After residential history information obtained on the survey was verified for accuracy, we geocoded each address, using the U.S. Census Bureau' *American FactFinder* Web site utility. In cases where respondents could not recall specific addresses but only proximate cross-streets, we verified these locations using MapQuest, and then identified the corresponding census tract using the aforementioned Census Web site showing tract boundaries. This procedure provided the census tract corresponding to each location in respondents' residential histories, which, in turn, permitted us to match each location to the aforementioned battery of neighborhood indicators for census tract neighborhoods. We were able to successfully link 92 percent of the residential locations identified by respondents.

We then transformed these data for households and neighborhoods into the format of a *child-year unit of observation*. For each child-year, there are variables associated with (1) fixed child characteristics, (2) fixed caregiver characteristics, (3) temporally varying child characteristics, (4) temporally varying caregiver-household characteristics, (5) temporally varying neighborhood characteristics, and (6) temporally varying outcomes.

Statistical Modeling Approaches

Our core modeling approach employs two complementary empirical strategies. The first explores the predictors of whether a child *ever* experienced a certain outcome (either by the time of our survey or 18 years of age, whichever came first). It employs various techniques for modeling such dichotomous outcomes: logit, multilevel, mixed-effects logit, and Bayesian analyses. The second explores the predictors of the *timing* when the onset of a particular outcome occurred. It employs Cox or accelerated failure time (AFT) analyses. For our core modeling efforts in both approaches, we measure time-varying predictors contemporaneously with the onset of outcome being modeled. We also explore how results differ when we measure cumulative exposures to neighborhood context. Moreover, we investigate whether relationships observed across the full sample are robust across males and females and across Latino and African-American ethnic groups. We explicate these approaches further below.

Dichotomous Outcome Models

In our first statistical approach, we employ both standard and multilevel, mixed-effects logistic regression models to estimate the odds of a child or youth experiencing a particular outcome, based on time-invariant predictors and time-varying predictors measured at age of onset or first occurrence (or time of survey or 18 years of age, whichever is earlier, if the given outcome never occurred).

For our preferred specification, we estimate a multilevel, mixed-effects logit model specified as one level conditional on a set of family random effects $\boldsymbol{u_i}$:

$$\Pr\left(y_{ij} = 1 \middle| \boldsymbol{u_i}\right) = H(\beta x_{ij} + z_{ij}\boldsymbol{u_i}) + \varepsilon_{ij}$$

where H is the logistic cumulative distribution function, y_{ij} is the binary outcome, i is the number of families, j is the number of children observed within each family, χ are predictors, β are their associated coefficients, and ε_{ij} is a random error. Because this is a random intercept only model, z_{ij} is a scalar of 1. When the number of observations within each cluster (that is, family) is small and unbalanced across clusters, as it is in our study, the random-effects model above likely provides less biased parameter estimates than standard logit models (Cheah, 2009). We also observed that it produced somewhat more precise estimates, although the point estimates were typically similar.

Unfortunately, multilevel, mixed-effects logistic regression models are considerably more sensitive to small sample sizes, sometimes failing to converge and excluding variables they determine are perfectly predictive. We therefore also estimate a standard logit model employing robust standard errors to account for clustering of children in the same family.[21] In this study, we report the multilevel, mixed-effects logit model whenever possible; otherwise, the standard logit model employing robust standard errors is reported. In any event, the point estimates produced by the two types of models do not differ substantially.

Some of our physical and behavioral health outcomes occurred rarely, involved small analysis samples, or had highly skewed distributions, thus rendering one or more of the above logistic modeling approaches unfeasible or unstable. In such cases, we also employed Bayesian analysis with noninformative priors.[22] In contrast to maximum likelihood estimation, Bayes does not rely on large-sample theory or meeting assumptions of normality. Instead, Bayesian analysis uses Markov chain Monte Carlo algorithms with Gibbs sampling to iteratively replicate the observed data by obtaining approximations of the posterior distributions of the parameters. For each parameter, a 95 percent confidence interval is produced. In Bayesian inference, this interval is interpreted as follows: based on the observed data, there is a 95 percent chance that this credible interval contains the true value of the parameter. A posterior predictive *p*-value (PPP) of model fit can be obtained via a fit statistic *f* and is based on the usual chi-square test of H_0 against H_1. Lower PPP values indicate weaker fit. For a positive estimate, the *p*-value is the proportion of the posterior distribution that is below zero. For a negative estimate, the *p*-value is the proportion of the posterior distribution that is above zero.

Hazard Models

Our second, complementary analytical approach models the hazard function for the given outcome. We start by estimating a Cox proportional hazards model with clustered robust standard errors:

$$\lambda(t|\chi_{ij}) = \lambda_0(t)\exp(\beta_1\chi_{1ij} + \ldots + \beta_n\chi_{nij}) + \varepsilon_{ij} = \lambda_0(t)\exp(\chi_{ij}\,\beta) + \varepsilon_{ij}$$

where $\lambda(t|\chi_{ij})$ is the observed time of the given outcome (or the censoring time of 18 years of age) for youth, *ij* and $\lambda_0(t)$ are the baseline hazard; other symbols are defined as above. We then conduct a global chi-square test to ascertain whether the residuals of the Cox model violate the assumption of proportionality. If they do (as was often the case), we estimate an accelerated

[21] For the two logistic models, we used Stata logit and xtmelogit algorithms. We do not need to worry about clustering at the neighborhood level here: Children who live in the same neighborhood are typically experiencing a different value of the neighborhood indicator, because they are experiencing such for different years of their lives and different calendar years. There is no *commonly experienced* “higher spatial scale,” as is typically the case in hierarchical data structures.

[22] We used the Bayes Estimator model algorithm in Mplus and included a cluster adjustment to account for the clustering of the children within families. We also tested several Bayesian models using prior distributions estimated from the prevalence rates for asthma and obesity among children residing in Denver. See Muthén (2010), “Bayesian analysis in Mplus: A brief introduction,” available at http://www.statmodel.com/download/IntroBayesVersion%203.pdf).

failure time model of the age at which the outcome occurred.[23] In the AFT model, the outcome is the natural logarithm of the survival time *t*, which is expressed as a linear function of the covariates:

$$ln(t_{ij}) = \chi_{ij}\beta + \varepsilon_{ij}$$

where all symbols are defined as above. In AFT models, values greater than zero mean a longer spell prior to the occurrence of the outcome; values below zero depict shorter spells.

The AFT model is generally preferred to the Cox proportional hazard model with data that violate the assumptions of proportionality, because it is more robust to omitted covariates and less sensitive to choice of probability distribution. Specifically, we used the frailties version of the AFT model to address the clustering of siblings within families.

Temporal Aspects of Neighborhood Effects

In Chapter II, we discussed the issue of how temporal aspects of exposure to neighborhood context might be investigated. We confront this issue by measuring exposure timing in two ways. We first conduct all our analyses based on *contemporaneous* measures of neighborhood—that is, exposure to conditions measured at the time when a particular child or youth outcome occurred (for the first time, if repeat events are possible), such as being diagnosed with a particular condition or disease, engaging in a particular behavior, dropping out of school, or having a baby. We then replicate several analyses based on *cumulative* measures of neighborhood—that is, exposure to conditions measured as averages over the entire period from birth to onset of a particular outcome. Given our theoretical discussions in Chapter II, we would expect these alternative measures to perform differently depending on both the outcome being investigated and the particular causal processes we are measuring with our neighborhood indicators.

The cumulative measure of exposure raises a new methodological challenge. Computing exposures for each year of our sample children's lives raises no technical problems, but the question arises *which* years are appropriate to analyze. The complication emerges, because for most children, their families' quasi-random assignment to a neighborhood by DHA occurred at some point during childhood, not before they were born. On one hand, their experiences prior to this date involve potential correlations between neighborhood contexts and unmeasured caregiver characteristics that could introduce geographic selection bias into the results. On the other hand, their experiences prior to this date may have produced some indelible effects than should not be ignored when interpreting relationships observed during the postassignment years of childhood. Our response to this dilemma is to compute our cumulative exposure measures for all years of childhood leading up to onset of the given outcome but to limit our analysis sample to children who spent the majority of their lives before onset living in DHA housing. We think the potential for reintroducing geographic selection bias is minimal for this sample.

[23] We used the Stata streg algorithm with a lognormal model for AFT; for estimating the parameters, we used maximum likelihood.

Gender and Ethnic Differences in Neighborhood Effects

In Chapter II, we discussed the theory and evidence indicating that a given neighborhood context may not have identical consequences for all resident children and youth. We investigate the potential heterogeneity of neighborhood effects by conducting stratified versions of our statistical analyses described above. We replicate models for males, females, Latinos, and African Americans, comparing patterns of parameter magnitudes and statistical significance.

Reduced-Form Estimates of Neighborhood Effects

Both of our analytical strategies yield “reduced form” estimates of the degree to which neighborhood indicators correlate with the particular developmental outcome being investigated through unspecified intervening causal pathways. We intentionally omit from our models any endogenous or predetermined covariates that may themselves be affected by neighborhood environment. In this fashion, we avoid “overcontrolling” and thus minimizing the apparent relationships between neighborhood indicators and the particular outcome. As an illustration, we suspect that labor market success as a young adult will be a function of obtaining a high school diploma as well as other neighborhood conditions experienced as a teen. Yet, obtaining a diploma itself is related to a different set of neighborhood conditions as well as academic performance in secondary school (as we demonstrate in Chapter VII). But academic performance in secondary school itself may be related to a different set of neighborhood conditions as well as a youth’s exposure to violence—yet another endogenous variable—and so on. In our model of labor market success as a young adult, we thus do not control for high school diploma, academic performance, or exposure to violence, instead allowing neighborhood effects that might impinge on any or all of these intervening outcomes through complex causal pathways to emerge in summary fashion.

IV. PHYSICAL AND BEHAVIORAL HEALTH OUTCOMES

Introduction

In this chapter, we examine neighborhood influences on a several health-related outcomes for low-income, minority youth in our *Denver Child Study*. For all children, we analyze whether they were diagnosed with asthma, neurodevelopmental disorders, and/or obesity during childhood. For children between 7 and 18 years of age, we also examine diagnosis of internalizing behaviors and behavioral health service utilization during the period between middle childhood and late adolescence. As noted below, we find evidence of strong neighborhood effects on both physical and behavioral health outcomes, although sometimes with dimensions of these neighborhood contexts operating in unexpected ways.

Physical Health Outcomes Analysis

Study participants in our three physical health analysis samples range from 2 to 30 years of age at time of the survey, although we only examine these outcomes occurring during childhood (through 18 years of age). The average age of the children and youth across these analysis samples varied between 12.3 and 12.8 years. The resultant sample sizes for these "ever in Denver Housing Authority (DHA)" groups were 896 (obesity), 841 (neurodevelopmental disorders), and 814 (asthma). In these analysis samples, we have a slight over-representation of Latino males (31 percent) compared with the other gender-ethnic groups: Latina females comprise 28 percent, African-American males 22 percent, and African-American females 19 percent.[24]

We analyze three physical health outcomes for the period prior to turning 18 years of age: (1) ever diagnosed with asthma; (2) ever diagnosed with neurodevelopmental disorders (any one or more of mental retardation, developmental delay, learning disability, attention deficit hyperactivity disorder, or autism), and (3) ever diagnosed as obese. We ascertain these outcomes on the basis of the *Denver Child Study* caregiver survey respondents' answers to the questions, "Has a doctor or medical professional ever diagnosed your child with the following . . . . If so, at what age was this first diagnosed?" Approximately 1 in 10 of our sampled children and youth were diagnosed with asthma as a child, with a median age of onset of six years. Nearly 7 percent of children and youth in the sample were diagnosed with one or more neurodevelopmental disorders during childhood; the median age of onset was 7.5 years of age. Caregivers reported that 5 percent of children in the study had been diagnosed as obese, with a median age of onset of 11.5 years.[25]

We recognize that there is some inherent ambiguity in our health indicators. A diagnosis outcome results from the joint probabilities that a child health problem is present and that the

[24] These statistics apply to the "ever in DHA" sample but are comparable in the other three analysis samples, as well. Complete descriptive statistics for all variables related to these samples are available from the authors.

[25] We are well aware that the caregiver reports of diagnosed obesity are substantially lower than what is reported for the city of Denver. We make adjustments for this under-reporting in our Bayesian analysis models, which allows for the introduction of priors. Given the time span across which children resided in Denver neighborhoods, we set these priors at 6 percent at the beginning of our study period in 1970 and 27 percent at the end of our study period in the mid-2000s.

caregiver will seek medical advice given the problem is present. The latter probability, in turn, is a function of the caregiver's physical and behavioral health, personal efficacy, etc.,[26] and the institutional structure that the caregiver can access easily, like proximity to medical facilities. Neighborhood context can potentially affect some or all of the aforementioned components leading to a diagnosis. Unfortunately, we are unable to discern these mechanisms, though of course we do attempt to measure neighborhood institutional resources and medical facilities. Thus, we emphasize that our estimated statistical relationships represent a "net impact" of the given neighborhood indicator on the odds of a *diagnosis*, not necessarily on the odds that the child has a health problem. Indeed, this relationship may be obscured by another component of the above causal chain, leading to a diagnosis. For example, neighborhood indicator *X* may cause a resident child to be sicker but may also cause (1) the caregiver to be sicker and thus less likely to seek a diagnosis for the child and/or (2) fewer medical facilities to be accessible to provide a potential diagnosis even if the caregiver sought one. These countervailing neighborhood effects could well yield no association (or even a negative association) between the indicator and the observed odds of diagnosis, even though in this hypothetical example it actually was causally associated with children's health.

The implication is that our findings here need to be interpreted with care: An observed statistical relationship should not be viewed as unambiguously good or bad normatively, regardless of its sign. If certain neighborhood attributes are, for example, associated with higher odds of a child health problem diagnosis, this may be "bad," because it indicates that these places are less healthy for children. Yet, this finding may be "good," because it indicates that children are not more likely to have the health problem, but those who have it are more likely to be diagnosed with it.

Because all three of the physical health outcomes are dichotomous measures, we employ logistic regression and Cox proportional hazards models to estimate the odds or hazards of ever being diagnosed with a given health problem as well as accelerated failure time (AFT) frailty models, when appropriate, to estimate the age at which a child is first diagnosed.[27] Given that our health diagnoses occur rarely, we also employ complex, mixed-effects Bayesian analyses.
In this chapter, we estimate these models for the previously defined "ever in DHA," "currently in DHA," and "mostly in DHA" samples to assess the robustness of our results. Further, we add a fourth analysis sample, "majority in DHA," as an additional robustness check. Children who spent the majority of their childhood in DHA housing (measured in terms of time of survey or 18 years of age for older children and youth) and whose health conditions were diagnosed after initial random assignment constitute the study population in this sample. This would be the most restrictive of the analysis samples used in the study.

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[26] It will also depend on the caregiver's economic resources and insurance, but we control for these in our models.
[27] We used the Stata logit models with robust standard errors to adjust for clustering of children within families and stcox for estimating the proportional hazards models. We employed AFT instead of Cox proportional hazards models in the developmental disorders analyses when the global chi-square test rejected the null hypothesis of proportionality—that is, that the effect of a covariate is to multiply the hazard by some constant. By contrast, the AFT model assumes that the effect of a covariate is to multiply the predicted event time by some constant. As an additional robustness check we also ran complex, mixed-effects Bayesian models in Mplus to address issues of small sample sizes, non-normality in distributions, and the need for more flexible estimation procedures than available in maximum-likelihood procedures.

The logistic, Cox, AFT, and Bayesian models use the same core covariates common to all our analyses. Here, we measure “contemporaneous” family and neighborhood context at the time of the diagnosis of health condition or at either age at the time of survey or 18 years of age (whichever is younger) if the health condition never occurred during childhood. Thus, these analyses can be interpreted as investigating the degree to which health outcomes diagnosed during childhood have any relationship with the neighborhood conditions to which they were exposed at the point when they were diagnosed. We use the full set of neighborhood covariates described in Chapter III. Our physical health outcome analyses also controlled for low birth weight or extreme prematurity as well as residence in public housing at the time of diagnosis. The former was intended to control for preexisting health conditions that are often correlated with childhood health outcomes, while the latter indicator is intended as an additional control for housing quality.

Behavioral Health Outcomes Analysis

Study participants in our behavioral health analysis samples range in age from 7 to 35 years at the time of survey, although we only examine these outcomes occurring during childhood (through 18 years of age). The average age of the children and youth across these analysis samples varied between 14.8 and 16.6 years. The resultant sample sizes for these “ever in DHA” groups were 691 (internalizing behaviors) and 584 (behavioral health service utilization).[28] Approximately one-third of both samples comprises Latino males; the remainder of the sample consists of Latinas (27–28 percent), African-American males (20–22 percent), and African-American females (19 percent).

We analyze two behavioral health outcomes for the period prior to turning 18 years of age: (1) ever diagnosed with an internalizing behavior (any one or more of depression, anxiety, or post-traumatic stress disorder [PTSD] and (2) behavioral health service utilization. We ascertain diagnosis of an internalizing behavior on the basis of the *Denver Child Study* caregiver survey respondent’s answers to the questions, “Has a doctor or medical professional ever diagnosed your child with the following . . . . If so, at what age was this first diagnosed?” Approximately 5 percent of children in the study had been diagnosed with one or more of these internalizing behaviors during childhood. The median age of diagnosis was 12 years. Behavioral health service utilization was estimated using the *Denver Child Study* caregiver survey respondents’ first (mutually exclusive) categorical response to this question, asked in reference to all children residing in the household between 8 and 18 years of age: “Has your child ever seen a psychiatrist, psychologist, or a counselor? . . . If so, when was the first time [date]?” In our analysis sample, we found that 16 percent of the children and youth had received behavioral health services during childhood. The median age when children first received these services was 12 years.

Because both of our behavioral health measures are dichotomous, we employ logistic regression to estimate the odds of ever being diagnosed with an internalizing behavior or using behavioral health services during childhood and Cox proportional hazards models or AFT models to examine issues of timing of such diagnosis or utilization. As was the case with the physical

[28] These statistics apply to the “ever in DHA” sample but are comparable in the other three analysis samples, as well. Complete descriptive statistics for all variables related to these samples are available from the authors.

health outcomes, we also estimated complex, mixed-effects Bayesian models using Mplus to test the robustness of our results. For all analyses, we measure predictors contemporaneously with the onset of first diagnosis and employ robust standard errors to account for clustering of children within the same family.[29] These models use the same core covariates common to our physical health analyses.

We replicated our analyses using four samples of children and youth 7–18 years of age: “ever in DHA,” “currently in DHA,” “mostly in DHA,” and “majority in DHA.” All analysis samples required (1) family quasi-random assignment to DHA housing prior to onset of internalizing behavior or behavioral health service use and (2) covariates observed for the time of onset. Most of the contextual exposure in these latter analysis samples had accumulated while children resided in the randomly assigned neighborhood; this is not necessarily true in the “ever in DHA” sample, which includes some families who selected out of the DHA-assigned location.

Estimated Neighborhood Effects on Physical and Behavioral Health Outcomes

Tables below present nondichotomous predictor variables that are normalized to aid cross-variable comparability of coefficients. As before, we consider only those results that are statistically significant in two or more of the analysis samples for the given model type. Typically, the logit, Cox proportional hazard or AFT, and Bayesian models provided reinforcing results, so they will be discussed concurrently. Ranges of parameter estimates reported below reflect the variation across the four analysis samples. Instead of interpreting each individual correlation reported, we provide a holistic discussion of results at the end of the chapter.

Asthma

Results for our models of an asthma diagnosis during childhood are presented in Exhibits IV-1 and IV-2. The first shows results for each of four alternative analysis samples from our logistic regression models, with clustered robust standard results predicting ever having been diagnosed with asthma. The second shows the corresponding Cox proportional hazard models with robust standard errors estimating the hazards of experiencing this diagnosis.

The models revealed several statistically significant individual-level or household-level predictors. Our logit, Cox, and Bayesian analyses demonstrated that children had a lower probability of being diagnosed with asthma during childhood if they were Latino; were full term and normal weight at birth; and/or had caregivers who were older, single parents, not disabled, or had lower levels of schooling. Compared with African-American male youth in our samples, Latino or Latina youth had 66–88 percent lower odds of being diagnosed with asthma during childhood; the hazard of being diagnosed with asthma was 60–70 percent lower for Latino and Latina youth than otherwise-identical African-American male counterparts. Children who weighed less than 5 pounds at birth or were born prematurely were 2.8–10.1 times more likely to be diagnosed with asthma relative to children who were full term or normal weight at birth; the hazard rates were approximately 2.5 times higher. Similar reductions in both the odds and the

[29] As noted in Chapter III, we do not need to worry about clustering at the neighborhood level, because children who live in the same neighborhood are experiencing a different value of the neighborhood indicator: They are experiencing such for different years of their lives and different calendar years.

hazard of an asthma diagnosis were noted among older caregivers: a one-standard-deviation increase in caregiver age was associated with a 74– 88 percent reduction in the odds and a 76–86 percent reduction in the hazard of being diagnosed with asthma. Children residing with two adult caregivers had between 8.2 and 57 times higher odds and between 3.3 and 6.9 times greater hazard of being diagnosed with asthma relative to those residing with one caregiver. Children whose caregivers were disabled were 5.2 to 23.2 times more likely to be diagnosed with asthma that those with nondisabled caregivers; the comparable hazard rate was 3.8 to 9.6 times higher. Children whose parent or primary caregiver achieved a high school diploma had from 2.9 and 4.9 times higher odds of being diagnosed with asthma compared with children whose caregivers did not have a diploma; the comparable hazard rate was 2.7 to 3.3 times greater.

Many contemporaneous neighborhood indicators related to demographic, status, resources, safety, stability, and physical context were statistically significant predictors of being diagnosed with asthma during childhood across our statistical models. In a one-standard deviation-higher neighborhood, the:

- Percentage of African-American residents was associated with 60–67 percent lower odds of an asthma diagnosis.
- Percentage of foreign-born residents was associated with 65–92 percent lower odds and 66–73 percent lower hazards of an asthma diagnosis.
- Social vulnerability score was associated with 81–96 percent lower odds and 74–76 percent lower hazards of an asthma diagnosis.
- Occupational prestige scale was associated with 81–99 percent lower odds and 62–85 percent lower hazards of an asthma diagnosis.
- Neighborhood resource factor score was associated with 46–69 percent lower odds of an asthma diagnosis.
- Violent crime rate was associated with 40–96 percent lower odds of an asthma diagnosis.
- Property crime rate was associated with at least a four times higher odds and 1.9–to 2.7 times higher hazards of an asthma diagnosis.[30]
- Confirmed child abuse and neglect rate was associated with 77–98 percent lower odds and 56–58 percent lower hazards of an asthma diagnosis.
- Percentage of residents who moved into the neighborhood during the past year was associated with 2.8–3.1 times higher odds and 1.6–3.2 times higher hazards of an asthma diagnosis.
- Neurological risk index was associated with 1.6–7.9 times higher odds and 1.5–3.2 times higher hazards of an asthma diagnosis.

With the exceptions of the percentage of African-American residents, social vulnerability score, and our indicator of residential instability, the Bayesian analyses also found the remaining neighborhood indicators above to be statistically significant predictors of ever being diagnosed with asthma during childhood.

[30] In some smaller samples, the frequency of asthmas diagnosis is so low and the corresponding paucity of observations in many cells that we view the parameter estimated by our maximum likelihood models to be unreliably large. In such cases, we will not report the point estimate, only the minimum value estimated across the samples.

Exhibit IV-1. Standardized Logit Models Predicting Childhood Diagnosis of Asthma

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	OR		**SE**	**OR**		**SE**	**OR**		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of diagnosis unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	1.50		(0.61)	1.73		(1.00)	2.72		(1.86)	2.35		(1.18)
Social capital index	1.15		(0.21)	1.23		(0.32)	1.43		(0.36)	1.33		(0.34)
Social problems index	1.13		(0.29)	1.79	*	(0.51)	1.57		(0.53)	1.08		(0.43)
Social vulnerability score	0.52		(0.27)	0.04	**	(0.04)	0.19	*	(0.15)	0.37		(0.27)
Percent African American residents	0.83		(0.23)	0.40	*	(0.18)	0.33	*	(0.15)	0.93		(0.38)
Percent Latino residents	1.79		(0.96)	1.12		(0.92)	0.77		(0.60)	1.98		(1.74)
Occupational prestige score	0.54		(0.22)	0.01	***	(0.01)	0.19	**	(0.10)	0.60		(0.30)
Percent foreign born residents	0.35	*	(0.16)	0.08	**	(0.06)	0.18	*	(0.12)	0.26	*	(0.18)
Percent of residents who moved in preceding 12 months	1.50		(0.37)	1.68		(1.04)	2.85	*	(1.32)	3.08	**	(1.29)
Living in neighborhood with hospitals and clinics (omitted=no)	2.33		(1.38)	15.10	*	(17.30)	3.14		(2.60)	4.25		(4.74)
Resource factor score	0.54	*	(0.17)	0.31	*	(0.15)	0.36	*	(0.16)	0.39	*	(0.16)
Age of housing stock												
Percent of housing built before 1940	1.04		(0.30)	1.24		(0.58)	1.11		(0.44)	1.32		(0.49)
Percent of housing built between 1940-1969	0.98		(0.26)	0.22	**	(0.11)	1.26		(0.49)	2.04		(0.81)
Violent crime rate per 1,000	0.60		(0.29)	0.04	***	(0.03)	0.28	*	(0.17)	0.50		(0.31)
Property crime rate per 1,000	4.04	***	(1.17)	449.70	***	(498.70)	6.58	***	(3.60)	5.61	***	(2.28)
Child abuse and neglect rate per 1,000	0.23	***	(0.07)	0.02	***	(0.01)	0.21	***	(0.10)	0.20	***	(0.08)
Neurological hazards index (rescaled by 100)	1.59		(0.51)	7.97	*	(7.59)	7.64	**	(5.35)	1.75		(0.69)
Respiratory hazards index	1.04		(0.35)	0.32		(0.20)	0.29	*	(0.14)	0.85		(0.31)
Number of observations	814			549			471			548		
Number of clusters	448			317			275			316		
Log-Likelihood	-151.61			-88.26			-93.50			-77.24		
Chi-square	128.38	***		130.74	***		130.16	***		124.10	***	
Pseudo-R^2	0.36			0.60			0.46			0.51		

Notes:
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Exhibit IV-2. Standardized Cox Models Predicting Hazard of Childhood Diagnosis of Asthma

	Ever in DHA		Currently in DHA		Majority in DHA		Mostly in DHA	
	Hazard	SE	Hazard	SE	Hazard	SE	Hazard	SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of diagnosis unless otherwise noted)								
Living in neighborhood with negative peers (omitted=no)	1.80	(0.66)	1.87	(0.78)	3.39 *	(1.97)	3.22	(2.01)
Social capital index	1.14	(0.16)	1.14	(0.18)	1.20	(0.23)	1.26	(0.28)
Social problems index	1.00	(0.23)	1.25	(0.29)	1.12	(0.30)	0.93	(0.28)
Social vulnerability score	0.50	(0.22)	0.24 *	(0.17)	0.26 *	(0.15)	0.37	(0.22)
Percent African American residents	0.75	(0.18)	0.60	(0.16)	0.47 *	(0.17)	0.88	(0.31)
Percent Latino residents	0.93	(0.36)	0.83	(0.37)	0.60	(0.40)	1.10	(0.89)
Occupational prestige score	0.38 **	(0.12)	0.15 ***	(0.07)	0.23 ***	(0.10)	0.35 *	(0.15)
Percent foreign born residents	0.44 *	(0.16)	0.28 ***	(0.10)	0.27 *	(0.15)	0.35	(0.23)
Percent of residents who moved in preceding 12 months	1.56 *	(0.34)	1.97 **	(0.48)	3.15 **	(1.27)	2.45 *	(1.04)
Living in neighborhood with hospitals and clinics (omitted=no)	1.57	(0.72)	1.41	(0.80)	1.90	(1.33)	2.24	(2.15)
Resource factor score	0.62	(0.16)	0.67	(0.19)	0.50 *	(0.16)	0.48	(0.22)
Age of housing stock								
Percent of housing built before 1940	1.07	(0.26)	1.10	(0.24)	1.18	(0.38)	1.32	(0.59)
Percent of housing built between 1940-1969	1.10	(0.24)	0.74	(0.23)	1.61	(0.60)	1.92	(0.76)
Violent crime rate per 1,000	0.72	(0.29)	0.42	(0.20)	0.45	(0.20)	0.64	(0.39)
Property crime rate per 1,000	1.95 **	(0.45)	2.72 ***	(0.72)	1.95 *	(0.63)	1.94 *	(0.55)
Child abuse and neglect rate per 1,000	0.44 **	(0.12)	0.42 **	(0.13)	0.55	(0.22)	0.56	(0.23)
Neurological hazards index (rescaled by 100)	1.91 **	(0.42)	2.14	(0.96)	4.22 *	(2.45)	1.85 *	(0.54)
Respiratory hazards index	1.05	(0.28)	0.73	(0.32)	0.47	(0.19)	0.86	(0.36)
Number of observations	814		549		471		548	
Number of clusters	448		317		275		316	
Log-Likelihood	-316.55		-316.27		-223.81		-177.20	
Chi-square	326.74 ***		452.32 ***		369.34 ***		446.38 ***	
Global PH Chi-square	41.78		37.35		44.57		48.40	

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* p < 0.05; ** p < 0.01; *** p < 0.001.

Neurodevelopmental Disorders

Results for our models predicting a diagnosis of neurodevelopmental disorders during childhood are presented in Exhibits IV-3 and IV-4. The first exhibit summarizes results for each of four alternative analysis samples from our logistic regression models, with clustered robust standard errors predicting ever having been diagnosed with a neurodevelopmental disorder; the second shows the corresponding AFT frailty models, with robust standard errors predicting the timing of this diagnosis.

As for statistically significant individual-level or household-level predictors, our logit and Bayesian analyses demonstrated that children had a lower probability of being diagnosed with a neurodevelopmental disorder during childhood if they were Latina or had caregivers who were older; comparable AFT models found significantly longer spells before diagnosis, as well. Compared with African-American male youth in our samples, Latina youth had 82–92 percent lower odds of being diagnosed with a neurodevelopmental disorder during childhood and between 1.6 and 21.3 times longer spells before diagnosis. Similar reductions in the odds of diagnosis and increasing duration prior to diagnosis were observed among older caregivers: A one-standard-deviation increase in caregiver age was associated with 43–76 percent lower odds and a 1.5–2.3 times increase in the time prior to diagnosis of a neurodevelopmental disorder. Further, our AFT models revealed additional individual and household-level predictors of the timing of diagnosis of a neurodevelopmental disorder. Children were more likely to be diagnosed with a neurodevelopmental disorder sooner if their caregivers were disabled (22–83 percent) or if they were born prematurely or weighed less than 5 pounds at birth (22–27 percent). Children residing in households that had health insurance had 40–60 percent longer spells prior to diagnosis. A one-standard-deviation increase in the number of moves that children made prior to diagnosis was associated with 26–49 percent longer spells to a diagnosis of neurodevelopmental disorders.

As in the case of asthma, a number of contemporaneous neighborhood indicators related to demographic, status, resources, safety, and physical context were statistically significant predictors of being diagnosed with neurodevelopmental disorders during childhood across our statistical models. In a one-standard deviation-higher neighborhood, the:

- Percentage of foreign-born residents was associated with 68–88 percent lower odds of being diagnosed as well as 34–48 percent longer spells prior to diagnosis with a neurodevelopmental disorder.
- Occupational prestige score was associated with 67–97 percent lower odds of being diagnosed and a 39–73 percent longer spell to diagnosis of a neurodevelopmental disorder.
- Violent crime rate was associated with 91–100 percent lower odds of being diagnosed with and a 1.9–2.2 times longer spell to diagnosis of a neurodevelopmental disorder.
- Property crime rate was associated with at least a 2.3 times higher odds of being diagnosed and 20–31 percent shorter spell to diagnosis of a neurodevelopmental disorder.
- Social problems index was associated with 13–17 percent shorter time to diagnosis of a neurodevelopmental disorder.

Exhibit IV-3. Standardized Logit Models Predicting Childhood Diagnosis of Neurodevelopmental Disorders

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	OR		SE	OR		SE	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of diagnosis unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	0.96		(0.42)	0.71		(0.38)	0.77		(0.48)	0.45		(0.30)
Social capital index	0.81		(0.14)	0.87		(0.16)	0.80		(0.17)	0.88		(0.22)
Social problems index	1.38		(0.36)	1.65		(0.46)	1.50		(0.49)	1.84		(0.65)
Social vulnerability score	3.49		(2.94)	3.35		(5.78)	2.16		(2.27)	8.77	**	(7.01)
Percent African American residents	0.79		(0.25)	0.41	*	(0.18)	0.47		(0.19)	1.61		(0.79)
Percent Latino residents	1.69		(0.96)	1.24		(1.10)	0.78		(0.55)	4.50		(3.92)
Occupational prestige score	0.33	*	(0.17)	0.03	**	(0.04)	0.10	**	(0.08)	0.55		(0.35)
Percent foreign born residents	0.32	**	(0.14)	0.12	***	(0.07)	0.21	**	(0.11)	0.25	*	(0.16)
Percent of residents who moved in preceding 12 months	1.18		(0.37)	1.30		(0.86)	1.58		(0.70)	0.83		(0.33)
Living in neighborhood with hospitals and clinics (omitted=no)	2.16		(1.18)	5.30	*	(4.16)	2.47		(1.61)	1.38		(1.17)
Resource factor score	0.83		(0.30)	0.49		(0.26)	0.78		(0.36)	0.93		(0.48)
Age of housing stock												
Percent off housing built before 1940	1.06		(0.35)	1.07		(0.45)	1.42		(0.51)	0.85		(0.28)
Percent of housing built between 1940-1969	0.78		(0.19)	0.33	*	(0.16)	0.69		(0.26)	0.54		(0.19)
Violent crime rate per 1,000	0.09	***	(0.05)	0.00	***	(0.01)	0.03	***	(0.03)	0.06	***	(0.04)
Property crime rate per 1,000	2.98	***	(0.97)	31.17	***	(30.41)	5.30	***	(2.20)	2.36	*	(0.96)
Child abuse and neglect rate per 1,000	0.30	***	(0.11)	0.09	***	(0.05)	0.28	***	(0.11)	0.18	**	(0.11)
Neurological hazards index (rescaled by 100)	1.88		(0.66)	5.70	**	(3.57)	4.51	*	(2.65)	1.95		(0.84)
Respiratory hazards index	0.82		(0.25)	0.46		(0.21)	0.53		(0.21)	1.27		(0.56)
Number of observations	841			566			498			411		
Number of clusters	442			312			284			263		
Log-Likelihood	-137.51			-93.53			-90.52			-69.86		
Chi-square	110.26	***		103.09	***		103.97	***		113.89	***	
Pseudo-R^2	0.33			0.49			0.43			0.39		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Exhibit IV-4. Standardized AFT Frailty Models Predicting Timing of Childhood Diagnosis of Neurodevelopmental Disorders

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	TmR		SE	TmR		SE	TmR		SE	TmR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of diagnosis unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	1.03		(0.14)	1.17		(0.13)	1.09		(0.15)	1.19		(0.21)
Social capital index	1.04		(0.06)	1.03		(0.05)	1.04		(0.06)	0.98		(0.07)
Social problems index	0.89		(0.06)	0.87	*	(0.05)	0.87		(0.06)	0.83	*	(0.07)
Social vulnerability score	0.72		(0.16)	0.87		(0.19)	0.87		(0.21)	0.56	*	(0.14)
Percent African American residents	1.09		(0.09)	1.11		(0.07)	1.06		(0.09)	0.94		(0.11)
Percent Latino residents	0.90		(0.16)	0.91		(0.13)	0.93		(0.15)	0.69		(0.17)
Occupational prestige score	1.39	**	(0.17)	1.73	***	(0.22)	1.47	**	(0.21)	1.13		(0.15)
Percent foreign born residents	1.34	*	(0.18)	1.48	***	(0.15)	1.42	**	(0.19)	1.39		(0.25)
Percent of residents who moved in preceding 12 months	0.95		(0.09)	0.91		(0.08)	0.85		(0.08)	1.02		(0.11)
Living in neighborhood with hospitals and clinics (omitted=no)	0.89		(0.14)	0.96		(0.14)	1.10		(0.16)	0.91		(0.20)
Resource factor score	0.95		(0.10)	0.93		(0.08)	0.89		(0.09)	0.98		(0.14)
Age of housing stock												
Percent of housing built before 1940	0.95		(0.08)	0.95		(0.07)	0.91		(0.08)	1.02		(0.09)
Percent of housing built between 1940-1969	1.01		(0.08)	1.10		(0.10)	0.97		(0.08)	1.05		(0.09)
Violent crime rate per 1,000	1.86	***	(0.34)	2.17	***	(0.37)	1.99	***	(0.35)	2.00	***	(0.33)
Property crime rate per 1,000	0.80	*	(0.08)	0.69	***	(0.06)	0.74	**	(0.07)	0.95		(0.09)
Child abuse and neglect rate per 1,000	1.28	**	(0.11)	1.26	**	(0.10)	1.18	*	(0.10)	1.26	*	(0.14)
Neurological hazards index (rescaled by 100)	0.86		(0.08)	0.78	*	(0.08)	0.83		(0.11)	0.87		(0.09)
Respiratory hazards index	1.03		(0.08)	1.18	*	(0.08)	1.06		(0.11)	0.91		(0.10)
Number of observations	841			566			498			571		
Number of clusters	442			312			284			325		
Log-Likelihood	-135.29			-92.16			-85.23			-68.24		
Chi-square	503.52	***		326.98	***		333.92	***		430.23	***	

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics. TmR=Time ratio.

* p < 0.05; ** p < 0.01; *** p < 0.001.

- Confirmed child abuse and neglect rate was associated with 70–91 percent lower odds of being diagnosed and 18–28 percent longer spell to diagnosis of a neurodevelopmental disorder.
- Neurological risk index was associated with 4.5–5.7 times higher odds of being diagnosed with a neurodevelopmental disorder.

The aforementioned neighborhood indicators also emerged as significant predictors of a neurodevelopmental disorder diagnosis in our Bayesian analyses.

Obesity

Results for our models predicting a diagnosis of obesity during childhood are presented in Exhibits IV-5 and IV-6. The first exhibit summarizes results for each of four alternative analysis samples from our logistic regression models, with clustered robust standard results predicting ever having been diagnosed as obese during childhood; the second shows the corresponding Cox robust standard error models estimating the hazard of experiencing this diagnosis.

The models revealed several statistically significant individual-level or household-level predictors. Our logit and Cox analyses indicated that children had lower odds or hazards of being diagnosed as obese during childhood if they had more siblings or had caregivers who were older. Conversely, children had greater odds or hazards of being diagnosed as obese if they lived with two caregivers. A one-standard-deviation increase in the number of siblings was associated with 50–55 percent lower odds or hazards of being diagnosed as obese. Similar reductions in the odds or hazard of diagnosis were observed among older caregivers: A one-standard-deviation increase in caregiver age was associated with 67–92 percent lower odds or hazards of being diagnosed as obese. Living with two caregivers significantly increased the odds or hazard of being diagnosed obese by a factor of at least 8.7, although the odds ratios varied widely across analysis samples.[31] Educational attainment was a third variable that was significant in multiple logit models: The odds of children being diagnosed as obese were at least 4.2 times higher if the child's caregiver had attained additional school post–high school compared with children whose caregivers had not completed a high school diploma. Further, children whose caregivers were immigrants had at least 5.9 times higher odds of being diagnosed as obese.

Several contemporaneous neighborhood indicators related to ethnic, status, and safety contexts were statistically significant predictors of being diagnosed with neurodevelopmental disorders during childhood across our statistical models. Only one exhibited a positive association: living in a neighborhood with medical facilities was associated with at least a 4.2 times higher odds of being diagnosed as obese. In contrast, in a one-standard-deviation higher neighborhood, the:

- Percentage of African-American residents was associated with 67–72 percent lower odds of being diagnosed as obese.
- Percentage of Latino residents was associated with 73–86 percent lower odds of being diagnosed as obese.

[31] We have no confidence in the extremely large point estimates from the obesity models estimated for some of our smaller samples because of the rarity of the diagnosis and the corresponding paucity of observations in many cells.

- Occupational prestige scale was associated with 83–88 percent lower odds of being diagnosed as obese.

Exhibit IV-5. Standardized Logit Models Predicting Childhood Diagnosis of Obesity

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	OR		SE	OR		SE	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of diagnosis unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	0.45		(0.23)	0.87		(0.46)	0.64		(0.37)	0.35		(0.23)
Social capital index	1.26		(0.30)	1.50		(0.46)	1.24		(0.34)	1.25		(0.39)
Social problems index	1.26		(0.34)	0.98		(0.37)	1.27		(0.38)	0.85		(0.33)
Social vulnerability score	2.67		(2.21)	1.06		(1.52)	2.42		(3.58)	21.22	*	(26.68)
Percent African American residents	0.90		(0.29)	0.28	*	(0.15)	0.33	*	(0.17)	1.07		(0.48)
Percent Latino residents	0.77		(0.47)	0.37		(0.24)	0.14	**	(0.09)	0.27	*	(0.17)
Occupational prestige score	0.74		(0.36)	0.12	*	(0.11)	0.15	*	(0.13)	0.17	**	(0.09)
Percent foreign born residents	0.85		(0.33)	0.26	*	(0.15)	1.02		(0.44)	1.54		(0.80)
Percent of residents who moved in preceding 12 months	0.79		(0.28)	1.62		(0.95)	0.79		(0.35)	0.48		(0.22)
Living in neighborhood with hospitals and clinics (omitted=no)	4.21		(3.10)	18.54	**	(18.45)	4.65		(3.76)	41.70	***	(46.84)
Resource factor score	0.71		(0.25)	0.28	*	(0.15)	0.46		(0.21)	0.93		(0.54)
Age of housing stock												
Percent of housing built before 1940	1.30		(0.41)	1.68		(0.70)	2.15	*	(0.82)	1.95		(0.87)
Percent of housing built between 1940-1969	1.05		(0.44)	1.02		(0.47)	1.63		(0.68)	0.99		(0.44)
Violent crime rate per 1,000	0.40		(0.30)	0.04	*	(0.05)	0.19		(0.23)	0.06	**	(0.06)
Property crime rate per 1,000	1.14		(0.35)	8.60	**	(6.93)	1.87		(0.99)	0.87		(0.48)
Child abuse and neglect rate per 1,000	0.36	*	(0.18)	0.11	***	(0.07)	0.71		(0.34)	0.78		(0.38)
Neurological hazards index (rescaled by 100)	1.60		(0.60)	22.34	***	(20.06)	3.06		(2.26)	1.00		(0.46)
Respiratory hazards index at time	1.38		(0.44)	0.17	**	(0.11)	0.80		(0.49)	2.35	*	(0.90)
Number of observations	896			591			509			603		
Number of clusters	468			326			289			337		
Log-Likelihood	-120.73			-70.36			-74.42			-69.25		
Chi-square	125.25	***		111.32	***		134.37	***		139.97	***	
Pseudo-R^2	0.31			0.50			0.38			0.43		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver, and household characteristics.

* p < 0.05; ** p < 0.01; *** p < 0.001.

Exhibit IV-6. Standardized Cox Models Predicting Hazard of Childhood Diagnosis of Obesity

	Ever in DHA		Currently in DHA		Majority in DHA		Mostly in DHA	
	Hazard	**SE**	**Hazard**	**SE**	**Hazard**	**SE**	**Hazard**	**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of diagnosis unless otherwise noted)								
Living in neighborhood with negative peers (omitted=no)	0.36	(0.20)	0.27 *	(0.16)	0.28	(0.27)	0.41	(0.32)
Social capital index	1.06	(0.21)	1.21	(0.28)	0.99	(0.24)	0.86	(0.24)
Social problems index	1.31	(0.37)	1.34	(0.41)	1.63	(0.68)	0.84	(0.28)
Social vulnerability score	1.58	(1.18)	0.64	(0.69)	1.45	(2.12)	7.33	(8.59)
Percent African American residents	0.87	(0.26)	0.58	(0.23)	0.46	(0.25)	0.96	(0.36)
Percent Latino residents	0.98	(0.49)	0.59	(0.33)	0.35	(0.23)	0.44	(0.26)
Occupational prestige score	0.61	(0.28)	0.23	(0.19)	0.23	(0.21)	0.20 *	(0.13)
Percent foreign born residents	0.53	(0.18)	0.38 *	(0.15)	0.61	(0.26)	0.83	(0.44)
Percent of residents who moved in preceding 12 months	1.04	(0.32)	1.36	(0.61)	1.09	(0.42)	0.76	(0.29)
Living in neighborhood with hospitals and clinics (omitted=no)	2.89	(2.02)	2.33	(1.56)	2.85	(2.02)	27.64 **	(31.37)
Resource factor score	0.78	(0.25)	0.70	(0.30)	0.67	(0.27)	0.99	(0.54)
Age of housing stock								
Percent of housing built before 1940	1.13	(0.28)	1.34	(0.40)	1.52	(0.53)	1.27	(0.47)
Percent of housing built between 1940-1969	0.83	(0.26)	0.69	(0.32)	1.16	(0.42)	0.87	(0.27)
Violent crime rate per 1,000	0.44	(0.29)	0.34	(0.30)	0.30	(0.28)	0.13 *	(0.12)
Property crime rate per 1,000	0.79	(0.30)	1.13	(0.70)	0.95	(0.58)	0.44	(0.24)
Child abuse and neglect rate per 1,000	0.53	(0.25)	0.55	(0.24)	1.26	(0.55)	1.43	(0.75)
Neurological hazards index (rescaled by 100)	1.92	(0.81)	4.78 **	(2.85)	2.18	(1.25)	1.42	(0.85)
Respiratory hazards index	1.23	(0.40)	0.45	(0.23)	0.91	(0.37)	2.12 *	(0.80)
Number of observations	896		591		509		603	
Number of clusters	468		326		289		337	
Log-Likelihood	-200.24		-151.32		-129.00		-118.01	
Chi-square	366.85 ***		371.97 ***		230.21 ***		367.23 ***	
Global PH Chi-square	29.83		27.44		46.22		34.15	

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* p < 0.05; ** p < 0.01; *** p < 0.001.

- Violent crime rate was associated with 94–96 percent lower odds of being diagnosed as obese.
- Confirmed child abuse and neglect rate was associated with 64–89 percent lower odds of being diagnosed as obese.

Only violent crime rates and child abuse and neglect rates emerged as significant predictors of an obesity diagnosis in our Bayesian analyses, while none of the neighborhood indicators were robust across two or more samples when estimating Cox models.

Internalizing Behaviors

Results for our models predicting a diagnosis of internalizing behaviors during childhood are presented in Exhibits IV-7 and IV-8. We summarize the results for each of four alternative analysis samples from our logistic regression models, with clustered robust standard errors predicting ever being diagnosed with depression, anxiety, or PTSD during childhood in our first exhibit; the second shows the corresponding Cox robust standard error models.

Our logit, AFT, and Bayesian analyses consistently revealed several statistically significant individual-level and household-level predictors of a diagnosis of internalizing behaviors. Children had lower odds or hazards of being diagnosed with internalizing behaviors during childhood if they had caregivers who were older. Children who lived with two caregivers were at least 8 times more likely to be diagnosed with internalizing behaviors and have 33–45 percent shorter spells to diagnosis. They also experienced 37–52 percent longer spells to diagnosis if their caregivers reported depressive symptomatology at the time of survey. Further, children living in households that had one-standard-deviation higher levels of household stressors had 2–3 times higher odds of exhibiting these internalizing behaviors as well as 13–20 percent shorter spells prior to diagnosis. Our AFT models revealed that relative to younger siblings, children who were first born in their families had 25–49 percent longer spells prior to diagnosis.

Multiple contemporaneous neighborhood indicators related to nativity, status, safety, and stability contexts were statistically significant predictors of being diagnosed with an internalizing behavior during childhood across our logit and AFT statistical models. In a one-standard deviation-higher neighborhood, the:

- Percentage of foreign-born residents was associated with 43–63 percent longer spells prior to an internalizing behaviors diagnosis.
- Social vulnerability score was associated with 33–45 percent longer spells prior to an internalizing behaviors diagnosis.
- Social problems index was associated with 2.2–3.3 times higher odds of an internalizing behaviors diagnosis as well as 16–27 percent shorter spells prior to diagnosis.
- Property crime rate was associated with at least 3.2 times higher odds of an internalizing behaviors diagnosis and 17–41 percent shorter spells to diagnosis.

Exhibit IV-7. Standardized Logit Models Predicting Childhood Diagnosis of Internalizing Behaviors

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	OR		SE	OR		SE	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of diagnosis unless otherwise noted)												
Social capital index	1.11		(0.43)	1.68		(0.83)	0.98		(0.49)	1.22		(0.93)
Social problems index	2.21	*	(0.73)	3.34	**	(1.41)	5.16		(5.16)	4.05		(3.31)
Social vulnerability score	0.27	*	(0.16)	0.14		(0.15)	0.40		(0.37)	1.04		(1.06)
Percent African American residents	1.48		(0.82)	1.31		(0.88)	0.78		(0.69)	0.42		(0.42)
Percent Latino residents	3.06		(2.50)	1.79		(2.83)	2.29		(3.24)	2.97		(3.16)
Occupational prestige score	0.62		(0.33)	0.08	**	(0.06)	0.54		(0.84)	1.08		(0.90)
Percent foreign born residents	0.28	*	(0.18)	0.07		(0.10)	0.10		(0.14)	0.22		(0.17)
Percent of residents who moved in preceding 12 months	1.39		(0.39)	0.38		(0.35)	3.11		(1.81)	2.34	**	(0.73)
Resource factor score	0.96		(0.47)	0.60		(0.38)	0.74		(0.49)	0.95		(0.61)
Violent crime rate per 1,000	1.23		(0.76)	0.07	**	(0.06)	0.21		(0.21)	0.38		(0.39)
Property crime rate per 1,000	3.32	***	(1.18)	197.96	***	(304.21)	3.22	**	(1.42)	2.62		(1.59)
Child abuse and neglect rate per 1,000	0.36	**	(0.13)	0.08		(0.11)	0.40		(0.23)	0.33		(0.24)
Number of observations	691			361			298			459		
Number of clusters	393			241			178			259		
Log-Likelihood	-79.45			-35.96			-40.66			-39.36		
Chi-square	79.68	***		128.84	***		82.39	***		97.65	***	
Pseudo-R^2	0.37			0.64			0.48			0.37		
Notes:												
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics. Internalizing behaviors defined to include diagnoses of depressive disorders, PTSD, and other anxiety disorders.												
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.												

Exhibit IV-8. Standardized AFT Frailty Models Predicting Timing of Diagnosis of Internalizing Behaviors

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	TmR		SE	TmR		SE	TmR		SE	TmR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of diagnosis unless otherwise noted)												
Social capital index	0.98		(0.06)	0.94		(0.05)	1.02		(0.07)	0.99		(0.07)
Social problems index	0.84	**	(0.05)	0.84	***	(0.04)	0.73	***	(0.07)	0.75	***	(0.05)
Social vulnerability score	1.33	*	(0.17)	1.45	***	(0.15)	1.33		(0.21)	1.03		(0.11)
Percent African American residents	0.95		(0.09)	1.05		(0.06)	0.94		(0.10)	1.15		(0.12)
Percent Latino residents	0.85		(0.12)	1.23		(0.15)	0.74		(0.15)	0.71	*	(0.11)
Occupational prestige score	1.11		(0.11)	1.55	***	(0.12)	1.02		(0.13)	0.93		(0.09)
Percent foreign born residents	1.21		(0.15)	1.16		(0.13)	1.63	**	(0.30)	1.43	***	(0.15)
Percent of residents who moved in preceding 12 months	0.95		(0.06)	1.10		(0.10)	0.80	**	(0.06)	0.82	***	(0.04)
Resource factor score	1.00		(0.08)	1.10		(0.08)	1.06		(0.10)	1.02		(0.07)
Violent crime rate per 1,000	0.95		(0.10)	1.20	**	(0.07)	1.33	*	(0.16)	1.23	*	(0.11)
Property crime rate per 1,000	0.73	***	(0.06)	0.59	***	(0.05)	0.73	***	(0.06)	0.83	*	(0.06)
Child abuse and neglect rate per 1,000	1.24	**	(0.09)	1.14	*	(0.07)	1.17		(0.12)	1.23	*	(0.10)
Number of observations	691			361			298			459		
Number of clusters	393			241			178			259		
Log-Likelihood	-70.17			-25.25			-33.02			-27.45		
Chi-square	200.44	***		727.40	***		182.75	***		294.16	***	

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics. TmR=Time ratio. Internalizing behaviors defined to include diagnoses of depressive disorders, PTSD, and other anxiety disorders.

* p < 0.05; ** p < 0.01; *** p < 0.001.

- Abuse and neglect rate was associated with 14–24 percent longer spells prior to diagnosis.
- Percentage of residents who moved into the neighborhood in the previous 12 months was associated with 18–20 percent shorter spells prior to diagnosis

All of the aforementioned neighborhood indicators also emerged as significant predictors of being diagnosed with an internalizing behavior in our Bayesian analyses.

Behavioral Health Service Utilization

Results for our models predicting behavioral health service utilization during childhood are presented in Exhibits IV-9 and IV-10. The first exhibit summarizes results for each of four alternative analysis samples from our logistic regression models with clustered robust standard errors predicting ever having seen a psychiatrist, psychologist, or counselor during childhood; the second shows the corresponding Cox robust standard error models estimating the hazard of using these services.

As for individual-level or household-level predictors, our logit, Cox, and Bayesian analyses revealed that children had lower odds or hazard of using behavioral health services during childhood if they were Latino, had caregivers who were older, or had caregivers with histories of substance abuse. Conversely, children had a greater odds or hazard of using behavioral health services if they lived with two caregivers, had caregivers with higher levels of schooling, or if their caregivers were disabled. Latino male youth had 59–79 percent lower odds or hazards of using behavioral health services than their counterparts in the other strata. Similar reductions in the odds or hazards of behavioral health service use were associated with older caregivers: a one-standard-deviation increase in caregiver age was associated with 58–90 percent lower odds or hazard of using behavioral health services. For children whose caregivers reported histories of substance abuse, the odds of using behavioral health services were 63–86 percent higher. Living with two caregivers was associated with at least 2.5 times higher odds or hazard of behavioral health service utilization, although the odds or hazards ratios varied widely across analysis samples. Educational attainment was also a statistically significant predictor across multiple logit and Cox models: the odds or hazards of children using behavioral health services were between 2.3 and 5.2 times higher if the child’s caregiver had attained additional school post–high school compared with children whose caregivers had not completed a diploma. Compared with children who had nondisabled caregivers, children who had disabled caregivers had at least 2.5 times higher odds of using behavioral health services during childhood.

Not surprisingly, many of the same neighborhood indicators related to nativity composition, status, safety, and stability were statistically significant predictors of using behavioral health services, as in the case of internalizing behaviors. In a one-standard-deviation higher neighborhood, the:

- Percentage of foreign-born residents was associated with 70–84 percent lower odds or hazards of using behavioral health services.
- Social vulnerability score was associated with 72–93 percent lower odds or hazards of using behavioral health services.

Exhibit IV-9. Standardized Logit Models Predicting Childhood Behavioral Health Service Use

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	OR		**SE**	**OR**		**SE**	**OR**		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of onset unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	1.38		(0.61)	1.53		(1.05)	0.59		(0.45)	0.25	*	(0.16)
Social capital index	0.89		(0.15)	1.23		(0.28)	1.04		(0.27)	0.73		(0.21)
Social problems index	1.07		(0.21)	0.95		(0.29)	1.56		(0.58)	1.59		(0.49)
Social vulnerability score	0.28	**	(0.12)	0.07	***	(0.05)	0.13	*	(0.11)	0.12	**	(0.09)
Percent African American residents	0.97		(0.26)	0.41	**	(0.12)	0.42	*	(0.15)	1.61		(0.64)
Percent Latino residents	1.29		(0.60)	0.53		(0.27)	0.46		(0.32)	2.90		(1.93)
Occupational prestige score	0.25	***	(0.09)	0.04	***	(0.02)	0.05	***	(0.03)	0.09	***	(0.05)
Percent foreign born residents	0.30	***	(0.11)	0.14	**	(0.10)	0.16	**	(0.09)	0.13	***	(0.07)
Percent of residents who moved in preceding 12 months	1.60	**	(0.29)	1.82		(0.57)	2.34	**	(0.73)	2.95	***	(0.79)
Living in neighborhood with hospitals and clinics (omitted=no)	0.84		(0.39)	0.67		(0.41)	0.33		(0.22)	0.53		(0.41)
Resource factor score	0.80		(0.23)	0.54		(0.27)	0.91		(0.41)	0.88		(0.39)
Percent of housing built before 1940	1.31		(0.28)	1.65		(0.58)	2.44	**	(0.73)	2.07	*	(0.71)
Violent crime rate per 1,000	0.62		(0.23)	0.11	**	(0.08)	0.23	*	(0.17)	0.38		(0.24)
Property crime rate per 1,000	1.97	*	(0.53)	20.51	***	(15.10)	3.06	***	(1.01)	2.85	*	(1.28)
Child abuse and neglect rate per 1,000	0.69		(0.22)	0.36		(0.20)	0.58		(0.26)	0.75		(0.33)
Neurological hazards index (rescaled by 100)	1.62		(0.58)	8.63	***	(5.41)	4.38	**	(2.25)	1.52		(0.62)
Respiratory hazards index at time	1.27		(0.35)	0.38	*	(0.15)	0.53		(0.20)	1.44		(0.62)
Number of observations	584			368			297			374		
Number of clusters	353			248			190			232		
Log-Likelihood	-178.81			-100.85			-88.61			-84.76		
Chi-square	69.15	***		90.66	***		92.28	***		83.77	***	
Pseudo-R^2	0.31			0.52			0.44			0.39		
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.												
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.												

Exhibit IV-10. Standardized Cox Models Predicting the Hazard of Childhood Behavioral Health Service Use

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	Hazard		SE	Hazard		SE	Hazard		SE	Hazard		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of onset unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	1.26		(0.49)	1.64		(0.80)	0.54		(0.35)	0.24	*	(0.15)
Social capital index	0.86		(0.11)	1.07		(0.13)	0.97		(0.16)	0.85		(0.19)
Social problems index	1.00		(0.17)	0.80		(0.14)	1.27		(0.41)	1.38		(0.44)
Social vulnerability score	0.36	**	(0.12)	0.34	***	(0.11)	0.22	***	(0.10)	0.11	***	(0.07)
Percent African American residents	0.95		(0.17)	0.84		(0.15)	0.81		(0.20)	1.44		(0.50)
Percent Latino residents	1.06		(0.36)	0.75		(0.25)	0.91		(0.46)	3.02		(1.93)
Occupational prestige score	0.32	***	(0.09)	0.15	***	(0.04)	0.19	***	(0.06)	0.19	***	(0.10)
Percent foreign born residents	0.40	**	(0.12)	0.37	**	(0.12)	0.23	**	(0.11)	0.16	***	(0.08)
Percent of residents who moved in preceding 12 months	1.48	**	(0.20)	1.37		(0.28)	1.65	**	(0.31)	2.27	***	(0.54)
Living in neighborhood with hospitals and clinics (omitted=no)	1.07		(0.41)	0.70		(0.25)	1.25		(0.69)	1.01		(0.58)
Resource factor score	0.85		(0.21)	0.95		(0.23)	0.86		(0.32)	0.88		(0.34)
Percent of housing built before 1940	1.17		(0.20)	1.35		(0.24)	1.62	*	(0.39)	1.94	*	(0.52)
Violent crime rate per 1,000	0.69		(0.20)	0.27	***	(0.08)	0.53		(0.20)	0.66		(0.36)
Property crime rate per 1,000	1.52		(0.35)	2.81	***	(0.63)	1.36		(0.33)	1.82		(0.68)
Child abuse and neglect rate per 1,000	0.95		(0.21)	1.06		(0.21)	1.26		(0.35)	1.27		(0.49)
Neurological hazards index (rescaled by 100)	1.50		(0.34)	2.30	**	(0.70)	2.34	*	(0.89)	1.31		(0.39)
Respiratory hazards index	1.15		(0.23)	0.72		(0.13)	0.70		(0.19)	1.17		(0.40)
Number of observations	584			368			297			374		
Number of clusters	353			248			190			232		
Log Likelihood	-465.20			-399.05			-277.75			-189.45		
Chi-square	202.36	***		283.95	***		278.74	***		272.18	***	
Global PH Chi-square	27.99			19.02			34.96			52.14	*	

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

- Occupational prestige score was associated with 68–96 percent lower odds or hazards of using behavioral health services.
- Property crime rate was associated with at least 1.9 times higher odds of using behavioral health services.
- Percentage of residents who moved into the neighborhood in the preceding 12 months was associated with a 1.4–2.9 times higher odds or hazards of using behavioral health services.

All of the aforementioned neighborhood indicators also emerged as significant predictors of behavioral health service utilization in our Bayesian analyses.

Gender and Ethnic Differences in Neighborhood Effects

Estimated parameters for our models stratified by gender and ethnicity are presented in Appendix C. In our discussion of stratified results, we employ results from our analyses of the "ever in DHA" sample for each of the physical and behavioral health outcomes. In our overview, we find substantial heterogeneity in apparent neighborhood effects. Indeed, in rare cases—property crime rates, violent crime rates, and child abuse and neglect rates—there were statistically significant relationships in the aggregate sample, replicated consistently across three or more strata.

Asthma

The aforementioned aggregate relationships between asthma diagnosis and neighborhood safety—measured in terms of neighborhood property crimes as well as child abuse and neglect rates—were the only statistically significant predictors across all four strata in our logit models. All groups experienced significantly higher odds (3.8–8.0 times) of being diagnosed with asthma with higher neighborhood property crime rates yet significantly lower odds of diagnosis (77–91 percent) with higher neighborhood child abuse and neglect rates. Further, neighborhood safety relationships were strongest for female youth.

Several significant associations between neighborhood context and asthma diagnosis that emerged in the aggregated models were produced almost exclusively from relationships emerging from the African-American stratum. African-American children and youth were less likely to be diagnosed with asthma if they resided in neighborhoods that had higher fractions of African-American residents, higher levels of occupational prestige, or lower levels of neurological risk (lead pollutants). The remaining predictors in the aggregate models indicated particularly strong relationships in particular strata. If residing in a neighborhood with a one-standard-deviation-higher, the:

- Percentage of foreign-born residents was associated with substantially lower odds and hazards of being diagnosed with asthma for Latinos (86–90 percent) as well as for female youth (83 percent).
- Social vulnerability score was associated with 81 percent lower odds and hazard of being diagnosed with asthma for male youth.

- Violent crime rate was associated with 91 percent lower odds of female youth being diagnosed with asthma.

One neighborhood indicator emerged as a statistically significant predictor of asthma diagnosis for females was not significant in the aggregate model. Residing in a neighborhood that had a one-standard-deviation-higher social capital score was associated with 2.1 times higher odds of female youth being diagnosed with asthma.

Neurodevelopmental Disorders

The aforementioned aggregate relationship between diagnosis of a neurodevelopmental disorder and neighborhood safety was generally a statistically significant predictor across strata. All groups experienced significantly lower odds of being diagnosed and longer spells prior to diagnosis of a neurodevelopmental disorder in neighborhoods that had higher violent crime rates. Higher child abuse and neglect rates were associated with significantly lower odds of being diagnosed with a neurodevelopmental disorder for Latinos and for male youth.

The predictive power of the nativity composition in the aggregate models proved to be strongest for the Latino stratum. Residing in a neighborhood that had a one-standard-deviation-higher percentage of foreign-born residents was associated with 85 percent lower odds and 89 percent longer spells before Latino children were diagnosed with a neurodevelopmental disorder.

One other neighborhood indicator emerged as a statistically significant predictor of a neurodevelopmental disorder diagnosis in males, though not in the aggregate sample. Residing in a neighborhood that had a one-standard-deviation-higher social vulnerability score was associated with 8.3 times higher odds of male youth being diagnosed with a neurodevelopmental disorder.

Obesity

The aforementioned significant aggregate relationships between a diagnosis of obesity and neighborhood safety—measured in terms of violent crime rates as well as child abuse and neglect rates—was not observed in our stratified models. Indeed, the only significant neighborhood predictor across three of the four strata was living in a neighborhood that had medical facilities. Female youth and African-American and Latino children residing in these neighborhoods had more than six times higher odds of being diagnosed as obese during childhood.

Several significant associations between neighborhood context and obesity diagnosis that emerged in the aggregated models were produced primarily from relationships emerging from the African-American stratum. African-American children and youth were less likely to be diagnosed as obese if they resided in neighborhoods that had higher percentages of African-American or Latino residents, higher levels of social vulnerability, and lower levels of occupational prestige.

The percentage of pre-1940–vintage neighborhood housing stock was a strong predictor of obesity diagnosis in the aggregate sample but proved to be so only for the female stratum.

Residing in a neighborhood that had a one-standard-deviation-higher percentage of the housing stock built before 1940 was associated with 2.1–2.5 times higher odds or hazards of being diagnosed as obese for female youth.

Three other neighborhood indicators emerged as a statistically significant predictor of an obesity diagnosis in only one stratum, even though they were not predictive of patterns in the aggregate sample. Residing in a neighborhood that had a one-standard-deviation-higher:

- Percentage of the housing stock built between 1940 and 1970 was associated with 2.7–3.0 times higher odds or hazards of being diagnosed as obese for female youth.
- Social capital score was associated with 84 percent higher odds of being diagnosed for Latinos only.
- Resources factor score was associated with 74 percent lower odds of female youth being diagnosed as obese.

Our Bayesian analyses, which can be found in Appendix F, revealed similar statistically significant neighborhood indicators across the gender and ethnic strata.

Internalizing Behaviors

Property crime rate was the only significant neighborhood predictor across all four strata in the logit models and two strata in the AFT models. Children residing in neighborhoods that had a one-standard-deviation-higher property crime rate had 22–43 percent shorter spells to diagnosis of internalizing behaviors. Males and Latinos were 4.6 and 11.4 times, respectively, more likely to be diagnosed with internalizing behaviors if they resided in neighborhoods that had higher property crime rates.

Many neighborhood indicators proved most (or only) predictive in the Latino stratum. Latino youth were at least five times more likely to be diagnosed with internalizing behaviors if they resided in neighborhoods that had higher fractions of Latino and African-American residents but had 97 percent lower odds of diagnosis if they resided in neighborhoods that had more foreign-born residents. Latino children also experienced 47 percent shorter spells prior to diagnosis if they resided in neighborhoods that had one-standard-deviation-higher fractions of both Latino and African-American residents. However, spells prior to diagnosis were 72 percent longer for Latinos who lived in neighborhoods that had higher percentages of foreign-born residents as well as 35 percent longer in neighborhoods that had higher child abuse and neglect rates.

Latinos and boys had significantly higher odds (4–5 times) and shorter spells (12–20 percent) prior to diagnosis if they resided in neighborhoods that had more neighborhood social problems, while African Americans and girls experienced 37–47 percent longer spells prior to diagnosis if they resided in neighborhoods that had one-standard-deviation-higher levels of social vulnerability.

Of interest, the presence of higher levels of neighborhood resources exhibited the opposite relationships for boys and girls. Greater neighborhood resources was associated with 4.7 times higher odds and 20 percent reduced time to diagnosis of internalizing behaviors for boys; among girls, this was associated with 80 times lower odds and 29 percent increased time to diagnosis.

Behavioral Health Service Utilization

Occupational prestige and the percentage of foreign-born residents were significant neighborhood predictors across three of the four strata in both logit and Cox models. With the exception of the Latino stratum, children residing in neighborhoods that had a one-standard-deviation-higher occupational prestige score had 65–98 percent lower odds or hazards of using behavioral health services during childhood. Latinos, female youth, and male youth had significantly lower odds and hazards (66–82 percent) of using behavioral health services if they resided in neighborhoods that had higher percentages of foreign-born residents. Neighborhood stability proved a strong predictor in two strata. African-American children and female youth had significantly higher odds (greater than 2.1 times) of using behavioral health services if they resided in neighborhoods with standard-deviation-higher percentages of neighborhood residents who moved in during the previous year. Neighborhood social vulnerability proved an especially strong predictor among males. Residing in a neighborhood that had a one-standard-deviation-higher social vulnerability score was associated with 92 percent lower odds of behavioral health service use for male youth.

Two other neighborhood indicators emerged as statistically significant predictors of behavioral health service utilization in a particular stratum, though not in the aggregate sample. Residing in a neighborhood that had a one-standard-deviation-higher:

- Neurological risk index was associated with at least a 3.9 times higher odds or hazards of using behavioral health services for female youth and African-American children.
- Violent crime rate was associated with 86 percent lower odds of behavioral health service use for African-American youth.

Our Bayesian analyses found comparable statistically significant relationships between behavioral health service utilization and the aforementioned neighborhood indicators.

Nonlinear Neighborhood Effects

Results for our nonlinear investigations employing spline regressions are presented in Appendix D. Several noteworthy nonlinear relationships between neighborhood indicators and physical or behavioral health outcomes were uncovered that were robust across models.

Violent crime rates consistently demonstrated for asthma, neurodevelopmental disorder, and internalizing behavior diagnoses a nonlinear pattern indicating an asymmetric V-shaped pattern of marginal impacts (with the downward-sloping left side of the V longer).[32] Illustrated in the case of neurodevelopmental disorders, a standard-deviation increase in violent crime rates in a neighborhood remaining below the mean of such rates would be expected to reduce the odds of such a diagnosis by 98 percent, but such a change in a neighborhood remaining above the mean violent crime rate would be expected to *increase* the odds by 72 percent.[33] This nonlinear pattern

[32] Our aggregate results reported in Exhibits IV-3 and IV-4 clearly showed a strong inverse relationship overall, implying that there must be relatively little upslope to the above-mean segment of the spline relationship.
[33] These and other reported estimates are based on xtmelogit results for the “ever in DHA” sample but are consistent with those from the logit model and in most cases the Cox hazard/AFT models. The effect for the above-mean range

was confirmed in the Cox and AFT models. Indeed, as we will show in forthcoming chapters, this nonlinear result for violent crime rates is quite general across child outcomes analyzed. We think that this finding reflects the net effects produced by the conflicting forces impinging on children arising from violent crime in the broader neighborhood, controlling for crime in the immediate environs as we do. These forces are the negative direct effects from violent crime and alterations in caregiver actions in response that are intended to ameliorate such effects. We discuss this important finding more fully below.

Several neighborhood indicators—occupational prestige, percentage of foreign residents, and respiratory risk index—exhibited distinct threshold relationships—that is, they only had predictive power when they exceeded sample mean values. In the cases of asthma and behavioral health service usage outcomes, a standard-deviation-higher value of prestige in a neighborhood remaining above the mean prestige would be expected to decrease the odds of asthma diagnosis and behavioral health service usage by 99 percent. In the cases of obesity and behavioral health service usage outcomes, a standard-deviation-higher value of the percentage of foreign born in a neighborhood remaining above the mean percentage would be expected to decrease the odds of obesity diagnosis and behavioral health service usage by 72–93 percent, respectively. Finally, a standard-deviation-higher value of respiratory risk in a neighborhood remaining above the mean risk would be expected to increase the odds of asthma diagnosis by a substantial percentage, though we do not have confidence in the precise parameter estimated.[34] These threshold relationships have strong theoretical grounding in sociology and medicine, respectively, as discussed further below.

Two less expected threshold relationships also emerged. Greater neighborhood social vulnerability and turnover proved strongly inversely associated with the odds of an internalizing behavior diagnosis in neighborhoods that have above-average values for these indicators. Analogous nonlinear patterns were revealed in our AFT models of this outcome. To illustrate, in a neighborhood that has above-average vulnerability and residents moving in during the prior year, standard-deviation-higher values for these indicators would be predicted to yield 98 percent and 99 percent lower odds of diagnosis and 123 percent and 89 percent longer spells before diagnosis, respectively. We think this reflects the reduced likelihoods of parents in such vulnerable, unstable neighborhoods seeking medical attention for children who have internalizing behavioral symptoms or for disclosing such behaviors because of the stigmatization for reasons discussed more fully below.

Finally, the percentage of pre-1940–vintage housing exhibited different nonlinear patterns in predicting obesity and neurodevelopmental disorders. In the former case, it showed a threshold-like pattern, only being positively associated with obesity diagnosis odds when it exceeded sample mean. In the latter case, it manifested diminishing marginal positive impacts, switching from a strongly positive association with the odds of neurodevelopmental disorders to a modestly negative association at extremely high percentages of older housing.

is computed by adding the estimated logit coefficients (not odds ratios), and then exponentiating the value to return the “net” odds ratio for the spline segment.

[34] We suspect that this was the result of sparse cell sizes and the resulting sensitivity of our xtmelogit algorithm.

Discussion

The results reported above clearly show that many aspects of neighborhood context are statistically and substantively important predictors of our physical and behavioral health outcomes. Below, we organize the discussion around thematic categories of neighborhood context.

Neighborhood Safety

In understanding impacts on physical and behavioral health outcomes, our results suggest that "neighborhood safety" needs to be viewed as a multidimensional construct, components of which have differential impacts. We have found that property crime rates are generally associated with higher odds of having an adverse health diagnosis or use of behavioral health services, whereas violent crime and child abuse and neglect rates are generally associated with the opposite. More specifically, living in neighborhoods that had higher property crime rates is associated for all or most strata of our sample children with substantially greater chances of being diagnosed with asthma or neurodevelopmental disorders and using mental health services. However, living in a neighborhood that had higher violent crime rates is associated for the sample overall with reduced chances of being diagnosed with neurodevelopmental disorders; for female youth being diagnosed with asthma; and use of behavioral health services by African-American, male, and female youth. Residence in neighborhoods that have higher child abuse and neglect rates was also related to lower chances that low-income children were diagnosed with asthma (especially for males), neurodevelopmental disorders (especially for Latinos and males), obesity (all except for male), and internalizing behaviors (especially for Latinos).

The observed positive relationship between property crime and our physical and behavioral health outcomes is expected. There are several plausible links between more property crime in the environment and adverse health consequences for children. In neighborhoods that have higher rates of property crime, there will be higher incidences of children witnessing and being victimized by violence (as we will demonstrate in Chapter V) and as a result reacting in ways that put their physical and behavioral health at risk. There may also be greater fear among children and their caregivers that restricts more child activities to indoor spaces that may involve more health risks resulting from intensified exposure to indoor toxins such as lead, mold, dust mites, and vermin. Another link may be through intensification of risky behaviors that harm health (such as smoking, drinking, using drugs, and engaging in violence), as we will demonstrate in Chapter VI.

The observed asymmetric V-shaped relationship between violent crime and several physical and behavioral health outcomes was unexpected, but we believe that is can be explained in two ways that are not mutually exclusive. The first explanation is that the asymmetric V-shaped relationship observed here is mimicked in violent crime's relationships with exposure to violence (see Chapter V) and engaging in risky behaviors (see Chapter VI). We offer possible explanations for those relationships in those chapters, so we will not repeat them here. Suffice it to say that the pattern between violent crime and health may solely be replicating analogous patterns between violent crime and the other agents generating the adverse health impacts.

Our second explanation suggests that there are offsetting effects of violent crime on the probabilities of children having health problems and the probabilities of caregivers obtaining confirmatory medical diagnoses of such problems.[35] As for the former effect, there is ample evidence that exposure to violence generates adverse behavioral and physical health outcomes for children (see Chapter II). Moreover, it is likely that children's exposure to violence is statistically greater in Denver neighborhoods that have higher officially reported violent crime rates. If this were the only neighborhood effect mechanism operative, we would observe a positive relationship between violent crime rates and odds of diagnosed health problems. But in our case, this relationship must be offset by the negative relationship between violent crime and the *likelihood of a diagnosis* given that the child indeed has the health problem in question. Underlying causal pathways may be that higher levels of violence:

- Erode the willingness or ability of caregivers to recognize adverse health symptoms of their children, perhaps because of the stress associated with caregivers' own or their children's potential or past victimization.
- Erode the willingness or ability of caregivers to seek medical care for their children, perhaps because of fear of their own or their children's victimization when seeking such care.
- Reduce the likelihood that facilities appropriate for diagnosing such health problems are located proximate to the low-income household.[36]

We think the first two items above more plausible, given the Moving To Opportunity evidence about how neighborhood violence can intensify parental stress and exacerbate their physical and behavioral problems (Ludwig, 2012; Sanbonmatsu et al., 2012).

Our findings about the inverse relationship between neighborhood child abuse and neglect rates and the odds of adverse health diagnoses can also be understood through the same lens of caregiver perceptions and behaviors related to their children's health. Neighborhoods in which children are often treated poorly by their caregivers are unlikely to provide a normative collective context where children's symptomatic health problems are treated with sympathy, concern, or affirmative responses like seeking medical attention.

Neighborhood Ethnic and Nativity Composition

We have identified several important relationships between the foreign-born, African-American, and Latino composition of the neighborhood's population and children's health outcomes. For the full sample, higher percentages of foreign-born residents were associated with lower odds of asthma diagnosis (especially for females and Latinos), neurodevelopmental disorder diagnoses (especially for Latinos), internalizing behavior diagnoses (especially for Latinos), and behavioral health service utilization (at least past a threshold concentration of foreign-born residents). Similarly, higher percentages of African-American residents were associated with lower odds of both asthma and obesity diagnoses (especially for African Americans). Higher percentages of

[35] The violent crime relationship is replicated by the observed inverse relationship between our neighborhood social problems index (which is heavily weighted toward perceived violence and disorder) and the odds of a developmental disorder diagnosis.
[36] Although we try to control for this in our models.

Latino population were associated with lower likelihoods of obesity diagnosis (in the full sample) and internalizing behavior diagnosis (for Latinos only).

We see no persuasive theoretical bases to suggest why higher concentrations of these groups would improve the health of neighborhood children, controlling as we do for the child's own ethnicity and caregiver nativity. Instead, we think the above relationships more likely reflect the following (not mutually exclusive) factors related to the probability that a caregiver will obtain a medical diagnosis, given particular child adverse health symptoms:

- Collective norms and values related to what standards define "problematic health symptoms."[37]
- Collective norms and values related to caregivers' appropriate help-seeking behaviors.
- Local information networks offering limited information about children's health risks and appropriate parental responses.
- Difficulty accessing and interacting with the health care system because of cultural, class or linguistic barriers.

This last argument is consistent with the health literature on the "epidemiological paradox of immigrants." The paradox is that those groups who may have the least familiarity, cultural resonance, or ability to communicate with the U.S. health care system have "better" health outcomes, as (erroneously) indicated by lower rates of disease diagnosis.

Neighborhood Social Status

Two indices related to neighborhood social status often proved predictive of children's physical and behavioral health: occupational prestige and neighborhood social vulnerability. Residing in a higher prestige neighborhood was associated with a reduced likelihood of using behavioral health services and diagnoses of neurodevelopmental disorders, obesity, and asthma (the latter two especially for African Americans). For several of these relationships, a distinct threshold was observed. These results have intuitive appeal for several reasons. First, higher prestige neighborhoods may have distinctive local information networks, norms, and role models related to encouraging a variety of pro-health behaviors of neighboring caregivers and their children. Such mechanisms likely come into play only after a threshold of prestige has been surmounted, because only then are the aforementioned forces likely to be the dominant ones in the neighborhood. Second, beneficial health results may arise from lower exposure to violence and lower incidences of risky behaviors, fully consistent with findings we will present in Chapters V and VI that higher prestige neighborhoods are strongly negatively associated with these child outcomes. In contrast, we doubt that higher prestige neighbors would dampen the willingness or ability of low-income caregivers to acknowledge adverse health symptoms of their children and seek appropriate care; if anything, we would predict the opposite. We thus are persuaded that the occupation prestige result provides evidence of an unambiguously pro-health (not just pro-diagnosis) neighborhood effect.

[37] Explanations based on collective socialization are especially persuasive, given the observed threshold relationship for percentage of foreign-born residents.

The findings for neighborhood social vulnerability were less expected, however, given the conventionally observed inverse relationship between similarly conceived "neighborhood disadvantage" variables and healthy outcomes. We begin by emphasizing that our results are not strictly comparable with those in prior scholarly works for two reasons. First, our index sums neighborhood percentages of unemployment, poverty, and female-headed households and renters; it does not include ethnic, racial, or nativity measures, as do most others. Second, our models control for a host of other neighborhood characteristics that are often associated with "disadvantaged neighborhoods" but for which other studies have no direct measures, notably crime, child abuse, institutional resources, bad peer influences, social problems, social capital, and occupational prestige. Thus, other studies' "neighborhood disadvantage" variables serve as ambiguous proxies for a wide range of other attributes besides social status and should not be used as precedents for results using our social vulnerability measure.

Nevertheless, it is not obvious why our social vulnerability indicator should be associated with decreased likelihoods of asthma diagnosis (especially for males), use of behavioral health services (again, especially for males), internalizing behavior diagnosis (in more vulnerable neighborhoods), and (in the case of African Americans only) obesity diagnoses. We find it implausible that such neighborhoods constitute intrinsically healthier environments in which children have lower incidences of such health problems. Instead, we think that the relationship is founded on altering the likelihood that health problems generate diagnoses. Several possible (not mutually exclusive) alternative explanations are that more vulnerable, lower status neighborhoods have:

- Collective norms and values that establish higher standards defining "problematic health symptoms"; if such norms suggest that "real men don't get sick," for example, it could explain why the relationships are especially strong for male youth.
- Collective norms and values that establish higher standards of symptomatology, defining when caregivers should seek medical attention for their children.
- Local information networks that supply limited information and other resources about children's health risks and appropriate parental responses.
- Limited community resources that could be employed to assist the caregiver in accessing medical facilities, such as vehicles to borrow.

Neighborhood Institutional Resources

We found that our institutional resources index was inversely related to the odds of an asthma diagnosis and (in the case of females) an obesity diagnosis. Given that our index includes the availability of parks and recreation centers, this finding is interpretable in a straightforward way as a pro-health consequence of providing such facilities. We can think of no plausible reasons why the presence of such would deter caregivers from obtaining a diagnosis given certain symptomatology. In contrast, the presence of medical facilities in the neighborhood was associated with higher odds of an obesity diagnosis for virtually all strata. We interpret this as a relationship working though the probability of obtaining a medical diagnosis given a high body mass index, instead of one influencing a child's weight.

Neighborhood Physical Environment

Results for our two indices of air pollutants supported the conventional medical wisdom regarding the deleterious consequences of pollution for healthy child development (see, for example, Acevedo-Garcia et al., 2003). Children raised in neighborhoods that have higher neurological risks exhibited substantially higher odds of being diagnosed with asthma (especially if they were African American) and neurodevelopmental disorders and (in the case of females and African Americans) using behavioral health services. Children raised in neighborhoods that have higher-than-average respiratory risk also exhibited substantially higher odds of being diagnosed with asthma. Given that we can find no persuasive reasons why these environmental conditions should influence the likelihood of diagnosis given certain symptomatology, we believe they reveal another neighborhood force that directly impinges on children's health. This interpretation is buttressed by our frequent finding of threshold relationships here.

We also found intriguing results related to the age of a neighborhood's housing stock and obesity diagnoses. Higher percentages of both pre-1940– and 1940–1970–vintage housing were associated with higher odds of female youth being diagnosed as obese. The percentage of pre-1940–vintage dwellings indicator exhibited a minimum threshold before this relationship became manifest. We think it unlikely that these relationships emerged because of characteristics of older dwellings themselves (such as higher rates of lead, mold, mildew, vermin infestations, inadequate heating, and ventilation systems,); otherwise, they should have been stronger predictors of other health indicators. Rather, we think it reasonable to posit that they serve as proxies for the design, density, and land uses of the neighborhood. If older neighborhoods in Denver encourage more walking because they are indeed denser and typically offer a mix of residential and nonresidential land uses, they well could manifest payoffs in lower child obesity rates.

Geographic Selection Bias Revisited

In Chapter III, we argued that the estimated value of the "true" neighborhood effect likely lies within the range of estimates garnered from our various analysis samples, which consider different potential types of geographic selection post-initial assignment by DHA. For the physical and behavioral health outcomes reported in Exhibits IV-1 to IV-8, a number of the estimated neighborhood indicator parameters were substantially different between the four analysis samples, so our likely "true" estimate is less circumscribed than we would like. One likely reason for this variation is that some of our analysis samples are small and the number of observed diagnoses even smaller, producing sometimes exaggerated point estimates from some of our maximum likelihood estimators. We must also acknowledge the possibility, however, that there may be unmeasured differences between the parents of those who raised their children in DHA housing for most of their childhood until time of diagnosis and those who did not.[38] We of course do not know whether these unmeasured differences operated to bias the observed neighborhood effects upward or downward, and there is no general cross-sample pattern to the size of estimated parameters.[39]

[38] We remind the reader that those who left DHA comprise a heterogeneous group: both the economically successful and those who may have been evicted for lease violations.

Conclusion

Many aspects of neighborhood context are statistically and substantively important predictors of diagnoses of asthma, neurodevelopmental disorders, obesity, internalizing behaviors, and behavioral health service use by low-income Latino and African-American children. Aspects of the neighborhood’s safety, ethnic and nativity mix, social status, resources, and environmental quality all provide substantial predictive power for children’s physical and behavioral health outcomes, although the relationships’ magnitudes are often contingent on gender and ethnicity. We caution, however, that whether these relationships are manifested by causal links though the probability of a child having a health problem or the probability of having a set of symptoms medically diagnosed is sometimes not entirely clear. We believe that the most convincing way to interpret the neighborhood property crime, social problems index, occupational prestige, resources, environmental pollution, and housing stock vintage relationships is that they represent causal forces that directly affect child health. Thus, we conclude that low-income Latino and African-American children will demonstrate one or more comparatively superior health outcomes if they live in a neighborhood that has a lower property crime rate, social problems index, and respiratory and neurological pollution risk and that have a higher occupational prestige index, public resource factor score, and degree of walkability and land use mixes. On the contrary, we believe that results for violent crime; child abuse and neglect rates; neighborhood social vulnerability; local medical facility; and foreign-born, Latino, and African-American population percentages can best be interpreted as neighborhood influences on the odds of a given set of adverse child symptoms generating parental actions leading to a medical diagnosis. Thus, we conclude that potential health problems of low-income Latino and African-American children will be less likely to be diagnosed if they live in a neighborhood that has a higher violent crime rate; child abuse and neglect rate; social vulnerability; and foreign-born, Latino, or African-American population percentage and one in which there are no medical facilities.

V. EXPOSURE TO VIOLENCE OUTCOMES

Introduction

In this chapter, we examine neighborhood influences on five indicators of exposure to violence for low-income, minority youth in our *Denver Child Study*. For all children, we analyze whether they were a witness to or victim of neighborhood violence and whether they witnessed violence at home during childhood. For children between 5 and 18 years of age, we also examine whether they were a witness to or victim of violence at school. As noted below, we find evidence of strong neighborhood effects emanating from several dimensions of the residential environment, especially those related to neighborhood safety, social status, ethnic composition, and physical environment on children's witnessing and experiencing violence in their neighborhoods, schools, and homes.

Exposure to Neighborhood Violence Analysis

Over the course of childhood, children in our study could have been exposed to violence in their neighborhood as witnesses or victims. Therefore, we examine the extent to which neighborhood factors contributed to the likelihood that a child was a witness or victim of violence. Study participants in our core analysis samples range in 2 to 35 years of age at the time of survey, although we only measure exposure to neighborhood violence outcomes occurring through 18 years of age (or at the time of survey). The average age of the children and youth across these analysis samples varied between 11.2 and 12.9 years of age. The resultant sample sizes for these "ever in DHA" groups were 932 (victim of neighborhood violence) and 781 (witnessed neighborhood violence). In these analysis samples, we have a slight overrepresentation of Latino males (32 percent) compared with the other gender-ethnic groups: Latinas comprise between 29 and 31 percent, African-American males 20 percent, and African-American females between 18 and 19 percent.[40]

In this chapter, we assess two measures of exposure to neighborhood violence during childhood: (1) ever witnessed neighborhood violence and (2) ever a victim of neighborhood violence. We ascertain these outcomes on the basis of the *Denver Child Study* caregiver survey respondent's answers to the questions, "Has your child ever witnessed violence in or around the neighborhood? If so, at what age?" Caregivers were asked about experiences of victimization in the neighborhood, as well: "Has your child ever been beaten up, chased, threatened, or robbed in or around the neighborhood? If so, how old was he or she the first time and last time it happened?" Approximately 37 percent of our sampled children and youth witnessed neighborhood violence as a child, with a median age of onset of 8 years of age (although this ranged from 2 to 18 years of age, with 72 percent witnessing violence before 12 years of age). Eleven percent of children and youth in the sample had been victims of neighborhood violence during childhood; the median age of onset was 12 years of age, although it ranged from 2 to 17 years of age.

[40] These statistics apply to the "ever in DHA" sample but are comparable in the other three analysis samples, as well. Complete descriptive statistics for all variables related to these samples are available from the authors.

We recognize that all our measures of child exposure to violence (whether witness or victim, in neighborhood, school, or home) have shortcomings. First, they are subject to underreporting. Caregivers may not know about or, perhaps, wish to divulge all instances of their children's exposure to violence. Second, there may be variation among caregivers about what constitutes "witnessing", "getting beaten up," and so on. Both of these shortcomings will add error to our dependent variables, but so long as they remain uncorrelated with our neighborhood indicators, they will not introduce bias. Third, there is likely endogeneity with our measures of exposure and two of our neighborhood indicators: social problems index and negative peers. Caregivers who know that their children have been exposed are more likely to draw upon that fact when subjectively assessing the extent to which the corresponding neighborhood had social problems (many components of which involved crime) and negative peer influences.

Exposure to School Violence Analysis

Over the course of their school careers, children in our study could have been exposed to violence in their school settings as witnesses or victims. Therefore, we also examine the extent to which neighborhood factors contributed to the likelihood that a child was either a witness or victim of school violence. Study participants in our two neighborhood exposure to violence analysis samples range from 2 to 34 years of age at the time of survey, although we only examine these outcomes occurring during childhood (through 18 years of age or the time of survey). The average age of the children and youth across these analysis samples varied between 12.3 and 13.9 years of age. The resultant sample sizes for these "ever in DHA" groups were 913 (victim of school violence) and 814 (witnessed school violence). In these analysis samples, we have a slight overrepresentation of Latino males (32 percent) compared with the other gender-ethnic groups: Latinas comprise between 27 and 28 percent, African-American males 21 percent, and African-American females between 19 and 20 percent.[41]

We estimate models for two indicators of exposure to school violence during childhood: (1) ever witnessed school violence and (2) ever a victim of school violence. We determined these outcomes on the basis of the *Denver Child Study* caregiver survey respondent's answers to the questions, "Has your child ever witnessed violence in or around school? If so, at what age?" Caregivers were asked about experiences of victimization at school, as well: "Has your child ever been beaten up, chased, threatened, or robbed in or around school? If so, how old was he or she the first time and last time it happened?" Approximately 28 percent of our sampled children and youth witnessed violence at school as a child, with a median age of onset of 12 years of age, although this ranged from 3 to 18 years of age, with 40 percent witnessing violence at school before 12 years of age. Seven percent of children and youth in the sample had been victims of violence at school during childhood; the median age of onset was 12 years of age.

Exposure to Violence in the Home Analysis

Over the course of childhood, children in our study could have been exposed to violence within their homes, as well. Therefore, we examine the extent to which neighborhood factors

[41] These statistics apply to the "ever in DHA" sample but are comparable with the other three analysis samples, as well. Complete descriptive statistics for all variables related to these samples are available from the authors.

contributed to the likelihood that a child was a witness of violence at home.[42] Study participants in our exposure to violence in the home analysis sample range from 2 to 34 years of age at the time of survey, although we only examine these outcomes occurring during childhood (through 18 years of age). The overall sample size for the "ever in DHA" analysis sample was 745; the average age of the children and youth in this analysis sample is 13.2 years of age. In our analysis samples, we have a slight overrepresentation of Latino males (33 percent) compared with the other gender-ethnic groups: Latinas comprise 28 percent, African-American males 20 percent, and African-American females 20 percent.[43]

We estimate models for one outcome: ever witnessed violence in the home during childhood. We derive this outcome based on *Denver Child Study* caregiver survey respondents' answers to the questions, "Has your child ever witnessed violence in the home? If so, at what age?" Approximately 9 percent of our sampled children and youth witnessed violence at home as a child, with a median age of onset of 6 years of age, although this ranged from 2 to 17 years of age, with 81 percent witnessing violence at home before 12 years of age.[44]

Model Estimation

Because all five measures of exposure to violence are dichotomous, we employ logistic regression (with clustered robust standard errors) models to estimate the odds of ever witnessing violence in the neighborhood, at school, or at home or being victimized in the neighborhood or at school. We use accelerated failure time (AFT) frailty models to estimate the timing of first witnessing of the three forms of violence as well as timing to first victimization.[45] In this chapter, we estimate these models for the previously defined "ever in DHA," "currently in DHA," and "mostly in DHA" samples to assess the robustness of our results. Further, we add a fourth analysis sample, "majority in DHA" as an additional robustness check, because age of onset is most likely to occur during early and middle childhood, when children also were more likely to be residing in Denver, Colorado, Housing Author (DHA) housing. Children who spent the majority of their childhood in DHA housing (measured in terms of time of survey or 18 years of age for older children and youth) and whose exposure to violence or victimization occurred after initial random assignment constitute the study populations in these analyses.

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[42] We have additional information about the extent to which children were victims of violence at home via our questions about out-of-home placements during childhood; however, the reporting of this victimization by caregivers was too low to conduct separate analyses on this outcome.
[43] These statistics apply to the "ever in DHA" sample but are comparable with the other three analysis samples, as well. Complete descriptive statistics for all variables related to these samples are available from the authors.

[44] We recognize that caregivers may be reluctant to report that their children had witnessed violence in the home. We would note, however, that many of our caregivers were not biological parents, and the children under their care may have witnessed violence in their prior rather than current homes. Nevertheless, we must assume that there is no systematic pattern of underreporting associated with neighborhood context.

[45] We used Stata logit models with robust standard errors to adjust for clustering of children within families, because our xtmelogit models failed to converge for one or more of our analysis samples or stratum. We used Stata streg to estimate the AFT frailty models to adjust for the same issues of clustering of children. Further, we estimated AFT models instead of Cox proportional hazards models in our analyses when the global chi-square test rejected the null hypothesis of proportionality. The AFT model assumes that the effect of a covariate is to multiply the predicted event time by some constant.

The logistic and AFT models use the same core child and household covariates common to all of our analyses, with the exceptions of caregiver disability status, which was perfectly predicted in many of our models. Here, we measure “contemporaneous” family and neighborhood context at time of exposure to violence or victimization or at either age at time of survey or 18 years of age (whichever is younger) if such exposure or victimization never occurred during childhood. Thus, these analyses can be interpreted as investigating the degree to which childhood exposure to violence or victimization has any relationship with the neighborhood conditions to which children were exposed at the point of exposure. We use the full set of neighborhood covariates described in Chapter III, with the exception of our indicator for the presence of medical facilities in the neighborhood and two environmental quality indicators (neurorisk and respiratory risk indices) because of sparse cell counts or excessive attrition of cases from our analysis samples.

Estimated Neighborhood Effects on Exposure to Violence Outcomes

Exhibits V-1 through V-10 present nondichotomous predictor variables that are normalized to aid cross-variable comparability of coefficients. As before, we consider only those results that are statistically significant in two or more of the analysis samples for the given model type. Typically, the logit and AFT models provided similar results, so they will be discussed concurrently. Ranges of parameter estimates reported below reflect the variation across the four analysis samples. We will initially present the findings without comment; we will discuss them holistically later to minimize redundant explanations.

Witnessing Violence in the Neighborhood

Results for our models predicting exposure to neighborhood violence during childhood are presented in Exhibits V-1 and V-2. The first shows results for each of four alternative analysis samples from our logistic regression models, with clustered robust standard results predicting ever having witnessed neighborhood violence during childhood. The second shows the corresponding AFT frailty models estimating the timing of first exposure.

The models reveal several statistically significant individual-level or household-level predictors. Our logit and AFT analyses suggest that children had a lower probability of witnessing neighborhood violence during childhood and longer duration to first exposure if they lived with caregivers who were older or lived in larger families. A one-standard-deviation increase in caregiver age was associated with a 48–83 percent reduction in the odds of being a witness and 43–69 percent longer spell before witnessing neighborhood violence. A one-standard-deviation increase in the number of siblings in the household was associated with a 31–65 percent reduction in the odds of being a witness and a corresponding 10–13 percent longer spell before witnessing neighborhood violence for the first time.

Conversely, the odds of children witnessing neighborhood violence were significantly higher in households experiencing high levels of economic stress: a one-standard-deviation-higher level of household stressors was associated with 31–60 percent higher odds of witnessing violence in the neighborhood. Moreover, the AFT models suggest additional statistically significant child and household factors that influence the age of first witnessing neighborhood violence. Children who were first born had spells before witnessing neighborhood violence that were 22–41 percent longer than those for children who were born later. Likewise, children who moved more

Exhibit V-1. Standardized Logit Models Predicting Witnessing Neighborhood Violence During Childhood

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	OR		SE	OR		SE	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	1.69		(0.57)	1.47		(0.63)	0.84		(0.39)	4.26	*	(2.53)
Social capital index	1.07		(0.14)	1.11		(0.17)	1.20		(0.20)	1.46		(0.32)
Social problems index	2.10	***	(0.40)	2.06	***	(0.45)	2.68	***	(0.68)	1.65		(0.48)
Social vulnerability score	0.42	*	(0.15)	0.20	**	(0.10)	0.17	***	(0.08)	0.42		(0.21)
Percent African American residents	0.67		(0.16)	0.53	*	(0.16)	0.61		(0.18)	0.70		(0.24)
Percent Latino residents	0.41	*	(0.15)	0.35	*	(0.16)	0.41	*	(0.18)	0.50		(0.27)
Occupational prestige score	0.21	***	(0.06)	0.07	***	(0.03)	0.10	***	(0.04)	0.18	***	(0.08)
Percent foreign born residents	0.91		(0.24)	0.74		(0.27)	0.69		(0.26)	0.79		(0.36)
Percent of residents who moved in preceding 12 months	1.05		(0.20)	1.29		(0.27)	1.30		(0.29)	1.45		(0.33)
Resource factor score	1.43		(0.32)	1.60		(0.43)	1.63		(0.46)	1.56		(0.46)
Percent of housing built before 1940	1.58	**	(0.25)	2.22	**	(0.56)	2.26	***	(0.48)	1.87	*	(0.49)
Violent crime rate per 1,000	0.55		(0.18)	0.24	**	(0.12)	0.42	*	(0.18)	0.37	*	(0.17)
Property crime rate per 1,000	7.10	***	(1.99)	63.74	***	(32.78)	18.84	***	(8.42)	7.16	***	(2.64)
Child abuse and neglect rate per 1,000	0.47	***	(0.10)	0.22	***	(0.07)	0.42	**	(0.13)	0.85		(0.26)
Number of observations	781			630			520			334		
Number of clusters	404			333			290			187		
Log-Likelihood	-311.24			-233.57			-191.53			-102.10		
Chi-square	184.70	***		158.95	***		154.82	***		116.74	***	
Pseudo-R^2	0.40			0.47			0.47			0.48		
Notes:												
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.												
* p < 0.05; ** p < 0.01; *** p < 0.001.												

Exhibit V-2. Standardized AFT Frailty Models Predicting Timing of Witnessing Neighborhood Violence During Childhood

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	TmR		SE	TmR		SE	TmR		SE	TmR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	0.96		(0.07)	0.99		(0.09)	1.10		(0.09)	0.90		(0.07)
Social capital index	1.00		(0.03)	1.01		(0.03)	1.00		(0.03)	1.01		(0.03)
Social problems index	0.85	***	(0.03)	0.83	***	(0.04)	0.84	***	(0.03)	0.95		(0.03)
Social vulnerability score	1.07		(0.08)	1.08		(0.11)	1.19	*	(0.10)	1.09		(0.06)
Percent African American residents	1.08		(0.05)	1.07		(0.06)	1.02		(0.05)	1.07		(0.05)
Percent Latino residents	1.18	*	(0.09)	1.07		(0.09)	1.06		(0.08)	1.09		(0.09)
Occupational prestige score	1.26	***	(0.07)	1.24	**	(0.08)	1.26	***	(0.07)	1.16	**	(0.06)
Percent foreign born residents	1.03		(0.06)	1.08		(0.08)	1.09		(0.06)	1.01		(0.06)
Percent of residents who moved in preceding 12 months	0.96		(0.04)	0.96		(0.05)	0.90	**	(0.03)	0.94	*	(0.03)
Resource factor score	0.96		(0.04)	0.95		(0.04)	0.95		(0.04)	1.00		(0.03)
Percent of housing built before 1940	0.96		(0.04)	0.98		(0.04)	0.95		(0.04)	0.95		(0.03)
Violent crime rate per 1,000	1.05		(0.06)	1.07		(0.07)	1.08		(0.07)	1.05		(0.05)
Property crime rate per 1,000	0.85	**	(0.04)	0.85	**	(0.05)	0.86	**	(0.05)	0.89	**	(0.04)
Child abuse and neglect rate per 1,000	1.07		(0.04)	1.09		(0.06)	1.05		(0.05)	1.01		(0.03)
Number of observations	781			630			520			334		
Number of clusters	404			333			290			187		
Log-Likelihood	-317.86			-338.77			-211.59			-64.87		
Chi-square	553.50	***		365.23	***		550.67	***		474.34	***	
Notes:												
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics. TmR=Time ratio.												
* p < 0.05; ** p < 0.01; *** p < 0.001.												

frequently during childhood had spells prior to witnessing neighborhood violence that were 16–30 percent longer, with each standard-deviation-higher increase in the number of childhood moves. However, the spell before first witnessing neighborhood violence was significantly shortened (19 percent) if the household had health insurance.

Multiple contemporaneous neighborhood indicators related to ethnic, social status, safety, and physical context were statistically significant predictors of being a witness to neighborhood violence during childhood across our statistical models. Consider first ethnic composition. A one-standard deviation-higher neighborhood in the percentage of Latino residents was associated with 59–65 percent lower odds of being a witness to neighborhood violence.

Two indicators of the social status context of neighborhood also were predictive of witnessing neighborhood violence. A one-standard-deviation-higher occupational prestige scale was associated with 79–93 percent lower odds of being a witness as well as 16–26 percent longer spells prior to first witnessing neighborhood violence. A similar increase in the social vulnerability score was associated with 58–83 percent lower odds of being a witness to neighborhood violence. We will interpret this surprising latter result below.

As would be expected, two of our neighborhood safety indicators were predictive of individual-level witnessing of neighborhood violence. A one-standard-deviation higher:

- Social problems index was associated with 2.1–2.7 times higher odds of being a witness as well as 15–17 percent shorter spell prior to first witnessing such violence.
- Property crime rate was associated with at least 7 times higher odds of being a witness as well as 11–15 percent shorter spells prior to first witnessing neighborhood violence.[46]

Surprisingly, two indicators of neighborhood violence proved to be inversely related to caregiver reports that their children witnessed violence in the neighborhood. We probe these results further below. A one-standard-deviation-higher:

- Violent crime rate was associated with 58–76 percent lower odds of being a witness to neighborhood violence.
- Confirmed child abuse and neglect rate was associated with 53–77 percent lower odds of being a witness to neighborhood violence.

Finally, one aspect of the physical environment of the neighborhood was a significant predictor of the odds of childhood exposure to violence. A one-standard-deviation-higher percentage of housing built prior to 1940 was associated with 1.6–2.3 times higher odds of being a witness to neighborhood violence.

Victim of Neighborhood Violence

Results for our models predicting becoming a victim of neighborhood violence during childhood are presented in Exhibits V-3 and V-4. The first exhibit summarizes results for each of four

[46] In some smaller samples, the frequency of witnessing neighborhood violence is so low and the corresponding paucity of observations in many cells that we view the parameter estimated by our maximum likelihood models to be unreliably large. In such cases, we will not report the point estimate, only the minimum value estimated across the samples.

alternative analysis samples from our logistic regression (with clustered robust standard errors) models predicting ever becoming a victim of neighborhood violence; the second shows the corresponding AFT frailty models predicting the timing of neighborhood victimization.

The models reveal several statistically significant individual-level or household-level predictors. Our logit analyses suggest that children had lower probabilities of becoming a victim of neighborhood violence during childhood if they were not African-American males; comparable AFT models suggest that these same children had longer spells prior to first victimization. Compared with African-American male youth in our samples, Latina females have 82–90 percent lower odds of becoming victims of neighborhood violence and between 45 and 70 percent longer spells prior to first victimization. In addition, African-American females experienced 78–87 percent lower odds of becoming a victim of neighborhood violence as well as 26–42 percent longer spells prior to first victimization compared with African-American males. Although Latino males were as likely as African-American males to become victims of neighborhood violence, Latino males experienced significantly longer spells (21–37 percent) prior to first victimization. One additional child characteristic was a significant predictor of neighborhood victimization: Children who were first born had spells before becoming a victim of neighborhood violence that were approximately 21 percent longer than those for children who were born later.

Several caregiver and household variables were predictive of ever becoming a victim of neighborhood violence. The odds of becoming a victim as well as extending the spell prior to first victimization were associated with older caregivers: A one-standard-deviation increase in caregiver age was associated with 61–71 percent lower odds of becoming a victim and 37–68 percent increase in the time prior to first victimization. Also, compared with children whose caregivers did not complete high school, children of caregivers holding a high school diploma had 14–19 percent shorter spells prior to becoming victims of neighborhood violence. Children residing in larger families also experienced longer spells prior to victimization: A one-standard-deviation-higher number of siblings in the household was associated with approximately 10 percent longer spells. Residential instability for children demonstrated an ambiguous relationship with neighborhood victimization. On one hand, a one-standard-deviation-higher increase in the number of moves experienced during childhood increased the odds of becoming a victim of neighborhood violence by 35–54 percent. On the other hand, that same increase in the number of moves also was associated with 11 percent longer spell prior to first victimization. Finally, an increase in household economic stressors was associated with higher odds of becoming a victim of neighborhood violence. A one-standard-deviation increase in the level of household stressors increased the odds of becoming a victim by 44–79 percent.

Multiple contemporaneous neighborhood indicators related to demographic, social status, safety, and physical context were statistically significant predictors of becoming a victim of neighborhood violence during childhood across our statistical models. Regarding the

Exhibit V-3. Standardized Logit Models Predicting Ever Being Victimized in Neighborhood During Childhood

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	OR		SE	OR		SE	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	2.96	*	(1.34)	2.05		(1.20)	1.26		(0.83)	2.04		(1.52)
Social capital inidex	1.00		(0.16)	0.99		(0.20)	1.10		(0.22)	1.24		(0.29)
Social problems index	1.65	*	(0.32)	2.15	**	(0.51)	2.43	**	(0.67)	1.93	*	(0.53)
Social vulnerability score	0.47		(0.20)	0.09	**	(0.08)	0.29		(0.26)	1.17		(0.77)
Percent African American residents	1.05		(0.26)	0.88		(0.28)	0.97		(0.31)	1.58		(0.60)
Percent Latino residents	0.98		(0.44)	1.02		(0.73)	1.19		(0.77)	1.56		(1.03)
Occupational prestige score	0.34	***	(0.11)	0.04	***	(0.02)	0.24	***	(0.10)	0.69		(0.31)
Percent foreign born residents	0.47	*	(0.17)	0.21	**	(0.12)	0.33		(0.19)	0.55		(0.32)
Percent of residents who moved in preceding 12 months	1.27		(0.22)	1.67		(0.46)	1.25		(0.29)	1.11		(0.29)
Resource factor score	0.72		(0.16)	0.82		(0.25)	0.70		(0.22)	0.67		(0.24)
Percent of housing built before 1940	1.56	*	(0.29)	3.47	***	(0.89)	1.90	**	(0.43)	1.50		(0.39)
Violent crime rate per 1,000	0.49	*	(0.16)	0.14	**	(0.09)	0.40		(0.31)	0.21	**	(0.12)
Property crime rate per 1,000	4.84	***	(1.19)	129.84	***	(88.52)	8.59	***	(3.23)	4.26	***	(1.32)
Child abuse and neglect rate per 1,000	0.50	***	(0.10)	0.16	***	(0.06)	0.41	**	(0.12)	0.75		(0.20)
Number of observations	932			629			536			478		
Number of clusters	457			331			294			251		
Log-Likelihood	-215.78			-124.93			-120.92			-96.05		
Chi-square	178.41	***		169.52	***		173.72	***		102.30	***	
Pseudo-R^2	0.34			0.53			0.43			0.38		

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Exhibit V-4. Standardized AFT Frailty Models Predicting Timing of Neighborhood Victimization During Childhood

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	TmR		**SE**	**TmR**		**SE**	**TmR**		**SE**	**TmR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	0.84	*	(0.07)	0.96		(0.11)	1.03		(0.12)	0.87		(0.09)
Social capital index	0.99		(0.03)	0.99		(0.03)	0.96		(0.04)	0.98		(0.03)
Social problems index	0.91	*	(0.04)	0.88	**	(0.04)	0.85	**	(0.04)	0.91	*	(0.04)
Social vulnerability score	0.95		(0.08)	1.01		(0.12)	1.05		(0.14)	1.01		(0.08)
Percent African American residents	1.04		(0.05)	1.08		(0.06)	1.06		(0.07)	0.97		(0.05)
Percent Latino residents	1.07		(0.09)	1.10		(0.11)	1.04		(0.12)	0.95		(0.08)
Occupational prestige score	1.21	**	(0.08)	1.39	***	(0.12)	1.23	*	(0.10)	1.03		(0.06)
Percent foreign born residents	1.13		(0.07)	1.16	*	(0.08)	1.15		(0.10)	1.07		(0.08)
Percent of residents who moved in preceding 12 months	1.00		(0.03)	1.03		(0.04)	1.03		(0.04)	1.00		(0.03)
Resource factor score	1.09		(0.05)	1.06		(0.06)	1.11		(0.07)	1.03		(0.06)
Percent of housing built before 1940	0.92		(0.04)	0.89	*	(0.05)	0.89	*	(0.05)	0.95		(0.03)
Violent crime rate per 1,000	1.16	*	(0.08)	1.16		(0.10)	1.13		(0.13)	1.19	**	(0.08)
Property crime rate per 1,000	0.84	***	(0.04)	0.79	***	(0.04)	0.79	***	(0.05)	0.83	***	(0.03)
Child abuse and neglect rate per 1,000	1.10	*	(0.04)	1.10	*	(0.05)	1.09		(0.05)	1.01		(0.04)
Number of observations	932			629			536			478		
Number of clusters	457			331			294			251		
Log-Likelihood	-161.18			-113.64			-92.46			-62.31		
Chi-square	279.32	***		196.02	***		272.49	***		324.30	***	

Notes:
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.
TmR=Time ratio.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

ethnic and social mix of the neighborhood, we found that higher shares of immigrant and high-occupational-prestige neighbors were associated with lower chances of victimization. A one-standard-deviation-higher:

- Percentage of foreign-born residents was associated with 53–79 percent lower odds of becoming a victim of neighborhood violence.
- Occupational prestige was associated with 66–96 percent lower odds of becoming a victim of neighborhood violence as well as 21–39 percent longer spells prior to first victimization.

We continued to see strong (although seemingly contradictory) relationships between different aspects of neighborhood safety and neighborhood victimization. A one-standard-deviation-higher:

- Property crime rate was associated with at least 4 times higher odds of becoming a victim of neighborhood violence as well as 16–21 percent shorter spells prior to first victimization.[47]
- Social problems index was associated with 1.7–2.4 times–higher odds of becoming a victim of neighborhood violence as well as 9–15 percent–shorter spells prior to first victimization.
- Violent crime rate was associated with 51–86 percent–lower odds of becoming a victim of neighborhood violence as well as 16–19 percent–longer spells prior to first victimization.
- Confirmed child abuse and neglect rate was associated with 50–84 percent–lower odds of becoming a victim of neighborhood violence as well as 10 percent longer spells prior to first victimization.

As was the case with witnessing neighborhood violence, the odds of becoming a victim were significantly higher for children residing in neighborhoods that had higher percentages of older homes. A one-standard-deviation increase in the percentage of the housing stock built prior to 1940 was associated with 1.5–3.5 times–higher odds of becoming a victim of neighborhood violence as well as an 11 percent shorter spell prior to first victimization.

Witnessing Violence at School

Results for our models predicting exposure to violence at school are presented in Exhibits V-5 and V-6. The first shows results for each of four alternative analysis samples from our logistic regression models, with clustered robust standard results predicting ever witnessing violence at school. The second shows the corresponding AFT frailty models estimating the timing of first witnessing school violence.

The empirical models reveal that many of the same individual-level and household-level predictors proved significant as in the models related to neighborhood exposure to violence.

[47] In some smaller samples, the frequency of witnessing neighborhood violence is so low and the corresponding paucity of observations in many cells that we view the parameter estimated by our maximum likelihood models to be unreliably large. In such cases, we will not report the point estimate, only the minimum value estimated across the samples.

Exhibit V-5. Standardized Logit Models Predicting Witnessing School Violence During Childhood

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	OR		**SE**	**OR**		**SE**	**OR**		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	1.40		(0.47)	1.23		(0.57)	0.94		(0.46)	1.75		(0.87)
Social capital index	1.14		(0.15)	1.11		(0.19)	1.23		(0.22)	1.55	*	(0.29)
Social problems index	1.51	*	(0.24)	1.60	*	(0.32)	2.02	**	(0.43)	1.43		(0.33)
Social vulnerability score	0.54		(0.19)	0.14	***	(0.08)	0.14	***	(0.08)	0.84		(0.38)
Percent African American residents	0.96		(0.19)	0.76		(0.20)	0.78		(0.19)	1.22		(0.31)
Percent Latino residents	0.80		(0.30)	0.69		(0.34)	0.72		(0.33)	1.24		(0.62)
Occupational prestige score	0.42	**	(0.12)	0.11	***	(0.04)	0.21	***	(0.08)	0.73		(0.24)
Percent foreign born residents	0.59	*	(0.15)	0.34	**	(0.13)	0.39	**	(0.14)	0.53		(0.20)
Percent of residents who moved in preceding 12 months	1.16		(0.19)	1.64	*	(0.40)	1.54		(0.35)	1.03		(0.22)
Resource factor score	0.89		(0.18)	0.79		(0.18)	0.78		(0.18)	0.62		(0.18)
Percent of housing built before 1940	1.42	*	(0.21)	2.19	***	(0.51)	2.00	***	(0.40)	1.09		(0.21)
Violent crime rate per 1,000	0.48	*	(0.14)	0.21	***	(0.10)	0.55		(0.25)	0.47	*	(0.18)
Property crime rate per 1,000	3.04	***	(0.64)	31.28	***	(14.85)	5.78	***	(1.92)	2.10	**	(0.51)
Child abuse and neglect rate per 1,000	0.57	**	(0.11)	0.23	***	(0.08)	0.60	*	(0.16)	0.78		(0.19)
Number of observations	814			612			495			416		
Number of clusters	417			336			273			237		
Log-Likelihood	-382.25			-240.45			-210.46			-181.96		
Chi-square	102.12	***		135.71	***		104.15	***		67.41	***	
Pseudo-R^2	0.21			0.40			0.31			0.22		
Notes:												
Exponentiated coefficients; robust standard errors in parentheses. Models controls for child, caregiver and household characteristics.												
* p < 0.05; ** p < 0.01; *** p < 0.001.												

Exhibit V-6. Standardized AFT Frailty Models Predicting Timing of Witnessing School Violence During Childhood

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	TmR		SE	TmR		SE	TmR		SE	TmR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	0.97		(0.06)	1.01		(0.06)	1.06		(0.08)	0.95		(0.06)
Social capital index	1.00		(0.03)	1.02		(0.03)	1.00		(0.03)	0.94	**	(0.02)
Social problems index	0.93	**	(0.02)	0.94	*	(0.03)	0.89	***	(0.03)	0.95	*	(0.03)
Social vulnerability score	1.00		(0.05)	1.11		(0.06)	1.13		(0.09)	1.00		(0.06)
Percent African American residents	0.99		(0.04)	0.99		(0.04)	1.00		(0.05)	0.98		(0.03)
Percent Latino residents	1.02		(0.06)	1.02		(0.06)	1.01		(0.08)	0.96		(0.06)
Occupational prestige score	1.07		(0.05)	1.13	**	(0.05)	1.17	**	(0.07)	1.01		(0.04)
Percent foreign born residents	1.06		(0.05)	1.06		(0.04)	1.14	*	(0.07)	1.07		(0.05)
Percent of residents who moved in preceding 12 months	0.98		(0.03)	0.96		(0.03)	0.95		(0.04)	1.00		(0.03)
Resource factor score	0.99		(0.03)	0.99		(0.03)	1.03		(0.04)	1.06		(0.04)
Percent of housing built before 1940	0.99		(0.02)	1.01		(0.02)	0.96		(0.03)	0.99		(0.02)
Violent crime rate per 1,000	1.08	*	(0.04)	1.08	*	(0.04)	1.13	**	(0.05)	1.12	**	(0.05)
Property crime rate per 1,000	0.91	***	(0.03)	0.86	***	(0.02)	0.86	***	(0.03)	0.95		(0.03)
Child abuse and neglect rate per 1,000	1.03		(0.03)	1.04		(0.03)	1.00		(0.03)	0.97		(0.03)
Number of observations	814			612			495			416		
Number of clusters	417			336			273			237		
Log-Likelihood	-240.01			-138.33			-126.49			-88.00		
Chi-square	254.72	***		176.94	***		269.64	***		301.51	***	

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics. TmR=Time ratio.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Our logit and AFT analyses suggest that children had a lower probability of witnessing school violence or longer duration to first exposure to such violence if they were Latino or the first born within their families. Compared with African-American males, Latino youth had significantly lower odds of witnessing violence at school: for Latina females, the odds were reduced by 60–71 percent; for Latino males, the odds were reduced by 69–81 percent. Moreover, the duration to first witnessing school violence was increased by 18–31 percent for Latina females and 25–49 percent for Latino males. Children who were first born experienced 15–26 percent–longer spells prior to first witnessing school violence compared with siblings who were born later.

Several caregiver and household characteristics predicted witnessing school violence: caregiver age, number of siblings, mobility, presence of health insurance, and families that had two caregivers. A one-standard-deviation increase in:

- Caregiver age was associated with 13–25 percent longer spells prior to witnessing school violence.
- The number of siblings in the household was associated with 6 percent longer spells before witnessing school violence.
- The number of childhood moves was associated with 7–14 percent–longer spells prior to witnessing school violence.

When compared with children living with one caregiver, children living with two caregivers had 2.1–2.2 times–higher odds of witnessing school violence as well as 10–13 percent–shorter spells prior to witnessing school violence.[48] Finally, children living in households that had health insurance had approximately 2.5 times–higher odds of witnessing school violence compared with children without insurance.

Of more relevance to our study, many contemporaneous neighborhood indicators related to demographic, social status, safety, and physical dimensions of neighborhood context were statistically significant predictors of being a witness to school violence during childhood across our statistical models, generally in analogous patterns they exhibited in the realm of exposure to neighborhood violence. First, children raised in neighborhoods that had greater immigrant concentrations experienced significantly reduced odds of witnessing school violence. A one-standard-deviation-higher neighborhood percentage of foreign-born residents was associated with 41–66 percent–lower odds of being a witness to school violence.

As in the case of neighborhood violence, higher social-status neighborhoods, as measured by occupational prestige, seemed to provide environments in which children's exposure to violence in schools was lower. Children residing in neighborhoods that had a standard-deviation-higher value of occupational prestige experienced 58–89 percent–lower odds of being a witness to school violence as well as 13–17 percent–longer spells prior to first witnessing of such violence.

Neighborhood safety indicators remained strong predictors of exposure to school violence, as they had in the case of neighborhood violence, although once again, the relationships involving

[48] We think that this result reflects a difference in the likelihood of caregivers reporting a given child's exposure to violence, not a difference in actual exposure. Households that had two caregivers are more likely to find out about their children's exposures.

rates of violent crime and child abuse and neglect appeared counterintuitive on their face. A one-standard-deviation-higher:

- Property crime rate was associated with at least 2 times–higher odds of being a witness as well as 9–14 percent–shorter spells prior to first witnessing of such violence.[49]
- Social problems index was associated with 1.5–2.0 times–higher odds of being a witness to school violence as well as 5–11 percent–shorter spells prior to first witnessing of such violence.
- Violent crime rate was associated with 53–79 percent–lower odds of being a witness to school violence as well as 8–13 percent–longer spells prior to first witnessing of such violence.
- Confirmed child abuse and neglect rate was associated with 43–77 percent–lower odds of being a witness to school violence.

Also echoing earlier findings, housing vintage within the neighborhood continued to predict exposure to school violence. A one-standard-deviation increase in the percentage of housing stock built prior to 1940 was associated with 1.4–2.2 times–higher odds of being a witness to school violence.

Victim of School Violence

Results for our models predicting becoming a victim of school violence are presented in Exhibits V-7 and V-8 in a format consistent with those preceding. The sole individual-level predictor of school victimization was the child's birth order. Children who were first born had 21 percent–longer spells before becoming a victim of school violence than children who were born into their families subsequently. However, a number of caregiver and household characteristics were statistically significant. Children had a lower probability of becoming a victim of school violence if they were living with caregivers who were older or if they had histories of substance abuse. A one-standard-deviation increase in caregiver age was associated with 48–68 percent–lower odds of becoming a victim and a 14–53 percent increase in the spell prior to first school victimization. Compared with children whose caregivers did not have a history of substance abuse, children whose parents had such a history had 73–94 percent–lower odds of becoming a victim of school violence as well as 30–74 percent–longer spells prior to victimization.[50] Further, the likelihood of reporting school victimization was higher if caregivers reported depressive symptomatology.[51] Children whose parents reported depressive symptomatology had 2.7–2.9 times–higher odds of becoming victims of school violence as well as 19–22 percent–shorter spells prior to victimization compared with children whose parents did

[49] In some smaller samples, the frequency of witnessing neighborhood violence is so low and the corresponding paucity of observations in many cells that we view the parameter estimated by our maximum likelihood models to be unreliably large. In such cases, we will not report the point estimate, only the minimum value estimated across the samples.
[50] This result is likely a reporting issue; substance abusers may be less aware that their children have been victimized, perhaps because they have fewer communication lines open with their children.
[51] We caution that causation here may be ambiguous, inasmuch as caregivers' mental state may have been affected by their children's past exposure to violence.

not report those symptoms.[52] Finally, compared with children whose caregivers did not complete high school, children of caregivers holding a high school diploma had 14–19 percent–shorter spells prior to becoming victims of neighborhood violence.[53]

[52] Please note, however, that we are unable to estimate the causal sequencing of this relationship, because we had information only about parental depressive symptomatology reported at the time of survey, which may not coincide with the timing of children's past exposure to violence.
[53] As with several prior results, we think this can best be interpreted as a reporting issue. Better educated caregivers are more likely to be aware of their children's exposure to violence and perhaps more likely to register particular events involving their children as "violent acts."

Exhibit V-7. Standardized Logit Models Predicting Ever Being Victimized at School During Childhood

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	OR		SE	OR		SE	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	0.98		(0.47)	1.20		(0.83)	1.49		(0.87)	1.79		(0.99)
Social capital index	1.03		(0.18)	1.18		(0.26)	1.13		(0.23)	1.41		(0.44)
Social problems index	1.86	**	(0.44)	2.48	**	(0.85)	2.55	*	(1.02)	1.61		(0.53)
Social vulnerability score	0.46		(0.21)	0.09	*	(0.09)	0.06	**	(0.06)	0.84		(0.48)
Percent African American residents	0.85		(0.22)	0.38	*	(0.15)	0.79		(0.32)	1.21		(0.48)
Percent Latino residents	0.44		(0.20)	0.10	*	(0.10)	0.48		(0.41)	0.61		(0.39)
Occupational prestige score	0.15	***	(0.08)	0.01	***	(0.01)	0.01	***	(0.02)	0.39		(0.24)
Percent foreign born residents	0.52		(0.18)	0.43		(0.33)	0.13	**	(0.10)	0.53		(0.25)
Percent of residents who moved in preceding 12 months	1.39		(0.26)	1.78		(0.61)	3.77	***	(1.28)	1.46		(0.35)
Resource factor score	0.85		(0.22)	0.89		(0.36)	0.50	*	(0.16)	0.54		(0.20)
Percent of housing built before 1940	1.78	**	(0.36)	3.74	***	(1.48)	4.35	**	(2.11)	1.51		(0.50)
Violent crime rate per 1,000	0.48		(0.22)	0.15	*	(0.12)	0.17		(0.16)	0.46		(0.34)
Property crime rate per 1,000	2.28	***	(0.57)	24.61	***	(13.96)	4.40	***	(1.81)	1.66		(0.71)
Child abuse and neglect rate per 1,000	0.80		(0.20)	0.45		(0.22)	1.25		(0.44)	0.63		(0.21)
Number of observations	913			572			487			506		
Number of clusters	466			323			272			275		
Log-Likelihood	-175.46			-94.01			-77.87			-84.37		
Chi-square	74.38	***		111.42	***		62.25	***		53.91	***	
Pseudo-R^2	0.24			0.48			0.42			0.22		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Exhibit V-8. Standardized AFT Frailty Models Predicting Timing of School Victimization During Childhood

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	TmR		SE	TmR		SE	TmR		SE	TmR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	0.96		(0.08)	0.87		(0.08)	1.00		(0.12)	0.84		(0.08)
Social capital index	0.98		(0.03)	0.96		(0.04)	0.97		(0.04)	0.95		(0.05)
Social problems index	0.92		(0.04)	0.91		(0.05)	0.91		(0.07)	0.94		(0.06)
Social vulnerability score	1.07		(0.10)	1.22		(0.14)	1.32		(0.23)	1.03		(0.10)
Percent African American residents	1.01		(0.05)	1.08		(0.07)	0.91		(0.07)	0.97		(0.07)
Percent Latino residents	1.13		(0.10)	1.31	*	(0.16)	0.94		(0.13)	1.05		(0.14)
Occupational prestige score	1.36	***	(0.11)	1.67	***	(0.18)	1.56	***	(0.20)	1.15		(0.12)
Percent foreign born residents	1.14		(0.08)	1.08		(0.11)	1.38	*	(0.18)	1.13		(0.11)
Percent of residents who moved in preceding 12 months	0.94		(0.04)	0.96		(0.05)	0.82	***	(0.04)	0.95		(0.04)
Resource factor score	1.11	*	(0.06)	1.05		(0.07)	1.17	**	(0.07)	1.17	*	(0.07)
Percent of housing built before 1940	0.88	**	(0.04)	0.88	**	(0.04)	0.83	**	(0.05)	0.93		(0.06)
Violent crime rate per 1,000	1.11		(0.10)	1.15		(0.12)	1.36		(0.25)	1.15		(0.12)
Property crime rate per 1,000	0.94		(0.05)	0.76	***	(0.05)	0.87		(0.07)	0.95		(0.09)
Child abuse and neglect rate per 1,000	1.04		(0.06)	1.09		(0.07)	0.94		(0.06)	1.07		(0.06)
Number of observations	913			572			487			506		
Number of clusters	466			323			272			275		
Log-Likelihood	-135.74			-74.99			-62.09			-67.37		
Chi-square	213.59	***		141.25	***		329.92	***		229.36	***	

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics. TmR=Time ratio.

* p < 0.05; ** p < 0.01; *** p < 0.001.

Further, our AFT models suggested additional household predictors of the timing of first violence victimization in school. Children residing in larger families experienced longer spells prior to victimization: A one-standard-deviation-higher number of siblings was associated with approximately 10–18 percent–longer spells. Surprisingly, although greater residential instability during childhood proved positively associated with the risk of witnessing school violence, its relationship with school victimization was the opposite.[54] A one-standard-deviation-higher increase in the number of moves experienced during childhood was associated with 12–15 percent–longer spells prior to first victimization at school.

Multiple contemporaneous neighborhood indicators related to social status, resources, safety, and physical context were statistically significant predictors of becoming a victim of school violence across our statistical models. Two of our indicators of neighborhood social status proved strongly predictive. A one-standard-deviation-higher occupational prestige score was associated with 85–99 percent–lower odds of becoming a victim of school violence as well as 36–67 percent–longer spells prior to first school victimization.

Our social vulnerability measure produced the same unexpected results, as it did in the case of witnessing neighborhood violence: A one-standard-deviation increase in neighborhood social vulnerability was associated with 91–94 percent–lower odds of becoming a victim of school violence.

The availability of neighborhood resources (for example, parks, playgrounds, recreation centers) was positively related to the spell prior to first school victimization. A one-standard-deviation-higher resource factor score was associated with 11–17 percent–longer spells prior to victimization at school.

As in our previous exposure to violence models, both property crime rate and the index of social problems were predictive of school victimization. A one-standard-deviation-higher property crime rate was associated with at least two times–higher odds of becoming a victim of school violence.[55] A comparable variation in the social problems index was associated with 1.8–2.5 times–higher odds of becoming a victim of school violence.

Finally, the observed relationship between vintage of the neighborhood housing stock and exposure to violence continued to be a significant predictor of school victimization. A one-standard-deviation-higher percentage of housing built prior to 1940 was associated with 1.8–4.4 times–higher odds of becoming a victim of school violence as well as 12–17 percent–shorter spells prior to first victimization.

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[54] What may be happening is that as students experience a larger number of schools, they are more likely to experience a violent one. Yet, as a newcomer, they may be less likely to be embedded in longer standing interpersonal relationships or gang-related activities that would put them at higher risk for being victimized in school.

[55] In some smaller samples, the frequency of witnessing neighborhood violence is so low and the corresponding paucity of observations in many cells that we view the parameter estimated by our maximum likelihood models to be unreliably large. In such cases, we will not report the point estimate, only the minimum value estimated across the samples.

Witnessing Violence in the Home

Results for our models predicting witnessing violence in the home are presented in Exhibits V-9 and V-10 in comparable formats as above.

Compared with our other analyses, relatively few individual-level or household-level predictors were associated with witnessing violence at home. Children who were the first born within their families experienced 1.4–1.6 times–longer spells before witnessing violence at home compared with siblings who were born later. Lower odds of witnessing violence at home or having longer spells prior to first exposure were associated with living with caregivers who were older, had lower levels of educational attainment, and did not report depressive symptomatology or having resided in households that had greater levels of residential stability. A one-standard-deviation increase in caregiver age was associated with a 84–98 percent reduction in the odds of being a witness as well as 2.0–2.8 times–longer spells before witnessing violence at home. Compared with children whose caregivers did not complete a degree, children living with caregivers holding a high school diploma had 23–28 percent–shorter spells before witnessing violence at home. If they lived with caregivers who held hold postsecondary degrees, the spell before witnessing violence at home was 29–34 percent shorter. Children who moved more frequently during childhood had spells prior to witnessing violence at home that were 22–42 percent longer with each standard deviation–higher increase in the number of childhood moves.

In contrast, several contemporaneous neighborhood indicators related to demographic, social status, resources, safety, and physical context were statistically significant predictors of being a witness to violence in the home. Our logit and AFT models suggest that the ethnic mix of the neighborhood significantly predicted both the odds of witnessing violence in the home and time to first exposure. A one-standard-deviation-higher:

- Percentage of African-American residents was associated with a 65–100 percent reduction in the odds of witnessing violence in the home as well as 24–32 percent–longer spells prior to first exposure.
- Percentage of Latino residents was associated with 49–66 percent–longer spells prior to first exposure to violence in the home.

Two indicators of neighborhood social status—occupational prestige and social vulnerability—also predicted exposure to violence at home, although in opposite directions. A one-standard-deviation-higher occupational prestige scale was associated with 94–98 percent–lower odds of witnessing violence in the home as well as 1.3–2.2 times–longer spells prior to first witnessing of such violence. A similar increase in neighborhood social vulnerability was associated with 88–96 percent–lower odds of witnessing violence in the home as well as 45–95 percent–longer spells prior to witnessing such. This latter surprising result replicates what we observed in our other types of exposures to violence and will be discussed below.

Exhibit V-9. Standardized Logit Models Predicting Witnessing Violence at Home During Childhood

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	OR		SE	OR		SE	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	0.64		(0.46)	0.54		(0.45)	0.24		(0.25)	1.22		(1.30)
Social capital index	1.55		(0.44)	1.50		(0.43)	1.78		(0.70)	1.51		(0.95)
Social problems index	1.94		(0.71)	1.90		(0.71)	2.71	*	(1.34)	1.31		(0.54)
Social vulnerability score	0.12	*	(0.10)	0.05	**	(0.05)	0.04	**	(0.04)	244.12	***	(392.42)
Percent African American residents	0.35	*	(0.15)	0.29	**	(0.13)	0.46		(0.18)	0.00	***	(0.00)
Percent Latino residents	0.29		(0.19)	0.12	**	(0.10)	0.41		(0.28)	0.42		(0.49)
Occupational prestige score	0.06	***	(0.04)	0.02	***	(0.02)	0.04	***	(0.04)	0.27		(0.23)
Percent foreign born residents	0.71		(0.38)	0.59		(0.38)	0.41		(0.27)	0.22		(0.18)
Percent of residents who moved in preceding 12 months	1.21		(0.43)	1.43		(0.59)	0.97		(0.45)	0.37		(0.29)
Resource factor score	2.54	**	(0.87)	2.50	*	(1.02)	3.14	*	(1.41)	0.86		(0.50)
Percent of housing built before 1940	1.46		(0.41)	2.87	*	(1.21)	1.90		(0.68)	1.27		(0.71)
Violent crime rate per 1,000	0.44		(0.24)	0.18	*	(0.15)	0.26		(0.19)	0.43		(0.60)
Property crime rate per 1,000	12.39	***	(7.46)	89.08	***	(75.94)	41.33	***	(43.67)	9.50	*	(8.59)
Child abuse and neglect rate per 1,000	0.70		(0.18)	0.35	**	(0.14)	0.60		(0.18)	0.47		(0.18)
Number of observations	745			495			426			398		
Number of clusters	392			282			243			220		
Log-Likelihood	-112.09			-99.23			-76.89			-32.89		
Chi-square	89.16	***		81.33	***		89.36	***		86.78	***	
Pseudo-R^2	0.51			0.54			0.56			0.61		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Exhibit V-10. Standardized AFT Frailty Models Predicting Timing of Witnessing Violence at Home During Childhood

	Ever in DHA			Currently in DHA			Majority in DHA			Mostly in DHA		
	TmR		SE	TmR		SE	TmR		SE	TmR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)												
Living in neighborhood with negative peers (omitted=no)	1.09		(0.16)	1.29		(0.25)	1.26		(0.19)	1.04		(0.15)
Social capital index	0.97		(0.05)	1.02		(0.07)	0.99		(0.06)	1.01		(0.07)
Social problems index	0.86	*	(0.06)	0.82	*	(0.07)	0.84	*	(0.06)	0.90		(0.06)
Social vulnerability score	1.45	*	(0.24)	1.95	**	(0.41)	1.68	**	(0.29)	0.71		(0.18)
Percent African American residents	1.32	**	(0.11)	1.24	*	(0.13)	1.10		(0.08)	2.72		(1.51)
Percent Latino residents	1.49	**	(0.21)	1.66	**	(0.31)	1.20		(0.16)	1.19		(0.18)
Occupational prestige score	1.80	***	(0.22)	2.18	***	(0.38)	1.55	***	(0.17)	1.36	**	(0.15)
Percent foreign born residents	1.07		(0.13)	1.14		(0.17)	1.18		(0.16)	1.19		(0.13)
Percent of residents who moved in preceding 12 months	0.92		(0.06)	0.90		(0.08)	0.94		(0.07)	1.08		(0.06)
Resource factor score	0.84	*	(0.07)	0.75	**	(0.08)	0.82	*	(0.07)	0.99		(0.07)
Percent of housing built before 1940	0.92		(0.06)	0.82	*	(0.09)	0.94		(0.07)	0.88	*	(0.06)
Violent crime rate per 1,000	1.11		(0.13)	1.12		(0.17)	1.15		(0.15)	1.29		(0.20)
Property crime rate per 1,000	0.69	***	(0.07)	0.64	***	(0.07)	0.64	***	(0.07)	0.99		(0.08)
Child abuse and neglect rate per 1,000	1.02		(0.07)	1.03		(0.07)	1.04		(0.08)	0.96		(0.06)
Number of observations	745			495			426			398		
Number of clusters	392			282			243			220		
Log-Likelihood	-110.78			-128.48			-82.15			-27.17		
Chi-square	384.74	***		345.62	***		366.18	***		363.05	***	

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics. TmR=Time ratio.

* p < 0.05; ** p < 0.01; *** p < 0.001.

The scope and accessibility of neighborhood resources was also a significant predictor of ever witnessing violence at home. A one-standard-deviation–higher resource factor score was associated with 2.5–3.1 times–higher odds of witnessing violence at home as well as a 16–25 percent–shorter time to first witnessing of violence at home.

As with all previous models, the neighborhood safety indicators of property crime rate and social problems index were positively associated with exposure to violence. A standard deviation increase in property crime was associated with at least 12 times–higher odds of being a witness to violence in the home as well as 31–36 percent–shorter spells prior to first witnessing such.[56] A one-standard-deviation-higher social problems index was associated with 16–18 percent–shorter spell prior to first witnessing violence in the home.

Finally, the housing vintage dimension of the physical environment predicted exposure to violence in the home, again echoing a result found in all our models. A one-standard-deviation increase in percentage of housing built prior to 1940 was associated with 12–18 percent–shorter spells prior to witnessing violence at home.

Gender and Ethnic Differences in Neighborhood Effects

Estimated parameters for our models stratified by gender and ethnicity are presented in Appendix C. In our discussion of stratified results, we employ results from our analyses of the "ever in DHA" sample for each of the exposure to violence outcomes. In overview, although there was some heterogeneity in apparent neighborhood effects on exposure to violence, several predictors were robust across strata and alternative aspects of violence. In particular, property crime rates, child abuse and neglect rates, occupational prestige, and pre-1940–vintage housing stock were statistically significant predictors in the aggregate samples and consistently across three or more strata in several outcomes.

Witnessing Neighborhood Violence

The aforementioned aggregate relationships between witnessing neighborhood violence and neighborhood safety (measured in terms of neighborhood property crime rates, social problems index, and child abuse and neglect rates), occupational prestige, and pre-1940–vintage housing stock were statistically significant predictors across at least three of the four strata in our logit models. All groups experienced significantly higher odds (at least 5.3 times) of witnessing neighborhood violence with higher neighborhood property crime rates. However, only female and Latino youth experienced significantly (19–22 percent) shorter spells prior to first exposure. The social problems index predicted 10–20 percent–shorter spells prior to witnessing neighborhood violence for male, female, and Latino youth as well as 2.9–3.2 percent–higher odds of witnessing such violence for Latino and female youth only. Female, Latino, and African-American youth experienced significantly lower odds (between 50 and 72 percent reduction) of witnessing violence with one-standard-deviation-higher child abuse and neglect rates. For all youth, regardless of gender or ethnicity, a one-standard-deviation-higher occupational prestige

[56] In some smaller samples, the frequency of witnessing neighborhood violence is so low and the corresponding paucity of observations in many cells that we view the parameter estimated by our maximum likelihood models to be unreliably large. In such cases, we will not report the point estimate, only the minimum value estimated across the samples.

score was associated with 71– 89 percent–lower odds of as well as 23–29 percent–longer spells prior to witnessing neighborhood violence. Higher fractions of older housing in the neighborhood were related to increased odds of witnessing neighborhood violence by a factor of 1.6 to 3.4.

Other significant associations between neighborhood context and witnessing neighborhood violence that emerged in the aggregate models were almost exclusively produced from relationships emerging from the female and African-American strata. Female youth were less likely to witness neighborhood violence and experience longer spells prior to first exposure if they resided in neighborhoods that had higher fractions of African-American and Latino residents. Only female youth had 66 percent–lower odds of witnessing neighborhood violence if they resided in neighborhoods that had higher levels of social vulnerability. They were more likely to witness neighborhood violence (3.1 times higher) if they lived in neighborhoods that had higher levels of social problems and have 9 percent–shorter spells prior to witnessing such behavior if they resided in neighborhoods with higher levels of resources.

African-American youth were less likely to witness neighborhood violence and experience longer spells prior to exposure if they resided in neighborhoods that had higher fractions of Latino residents (78 percent reduction in odds, 33 percent longer spell). However, they were 1.6 times more likely to witness neighborhood violence if they lived in neighborhoods that had higher levels of neighborhood social capital.

Two other neighborhood indicators emerged as statistically significant predictors of witnessing neighborhood violence for particular strata, even though they were not significant in the aggregate analyses. The presence of negative peers in the neighborhood was associated with substantially higher odds of witnessing neighborhood violence for African-American and male youth (4.1 and 2.8 times, respectively) as well as shortened spells prior to first exposure by 21 percent for African-American youth. Residing in a neighborhood with a one-standard-deviation-higher percentage of neighborhood residents who moved in the previous year was associated with 9 percent shorter spells prior to witnessing neighborhood violence for Latino youth only.

Victim of Neighborhood Violence

The aforementioned aggregate relationships between becoming a victim of neighborhood violence and neighborhood safety (measured in terms of neighborhood property crimes as well as child abuse and neglect rates) were the only statistically significant predictors across three or more of the strata in our logit or AFT models. All groups experienced significantly higher odds (5.1–8.3 times) of becoming a victim of neighborhood violence with rising neighborhood property crime rates; a corresponding reduction of 14–20 percent in the length of the spell prior to victimization was experienced by male, female, and Latino youth in the sample. Significantly lower odds of victimization (39–81 percent) were associated with higher neighborhood child abuse and neglect rates for all groups; however, only female and African-American youth experienced significantly longer spells (24 percent and 13 percent, respectively) prior to victimization.

The aggregate relationships revealed for occupational prestige and the social problems index proved strong predictors only for male and Latino youth. A one-standard-deviation-higher value of occupational prestige was associated with 69–77 percent–lower odds of male and Latino youth, respectively, becoming victims of neighborhood violence as well as 19–20 percent–longer spells prior to victimization for both groups. A one-standard-deviation-higher social problems index was associated with 1.9–2.2 times–higher odds of becoming a victim of neighborhood violence for male and Latino youth, respectively; the corresponding spell prior to victimization was reduced by 11–12 percent for both groups.

Other significant associations between neighborhood context and witnessing neighborhood violence that emerged in the aggregated models were almost exclusively produced from relationships emerging from the male youth stratum. Male youth were less likely (67 percent reduction in odds) to become victims of neighborhood violence if they resided in neighborhoods that had higher fractions of foreign-born residents as well as experience longer (23 percent) spells prior to victimization. They also were less likely to become victims if they resided in neighborhoods that had higher levels of social vulnerability (76 percent reduction in odds) but 1.6 times more likely to become victims if they resided in neighborhoods that had a one-standard-deviation-higher percentage of housing built prior to 1940.

Two other neighborhood indicators emerged as statistically significant predictors of being a victim of neighborhood violence in particular strata, even though they were not significant in the aggregate analyses. Residing in neighborhoods with negative peers was associated with at least 3 times higher odds of becoming a victim of neighborhood violence for male and African-American youth as well as a corresponding 39 percent decrease in the spell prior to victimization for African-American youth.[57] Residing in a neighborhood that had a one-standard-deviation-higher percentage of residents who moved into neighborhood during the previous year was associated with 1.7 percent–higher odds of becoming a victim for African-American youth only.

Witnessing School Violence

As in the case of witnessing neighborhood violence, the aggregate relationships between witnessing school violence and neighborhood property crimes, social problems, child abuse and neglect rates, and occupational prestige were statistically significant predictors across at least three of the four strata in our logit models. All groups experienced significantly higher odds (2.6–3.7 times) of witnessing school violence with higher neighborhood property crime rates. Female and Latino youth experienced significantly (10–11 percent) shorter spells prior to first exposure. Male, Latino, and African-American youth experienced 6–9 percent shorter spells prior to witnessing school violence, with a one-standard-deviation increase in the social problems score; however, the corresponding 1.9 times increase in the odds ratio was significant only for female and African-American youth. Female, Latino, and African-American youth experienced significantly lower odds (between 38 and 62 percent reduction) of witnessing school violence, with a one-standard-deviation-higher child abuse and neglect rate. For male, female, and African-American youth, a one-standard-deviation–higher occupational prestige score was

[57] In some smaller samples, the frequency of witnessing neighborhood violence is so low and the corresponding paucity of observations in many cells that we view the parameter estimated by our maximum likelihood models to be unreliably large. In such cases, we will not report the point estimate, only the minimum value estimated across the samples.

associated with 55–75 percent–lower odds of witnessing school violence; however the corresponding 15 percent increase in the spell prior to witnessing such violence was significant only for African-American youth.

The strong relationships in the aggregate models between witnessing school violence and immigrant composition, violent crime rates, and age of housing were manifested only in one or two strata. Residing in a neighborhood with a one-standard-deviation-higher:

- Percentage of foreign-born residents was associated with 47 percent–lower odds of witnessing school violence for male youth only.
- Violent crime rate was associated with 56 percent and 63 percent lower odds of witnessing school violence for male youth and African-American youth, respectively, as well as 13 percent–longer spells prior to witnessing school violence for African-American youth only.
- Percentage of housing stock built prior to 1940 was associated with 1.5 times– and 2.6 times–higher odds of witnessing school violence for male and African-American youth, respectively, as well as 8 percent–shorter spells prior to witnessing school violence for African-American youth only.

Three other neighborhood indicators emerged as statistically significant predictors of witnessing school violence for particular strata, even though they were not significant in the aggregate analyses. Residing in a neighborhood with a one-standard-deviation-higher:

- Percentage of African-American residents was associated with 18 percent–longer spells prior to witnessing school violence for Latino youth.
- Resource factor score was associated with an 8 percent–shorter spell prior to witnessing school violence for African-American youth.
- Social capital index score was associated with 77 percent–higher odds of witnessing school violence for female youth.

Victim of School Violence

The neighborhood property crime rate was the only statistically significant predictor from the aggregate model that also proved so across all four strata in our logit models. All groups experienced significantly higher odds (2.1–4.3 times) of becoming victims of school violence with rising neighborhood property crime rates. However, the corresponding 11 percent and 17 percent decrease in spells prior to school victimization were significant only for female and Latino youth, respectively.

Neighborhood occupational prestige was statistically significant in three of the strata. A one-standard-deviation increase in occupational prestige was associated with 83–95 percent–lower odds of school victimization as well as 23–50 percent–longer spells prior to victimization for male, female, and Latino youth.

Three neighborhood indicators that were strong predictors of school violence victimization in the aggregate models proved to be so in only one or two strata.[58] Residing in a neighborhood that had a one-standard-deviation-higher:

- Social problems index was associated with 1.8–3.2 times–higher odds of becoming a victim of school violence for male and Latino youth, respectively, as well as a 16 percent–shorter spell prior to becoming a victim of school violence for Latino youth.
- Percentage of housing stock built before 1940 was associated 2.6 times– and 2.4 times–higher odds of becoming a victim and 12–17 percent–shorter spells prior to school victimization for male and African-American youth, respectively.
- Resource factor score was associated with a 15 percent–longer spell prior to becoming a victim of school violence for female youth.

Four other significant associations emerged as statistically significant predictors of becoming a victim of school violence in particular strata, though not in the aggregate: peers, residential stability, rates of violent crime, and rates of child abuse and neglect. The presence of negative peers in the neighborhood was associated with 4.5 times–higher odds of female youth becoming victims of school violence as well as a 31 percent decrease in the spell prior to victimization. Residing in a neighborhood with a one-standard-deviation-higher:

- Percentage of residents moving in the previous year was associated with 2.6 times–higher odds of female youth becoming a victim of school violence.
- Violent crime rate was associated with 22 percent–longer spells prior to becoming a victim of school violence for African-American youth.
- Child abuse and neglect rate was associated with 19 percent–longer spells prior to becoming a victim of school violence for African-American youth.

Witnessing Violence at Home

The aforementioned aggregate relationships between ever witnessing violence at home and neighborhood property crime rates and percentage of African-American residents were the only predictors that proved statistically significant across all strata. All groups experienced significantly higher odds (at least 5.8 times) of witnessing violence at home as well as 21–65 percent–shorter spells prior to first witnessing such violence with a standard-deviation-higher neighborhood property crime rate. A one-standard-deviation increase in the percentage of African-American residents in the neighborhood was associated with a lengthened spell prior to witnessing violence at home by a factor of 1.3 to 2.7 for all strata of youth analyzed.

Other indicators of occupational and ethnic composition of neighborhoods that were strong predictors in the aggregate also proved so across several strata. Residence in a standard-deviation-more prestigious neighborhood was associated with 95–100 percent–lower odds of witnessing violence at home for male and female youth. Such a difference was also associated with 1.7–6.5 times–longer spells for male, female, and African-American youth.[59] Further, a

[58] Moreover, neighborhood social vulnerability, which was significant in the aggregate models, was not a statistically significant predictor of school victimization in the stratified models.
[59] In some smaller samples, the frequency of witnessing neighborhood violence is so low and the corresponding paucity of observations in many cells that we view the parameter estimated by our maximum likelihood models to

corresponding increase in the percentage of Latino residents was associated with 79–91 percent–lower odds of ever becoming a witness and spells prior to witnessing violence at home that were lengthened by a factor of at least 1.5 for male and female youth.

All other neighborhood indicators that were strong predictors in the aggregate models proved to be so only in selected strata. Residing in a neighborhood with a one-standard-deviation-higher:

- Social vulnerability score was associated with a 33 percent–shorter spell prior to witnessing violence at home for Latino youth but a 42 percent–longer spell for female youth.
- Social problems index was associated with 18–23 percent–shorter spells prior to witnessing violence at home for male and Latino youth.
- Resource factor score was associated with 4.4 times–higher odds of ever witnessing violence at home for female youth and a 25 percent–shorter spell prior to witnessing violence at home for African-American youth.
- Percentage of housing stock built prior to 1940 was associated with 11.8 times–higher odds of ever witnessing violence at home for female youth and 27–38 percent–shorter spells prior to witnessing violence at home for female and African-American youth, respectively.

Two other associations emerged as statistically significant predictors of witnessing violence at home in particular strata, though they were not so in the aggregate models. Residing in a neighborhood with a one-standard-deviation-higher:

- Percentage of foreign-born residents was associated with 64 percent–shorter spell prior to witnessing violence at home for African-American youth.
- Violent crime rate was associated with 85 percent–lower odds of ever witnessing violence at home for female youth as well as 1.4–2.0 times–longer spells prior to witnessing violence at home for Latino and African-American youth.

Nonlinear Neighborhood Effects

Results for our nonlinear investigations employing spline regressions are presented in Appendix D. Several noteworthy nonlinear relationships between neighborhood indicators and exposure to violence outcomes were uncovered. Here, we emphasize statistically significant nonlinear findings that were generally robust across models and various outcomes related to violence.

First, several context measures exhibited strong associations only after a minimum threshold value had been exceeded. There was strong evidence that the occupational prestige of the neighborhood exhibited such a threshold.[60] In neighborhoods that had above-mean values of prestige, a standard-deviation increase in prestige was associated with an 89–95 percent reduction in the odds of being exposed to violence, but no relationship was manifested for

be unreliably large. In such cases, we did not report the point estimate; instead, we reported the minimum value estimated across the samples.

[60] This outcome was robust across both logit and hazard/survival models.

prestige values in the below-mean range. This threshold relationship manifested itself in three measures of exposure: witnessing and being victimized by violence in the neighborhood and witnessing violence at school. Our index of social problems showed the opposite threshold. In neighborhoods that had above-mean values of this index, a standard-deviation increase in problems was associated with a 335 percent increase in the odds of witnessing violence at school. Finally, our measure of neighborhood social vulnerability exhibited a threshold but in an unexpected fashion. In neighborhoods that had above-mean values of the social vulnerability score, a standard-deviation increase in this index is associated with a 95–99 percent decrease in the odds of being victimized by violence in the neighborhood or witnessing violence at home, respectively.

Second, three neighborhood indicators—violent crime rates, percentage of households moving in during the prior year, and percentage of Latino residents—demonstrated a V-shaped relationship, with several measures of exposure to violence. A standard-deviation increase in the rate of violent crime in a neighborhood that remains below (above) the mean of such rates would be expected to manifest an:

- 98 percent decrease (72 percent increase) in the odds of witnessing violence in the neighborhood.
- 99 percent decrease (73 percent increase) in the odds of being victimized by violence in the neighborhood.
- 99 percent decrease (62 percent increase) in the odds of witnessing violence in the home.
- 93 percent decrease (6 percent increase) in the odds of witnessing violence at school.

A standard-deviation increase in the percentage of households moving in during the prior year in a neighborhood that remains below (above) the mean of such percentage would be expected to manifest an:[61]

- 89 percent decrease (475 percent increase) in the odds of witnessing violence at home.
- 72 percent decrease (51 percent increase) in the odds of witnessing violence in the neighborhood.

A standard-deviation increase in the percentage of Latino residents in a neighborhood that remains below (above) the mean of such percentage would be expected to manifest a:

- 78 percent decrease (183 percent increase) in the odds of being victimized by violence in the neighborhood.
- 74 percent decrease (22 percent increase) in the odds of witnessing violence at school.
- 92 percent decrease (39 percent decrease; diminished marginal negative effect) in the odds of witnessing violence in the neighborhood.

[61] Oddly, for the victimization in school model, the only nonlinear relationship observed exhibited an inverse V-shaped relationship for neighborhood turnover rates.

Discussion

In overview, the results reported above clearly show that many aspects of neighborhood context are statistically and substantively important predictors of our exposure to violence outcomes. Below, we organize the discussion around thematic categories of neighborhood context.

Neighborhood Safety

In understanding impacts on our exposure to violence outcomes, our results suggest that "neighborhood safety" needs to be viewed as a multidimensional construct, components of which have differential impacts. Property crime rates and our neighborhood social problems index (at least past a threshold) are generally associated with higher odds of (and shorter spell before) witnessing or being a victim of crime in neighborhood, school, and home settings, whereas violent crime and child abuse and neglect rates are generally associated with the opposite. More specifically, living in neighborhoods that have higher property crime rates is powerfully predictive for all or most strata of our sample children of greater chances of witnessing violence in the neighborhood, at school, or at home during childhood and becoming a victim of neighborhood and school violence. Further, these residential contexts also are predictive of shorter spells prior to first witnessing or experiencing violent behavior. A similar pattern manifests itself in the case of our social problems index, though slightly less robustly across all strata and, in the case of witnessing violence at school, only past a threshold.

In contrast, living in a neighborhood that has higher violent crime rates is associated with lower odds of exposure to neighborhood and school violence for the sample overall and for African-American youth most powerfully, although this relationship only occurs up to a point until a threshold is reached. Such a context is also associated with lower odds of witnessing violence at home for male and female youth and longer spells to first witnessing of such violence for Latino and African-American youth. Residence in neighborhoods that have higher child abuse and neglect rates is also inversely related to the chances that low-income children were exposed to neighborhood or school violence as witnesses or victims, particularly African-American children.

The observed positive relationships between property crime and social problems index (which includes three components related to violent crime and one related to property crime) and our exposure to violence outcomes are expected. It is conventional to posit a direct link between more crime in the distal environment and increasing opportunities for children to not only see these crimes but also to be victimized by them. More surprising superficially are the results for rates of violent crime and child abuse and neglect. Further reflection reveals, however, plausible explanations.

To interpret the violent crime results correctly, one must recall that in the *Denver Child Study* violent crime is measured at the Piton neighborhood scale (roughly two census tracts in size), but our social problems index is measured for the neighborhood as perceived by the caregiver survey respondent, which we presume is much smaller in size. Thus, the current findings should be interpreted as consequences of variations in officially reported violent crime at a larger spatial scale while *holding constant perceived violent crime at the smaller scale surrounding the youth's home.*

In this context, we believe that a plausible explanation is that fear of violence in the wider geographic context induces more caregiver or self-imposed restrictions on children's movements outside of the home, immediate environs, or school. The consequence of this change in youths' routine activity spaces may be reduced chances of their being exposed to violence (and having their own behavioral problems, which may expose them to violence, as we will demonstrate in Chapter VI). The nonlinear, V-shaped relationship evinced in the case of violent crime clearly suggests, however, that there are limits to the efficacy of these defensive, compensatory responses to violence in the wider neighborhood. Past the mean level of violent crime rates, the relationship turns positive with exposure to violence, as we would expect a priori.

Our findings about the inverse relationship between neighborhood child abuse and neglect rates and exposure to violence are more challenging to explain. We think that the explanation lies with the likelihood of caregivers *reporting* that their children have been exposed to violence, given a certain degree of "objectively measured" exposure. We made a similar argument in Chapter IV in the context of the observed relationship between higher neighborhood abuse and neglect rates and fewer reported diagnoses of child health problems. Neighborhoods in which children are often treated poorly by their caregivers are unlikely to provide a normative context where children's exposure to violence is treated with much notice or concern; thus, caregivers may underreport such. For example, high abuse and neglect rates may reflect extremely tolerant standards of what constitutes "violence."

Neighborhood Ethnic and Nativity Composition

We have identified several important associations between the foreign-born, Latino, and African-American composition of the neighborhood's population and children's exposure to violence outcomes. Higher percentages of foreign-born residents are associated with (1) lower odds of being a victim of neighborhood violence in the full sample, especially for males; (2) lower odds of males witnessing neighborhood violence; and (3) lower odds of African-American youth witnessing violence in the home. On the one hand, we think that these results could be the result of limitations and adaptations of youths' activities and the spaces in which they occur that are collectively enforced by immigrants' cultural traditions and norms. For example, immigrant communities may be more likely to share in communal responsibilities, accompanying children to and from school and monitoring them when they play outside. These kinds of adaptations and supplemental resources invested in youths' routine activity spaces might make them less vulnerable to violence, though our evidence suggests perhaps less strongly so for female youth. On the other hand, these results may reflect immigrant communities' power to enforce cultural norms related to the definition of violence or fear of stigmatization that might make all caregivers residing there less likely to report their children's exposure to violence to our interviewers (Warner and Rountree, 1997).

Higher percentages of Latino residents also are associated with lower odds of witnessing neighborhood violence (for the full sample) and lower odds of and shorter spells prior to witnessing violence at home (for males and females). Analogous arguments to those above related to immigrant communities can again be forwarded here as potential explanations. Recall, however, that this variable also demonstrates a V-shaped relationship (that is, with being victimized by violence in the neighborhood and witnessing violence in schools), which cannot be easily explained by underreporting. Perhaps what is occurring in neighborhoods that have above-average concentrations of Latinos is that the aforementioned protective behaviors are being overwhelmed by associated upsurges in gang- and drug-related activities.

Higher percentages of African-American residents predict lower odds of and longer spells prior to witnessing violence in the home for the full sample (especially strongly for females) and witnessing violence at school for Latino youth. We think these results are explained by the following (not mutually exclusive) factors related to whether youth reveal their exposures to their caregivers or caregivers reveal exposures to the interviewers:

- Collective norms and values related to what standards define "violent behavior" within the contexts of neighborhood, school, and home[62] and how such behaviors are shared with others outside of the community (perhaps related to oppositional cultural attributes held by some African-American communities).
- Collective norms and values related to youths' appropriate help-seeking behaviors and reporting their exposure to violence to their caregivers.
- Local information networks offering limited information about the risks to children associated with exposure to violence and appropriate caregiver responses to potential cases of their children's exposure to violence.

Neighborhood Social Status

Two indices related to neighborhood social status often prove predictive of children's exposure to violence: occupational prestige and neighborhood social vulnerability. Residing in a higher prestige neighborhood is associated with a reduced likelihood of and longer spells before witnessing or experiencing childhood violence in the neighborhood, at school, or at home for all youth (but especially for African-American youth). For several of these relationships, a distinct threshold was observed. These results have strong intuitive appeal from the perspective of local information networks, norms, and role models related to parents encouraging safer environments for their children. Higher prestige neighbors might also provide safer environments in and around their homes that not only redound to the benefit of their own children but also neighboring children with whom their children associate. We thus are persuaded that the occupational prestige result provides evidence of an unambiguously protective neighborhood effect.

The findings for neighborhood social vulnerability were less expected, however, given the conventionally observed inverse relationship between similarly conceived "neighborhood disadvantage" variables and exposure to violence outcomes (see, for example, the review in Leventhal and Brooks-Gunn, 2000). As we explained in our previous chapter on health outcomes, prior research provides little precedent here, because their measure of "disadvantaged" neighborhoods is constructed differently, and we control for many other aspects of neighborhood. Nevertheless, it is not obvious why our social vulnerability indicator should be associated with decreased likelihoods of witnessing neighborhood violence (especially female youth), being a victim of neighborhood or school violence (particularly male youth), and witnessing violence at home (only Latino youth). We find it implausible that such neighborhoods constitute intrinsically safer environments in which children have lower exposure to violence in

[62] Explanations based on collective socialization are especially persuasive given the observed threshold relationship for percentage of foreign-born residents.

all three settings. Instead, we think that the relationship is founded on altering the likelihood that safety issues generate identification and reporting of the same to our interviewers. In other words, we think that our social vulnerability indicator is reflecting underreporting of exposure to violence, given all other contextual variables we have controlled in our models. Several possible (not mutually exclusive) alternative explanations are that more vulnerable, lower status neighborhoods have:

- Collective norms and values that establish higher standards defining “violent behavior”; if such norms suggest that “boys will be boys” in terms of violent behaviors, for example, it could explain why the relationships are especially strong for male youth.
- Collective norms and values that establish the boundaries within which youth and caregivers operate in the reporting of exposure to violence—that is, norms that sanction “airing the family’s dirty linen” to outsiders.
- Fear of stigmatization or retaliation for exposing violent behaviors to outsiders, including interviewers.

Neighborhood Physical Environment

We also found intriguing results related to the consistently positive relationship between the age of a neighborhood’s housing stock and exposure to violence in several dimensions. Higher percentages of pre-1940–vintage homes are associated with higher odds of youth witnessing or experiencing violence in their neighborhoods, schools, and homes. This association was especially strong for African Americans and their increased risk of victimization at school. We believe that these relationships emerged because of the street configurations and land uses distinguishing older Denver neighborhoods as well as the characteristics of older dwellings themselves—that is, greater incidences of vacant, abandoned, or poorly maintained properties. Neglected, vacant, or abandoned properties may provide visible signs of social disorder that symbolize withering of collective efficacy. In extreme case, such properties may become centers of gang and drug activities within the neighborhood. All such forces likely generate more opportunities for exposure to witnessing or being victimized (Raleigh and Galster, forthcoming). Further, the walkable, mixed-use nature of such traditionally designed neighborhoods may enhance opportunities for “street interactions” with peers (thereby maximizing the potential for contagious social processes) while simultaneously degrading their opportunities to be monitored and supervised. Ancillary consequences, as we show in Chapters IV and VI, are poorer physical and mental health as well as heightened engagement in risky behaviors.

Geographic Selection Bias Revisited

In Chapter III, we argued that the estimated value of the “true” neighborhood effect likely lies within the range of estimates garnered from our various analysis samples, which consider different potential types of geographic selection postinitial assignment by DHA. For the exposure to violence outcomes reported in Exhibits V-1 to V-10, a number of the estimated neighborhood indicator parameters were substantially different between the four analysis samples, so our likely “true” estimate is less circumscribed than we would like. One likely reason for this variation is that some of our analysis samples are small and the number of observed outcomes even smaller, producing sometimes exaggerated point estimates from some of our maximum likelihood estimators. We must also acknowledge the possibility, however, that there may be unmeasured differences between the caregivers of those who raised their children in DHA housing for most of their childhood until time of violence exposure and those who did not.[63] We of course do not know whether these unmeasured differences operated to bias the observed neighborhood effects upward or downward, and there is no general cross-sample pattern to the size of estimated parameters.

Conclusion

Many aspects of neighborhood context are statistically and substantively important predictors of exposure to violence for low-income Latino and African-American children. Aspects of the neighborhood's safety, ethnic and nativity mix, social status, and housing stock all provide substantial predictive power for children's exposure to violence outcomes in multiple domains. Exposure to violence in the neighborhood, at school, or at home is generally less likely in neighborhoods that have lower rates of property crime, social problems, and pre-1940–vintage housing stock and higher rates of violent crime (up to a point), child abuse and neglect rates, occupational prestige, and social vulnerability. We believe that relationships observed for child abuse rates and social vulnerability are likely reflecting neighborhood effects that yield systematic underreporting. Higher percentages of immigrants, Latinos, and African Americans in the neighborhood are also linked to lower odds of witnessing violence, although the effects of neighborhood composition depend on the outcome in question and may again be more suggestive of forces associated with underreporting of such violence. The magnitudes of most of these apparent influences (especially property crime), however, appear to be only modestly contingent on the gender and ethnicity of the youth, although for some aspects of context cross-strata, differences are substantial. Nonlinear neighborhood effects appeared often; several indicators exhibited minimum thresholds, and others demonstrated V-shaped relationships.

[63] We remind the reader that those who left DHA comprise a heterogeneous group: both the economically successful and those who may have been evicted for lease violations.

VI. RISKY BEHAVIOR OUTCOMES

Introduction

In this chapter, we consider a variety of outcomes for low-income, minority youth in our *Denver Child Study* that conventionally are viewed as risky behaviors. We analyze whether they smoked cigarettes, drank alcohol, smoked marijuana, ran away from home, or engaged in aggressive or violent behavior during childhood. For all of these outcomes, we find evidence suggesting strong neighborhood effects emanating from several dimensions of the residential environment, especially those related to neighborhood safety, social status, ethnic composition, and physical environment.

In the *Denver Child Study*, caregivers were asked about a variety of risky behaviors affecting their children who were eight years of age or older at the time of the survey. The questions were phrased, "Before turning 18, has your child ever ____? If so, how old was your child when this first occurred?" The dependent variables of interest here are whether a child had engaged in one of five behaviors before 18 years of age that our survey described as smoked cigarettes; drunk alcohol; smoked marijuana, or "pot"; run away from home; and used aggressive or violent behavior such as hitting, slapping, or punching. There are between 733 and 810 children in our behavioral analysis samples with complete information.[64] The incidence and mean age of onset[65] of the above behaviors were as follows:

- 13.2 percent smoked cigarettes starting at 15.5 years of age.
- 11.2 percent drank alcohol starting at 16.1 years of age.
- 10.5 percent smoked marijuana starting at 15.7 years of age.
- 6.9 percent ran away starting at 14.8 years of age.
- 18.4 percent used aggressive or violent behavior starting at 12.0 years of age.

We recognize the potential shortcomings of these behavioral indicators. First, they are subject to recall error by the caregiver survey respondent, though we intentionally chose outcomes for which this likely would be minimal. Second, they are based on caregiver perceptions of the behaviors. Although caregivers may have first-hand knowledge or child reports as the basis of these perceptions, we note that their perceptions may not always be accurate, because children may deliberately hide some of these behaviors from them. Third, they are subject to caregivers' willingness to reveal socially sensitive behaviors of their children to the interviewer. Although all three concerns likely create considerable noise in our dependent variables, we assume that there is no systematic pattern in these errors related to neighborhood indicators.

Because the occurrence of all our youth behavioral outcomes can be expressed as dichotomous measures, we employ logit models with robust clustered standard errors for parameter

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[64] The descriptive statistics here apply to the "ever in DHA" group; sample sizes vary depending on the outcome; see Exhibits VI-1 to VI-10 for details of sample sizes by outcome and alternative analysis samples.

[65] The age of onset could have been earlier than eight years of age, even though the survey only asked the question for children eight years of age and older.

estimation.[66] We also estimate Cox proportional hazard models employing robust standard errors[67] for all behaviors except running away from home. For that specific outcome, we estimate accelerated failure time (AFT) frailty models for time to onset of running away from home.[68] As with the outcomes reported in earlier chapters, we estimate these models for the previously defined “ever in DHA,” “currently in DHA,” and “mostly in DHA” samples to assess the robustness of our results and bound potential degrees of geographic selection bias following Denver, Colorado, Housing Authority (DHA) assignment.

All logistic, hazard, and AFT models use the same neighborhood indicators and core covariates common to all our analyses in this report. Our behavioral outcome analyses add one covariate: whether the child reached puberty earlier than normal (the reference category is *puberty on time or late reaching*). Ten percent of our sample did so.

Estimated Neighborhood Effects on Behavioral Outcomes

The exhibits present nondichotomous predictor variables that are normalized to aid cross-variable comparability of coefficients. As before, we consider only those results that are statistically significant in two or more of the analysis samples for the given model type. Typically, the logistic regression, Cox proportional hazard, and AFT frailty models provided reinforcing results, so they will be presented concurrently. Ranges of parameter estimates reported below reflect the variation across the three analysis samples. We defer interpreting the estimates until later in this chapter so that we can provide a more holistic discussion, especially when it comes to explaining unexpected results.

Smoking Cigarettes

Results for our models of smoking are presented in Exhibits VI-1 and VI-2. The first shows (for each of three alternative analysis samples) clustered robust standard error logit model results for ever having smoked before 18 years of age; the second shows the corresponding Cox robust standard error hazard models for the timing of first instance of this behavior.

The models generally revealed few consistently significant individual-level or household-level predictors of smoking. Youths who had more siblings had a 36–42 percent–lower hazard of smoking per standard-deviation increase in siblings. Youths whose caregivers were one standard deviation older exhibited similar reductions of 34–43 percent in their hazards of smoking.

[66] Because our multilevel, mixed-effects models either did not converge or did not yield plausible point estimates because of sparse cell sizes in some samples for some outcomes, we report results from our logit models with clustered robust standard errors. Clustered standard errors are based on multiple siblings within the same household.
[67] For each hazard model, we used the global chi-square test to determine whether the proportionality assumption of the Cox model was violated; except for running away from home, this assumption was never violated in the other behavioral analyses.
[68] The proportionality assumption of the Cox model was violated in our analyses predicting running away from home. Therefore, we employed AFT frailty models to account for clustering with families.

Exhibit VI-1. Standardized Logit Models Predicting Childhood Onset of Smoking

	Ever in DHA			Currently in DHA			Mostly in DHA		
	OR		**SE**	**OR**		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of onset unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	1.20		(0.46)	1.20		(0.52)	1.32		(0.69)
Social capital index	0.73	*	(0.11)	0.76		(0.13)	1.17		(0.27)
Social problems index	1.54	*	(0.30)	1.33		(0.32)	1.78		(0.57)
Social vulnerability score	1.16		(0.54)	0.79		(0.41)	0.99		(0.72)
Percent African American residents	1.15		(0.25)	1.05		(0.23)	0.97		(0.33)
Percent Latino residents	0.74		(0.32)	0.84		(0.42)	1.06		(0.70)
Occupational prestige score	0.69		(0.21)	0.64		(0.22)	1.15		(0.56)
Percent foreign born residents	0.89		(0.28)	0.84		(0.31)	1.04		(0.52)
Living in neighborhood with hospitals and clinics (omitted=no)	0.92		(0.42)	0.83		(0.42)	0.57		(0.37)
Resource factor score	1.02		(0.24)	0.89		(0.26)	1.82	*	(0.52)
Percent of housing built before 1940	0.90		(0.19)	0.99		(0.23)	0.82		(0.26)
Violent crime rate per 1,000	0.43	*	(0.16)	0.49		(0.22)	0.60		(0.36)
Property crime rate per 1,000	3.12	***	(0.72)	3.96	***	(1.05)	2.67	***	(0.74)
Child abuse and neglect rate per 1,000	0.69		(0.13)	0.73		(0.15)	0.74		(0.26)
Respiratory hazards index	0.94		(0.16)	0.91		(0.18)	0.62		(0.19)
Number of observations	760			590			465		
Number of clusters	402			328			261		
Log-Likelihood	-237.17			-187.72			-119.35		
Chi-square	88.26	***		73.87	***		64.44	***	
Pseudo-R^2	0.20			0.22			0.21		
Notes:									
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.									
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.									

Exhibit VI-2. Standardized Cox Models Predicting Hazard of Smoking During Childhood

	Ever in DHA			Currently in DHA			Mostly in DHA		
	Hazard		**SE**	**Hazard**		**SE**	**Hazard**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of onset unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	1.17		(0.35)	1.11		(0.36)	1.53		(0.80)
Social capital index	0.84		(0.11)	0.92		(0.13)	1.09		(0.23)
Social problems index	1.51	**	(0.24)	1.35		(0.26)	1.46		(0.43)
Social vulnerability score	1.13		(0.37)	0.97		(0.36)	1.06		(0.59)
Percent African American residents	1.18		(0.21)	1.18		(0.21)	0.86		(0.28)
Percent Latino residents	0.81		(0.29)	0.99		(0.40)	0.81		(0.45)
Occupational prestige score	1.12		(0.28)	1.06		(0.33)	1.23		(0.46)
Percent foreign born residents	1.20		(0.31)	1.22		(0.32)	1.39		(0.54)
Living in neighborhood with hospitals and clinics (omitted=no)	0.99		(0.39)	0.80		(0.34)	0.50		(0.30)
Resource factor score	1.05		(0.23)	1.06		(0.25)	1.57		(0.47)
Percent of housing built before 1940	0.79		(0.13)	0.84		(0.15)	0.81		(0.21)
Violent crime rate per 1,000	0.84		(0.22)	0.82		(0.26)	0.83		(0.39)
Property crime rate per 1,000	1.60	**	(0.27)	1.72	*	(0.38)	1.62	*	(0.36)
Child abuse and neglect rate per 1,000	1.00		(0.13)	1.08		(0.16)	1.26		(0.40)
Respiratory hazards index	0.96		(0.12)	0.98		(0.12)	0.67		(0.16)
Number of observations	760			590			465		
Number of clusters	402			328			261		
Log-Likelihood	-545.33			-429.88			-222.08		
Chi-square	101.00	***		109.10	***		62.24	***	
Global PH Chi-square	35.34			36.89			36.73		
Notes:									
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.									
* p < 0.05; ** p < 0.01; *** p < 0.001.									

Only one neighborhood indicator related to safety proved a consistently statistically significant predictor of smoking across samples.[69] A one-standard-deviation-higher neighborhood property crime rate was associated with a 60–72 percent–greater hazard of smoking and 167–296 percent–greater odds of ever having smoked before 18 years of age.[70]

Drinking Alcohol

Results for our models of underage drinking are presented in Exhibits VI-3 and VI-4. The first shows (for each of three alternative analysis samples) clustered robust standard error logit model[71] results for ever having drunk alcohol before 18 years of age; the second shows the corresponding Cox robust standard error hazard models for the timing of this behavior. Normalized versions of all continuous variables are employed.

Examination of these exhibits reveals once again that only caregiver age and depressive symptomatology demonstrated explanatory power among the control variables.[72] Youths whose caregivers were one standard deviation older exhibited reductions in the range of 51–78 percent in their hazards of drinking. Caregivers who self-reported depressive symptoms at the time of the interview had 281–351 percent–higher odds of saying their child drank while underage.

As in the case of smoking, alternative aspects of neighborhood safety exhibit distinct relationships with youth drinking behavior, with property crime having a positive association with drinking but violent crime and abuse rates having negative associations. A one-standard-deviation-higher neighborhood:

- Property crime rate was associated with at least 124 percent–greater odds and 35–29 percent–greater hazard of ever drinking before 18 years of age.
- Violent crime rate was associated with 81–99 percent–lower odds of ever drinking before 18 years of age and 68–75 percent reductions in the hazard of doing so.
- Child abuse and neglect rate was associated with 36–90 percent lower odds of ever drinking before 18 years of age.

Superior social status dimensions of neighborhood context also proved predictive of lower likelihoods of drinking. A one-standard-deviation-higher neighborhood social vulnerability score was associated with 174–436 percent–greater odds of ever drinking before 18 years of age. Our neighborhood occupational prestige score exhibited the opposite association, with the corresponding range of impact being 62–94 percent–lower odds of underage drinking.

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[69] Note that a higher social problems index was associated with a greater hazard of smoking but only in the “ever in DHA” sample.
[70] These estimated odds ratios were for the logit model with clustered robust standard errors. In this case, we deem these estimates more reliable than those produced by the xtmelogit model, which were the orders of magnitude we deemed suspicious in the smaller samples.
[71] We report logit results, because the xtmelogit model did not converge.
[72] Having siblings who drank reduced the hazard of drinking but only in the “ever in DHA” sample.

Exhibit VI-3. Standardized Logit Models Predicting Childhood Onset of Alcohol Consumption

	Ever in DHA			Currently in DHA			Mostly in DHA		
	OR		SE	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of onset unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	0.93		(0.42)	0.90		(0.56)	1.36		(1.02)
Social capital index	0.71	*	(0.12)	0.96		(0.28)	0.96		(0.24)
Social problems index	1.31		(0.32)	1.30		(0.44)	1.15		(0.43)
Social vulnerability score	2.74	*	(1.31)	5.36	*	(4.45)	2.03		(1.29)
Percent African American residents	0.62		(0.16)	0.42		(0.20)	0.68		(0.32)
Percent Latino residents	0.44		(0.20)	0.68		(0.52)	0.67		(0.48)
Occupational prestige score	0.38	**	(0.12)	0.06	***	(0.04)	1.02		(0.48)
Percent foreign born residents	0.89		(0.30)	0.24	*	(0.16)	1.09		(0.60)
Living in neighborhood with hospitals and clinics (omitted=no)	0.72		(0.34)	1.41		(0.91)	0.24		(0.19)
Resource factor score	0.93		(0.28)	0.43	*	(0.18)	1.26		(0.61)
Percent of housing built before 1940	1.40		(0.30)	2.17	*	(0.71)	0.94		(0.37)
Violent crime rate per 1,000	0.19	***	(0.09)	0.01	***	(0.01)	0.29		(0.20)
Property crime rate per 1,000	2.24	**	(0.58)	62.69	***	(44.36)	3.30	**	(1.22)
Child abuse and neglect rate per 1,000	0.64	*	(0.13)	0.10	***	(0.05)	0.73		(0.19)
Respiratory hazards index	0.85		(0.14)	0.97		(0.37)	0.59	*	(0.14)
Number of observations	733			443			465		
Number of clusters	395			270			253		
Log-Likelihood	-201.24			-85.79			-85.86		
Chi-square	80.23	***		147.70	***		127.60	***	
Pseudo-R^2	0.22			0.55			0.29		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Exhibit VI-4. Standardized Cox Models Predicting Hazard of Alcohol Consumption During Childhood

	Ever in DHA			Currently in DHA			Mostly in DHA		
	Hazard		SE	Hazard		SE	Hazard		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of onset unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	1.13		(0.40)	1.81		(0.72)	1.14		(0.93)
Social capital index	0.96		(0.14)	0.94		(0.16)	1.19		(0.33)
Social problems index	1.23		(0.27)	0.92		(0.22)	0.83		(0.27)
Social vulnerability score	1.61		(0.59)	0.93		(0.55)	1.82		(1.19)
Percent African American residents	0.67		(0.14)	0.57	*	(0.16)	0.73		(0.37)
Percent Latino residents	0.55		(0.20)	0.92		(0.36)	0.62		(0.43)
Occupational prestige score	0.58		(0.17)	0.29	*	(0.12)	1.11		(0.53)
Percent foreign born residents	1.05		(0.30)	0.49	*	(0.17)	1.66		(0.95)
Living in neighborhood with hospitals and clinics (omitted=no)	0.63		(0.23)	0.72		(0.22)	0.23		(0.18)
Resource factor score	0.96		(0.24)	1.21		(0.31)	1.17		(0.52)
Percent of housing built before 1940	1.22		(0.22)	1.12		(0.25)	0.84		(0.29)
Violent crime rate per 1,000	0.48		(0.16)	0.25	*	(0.15)	0.32	*	(0.18)
Property crime rate per 1,000	1.35		(0.32)	1.91	**	(0.48)	3.09	*	(1.59)
Child abuse and neglect rate per 1,000	1.03		(0.14)	1.07		(0.20)	1.22		(0.34)
Respiratory hazards index	0.89		(0.11)	1.08		(0.15)	0.65	*	(0.13)
Number of observations	733			443			465		
Number of clusters	395			270			253		
Log-Likelihood	-421.09			-273.20			-147.26		
Chi-square	161.53	***		176.76	***		140.68	***	
Global PH Chi-square	46.74			48.90			46.74		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* p < 0.05; ** p < 0.01; *** p < 0.001.

Smoking Marijuana

Results for our models of marijuana use are presented in Exhibits VI-5 and VI-6. The first shows (for each of three alternative analysis samples) clustered robust standard error logit model results for ever having smoked marijuana; the second shows the corresponding Cox robust standard error models estimating the hazard of first marijuana use. Normalized versions of all continuous variables are employed.

Compared with African-American males, Latino males had 189–360 percent–higher odds of smoking marijuana. Children who were first born were less likely to have used marijuana (47–64 percent–lower odds) before 18 years of age, all else being equal. Several family covariates also proved predictive of this behavior.[73] As with smoking and drinking, older caregivers evinced lowers odds (60–64 percent per standard deviation increase) and reduced hazards (78–91 percent) of reporting their child used marijuana. Families that have health insurance revealed lower odds and reduced hazards of child marijuana use (27–39 percent per standard deviation and 61–78 percent, respectively). Children in families experiencing higher levels of residential instability had higher odds of using marijuana (35–60 percent per standard deviation).

As with the other behavioral outcomes investigated, neighborhood rates of violent and property crime proved strongly predictive of marijuana use before 18 years of age but again in opposite directions. All else being equal, a youth being raised in a neighborhood that had a one-standard-deviation-higher property crime rate would be predicted to have at least 100 percent–greater odds and 72–207 percent–higher hazards of smoking marijuana. Conversely, a youth being raised in a neighborhood that had a one-standard-deviation-higher violent crime rate would have 74–100 percent–lower odds and 70–86 percent–lower hazards of this behavior. Child abuse and neglect rates echoed once more the violent crime results, with a one-standard-deviation-higher rate associated with 42–94 percent–lower odds of marijuana use.[74]

Two findings were related to the potential impacts of the neighborhood physical environment. A one-standard-deviation-higher percentage of the neighborhood housing stock built prior to 1940 was associated with 70–90 percent–higher odds and 46–62 percent–higher hazards of using marijuana before 18 years of age. Youth residing in a neighborhood that had a one-standard-deviation-higher respiratory risk index were predicted to have 31–34 percent–lower odds and 32–38 percent–lower hazards of this behavior.

[73] In addition, having more siblings reduced the hazard of the focal child smoking marijuana but only in the "ever in DHA" sample.

[74] Even the most conservative logit estimates indicate changes in odds of 100 percent, 74 percent, and 94 percent associated with standard deviation increases in property crime, violent crime, and child abuse rates, respectively.

Exhibit VI-5. Standardized Logit Models Predicting Childhood Onset of Marijuana Use

	Ever in DHA			Currently in DHA			Mostly in DHA		
	OR		**SE**	**OR**		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of onset unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	0.76		(0.36)	0.46		(0.33)	0.56		(0.35)
Social capital index	1.29		(0.25)	1.82	*	(0.55)	1.84	*	(0.48)
Social problems index	2.24	***	(0.51)	3.30	**	(1.20)	2.65	**	(0.81)
Social vulnerability score	2.05		(1.04)	11.51	**	(8.57)	1.78		(1.14)
Percent African American residents	1.08		(0.27)	0.57		(0.17)	1.22		(0.39)
Percent Latino residents	0.63		(0.30)	0.98		(0.72)	0.51		(0.34)
Occupational prestige score	0.56		(0.20)	0.16	***	(0.08)	0.64		(0.28)
Percent foreign born residents	0.68		(0.24)	0.26	*	(0.16)	0.89		(0.42)
Living in neighborhood with hospitals and clinics (omitted=no)	0.82		(0.44)	3.50		(2.67)	1.02		(0.70)
Resource factor score	0.87		(0.24)	0.89		(0.43)	0.70		(0.25)
Percent of housing built before 1940	1.70	*	(0.38)	1.91	*	(0.53)	1.28		(0.34)
Violent crime rate per 1,000	0.22	***	(0.10)	0.00	***	(0.00)	0.26	*	(0.14)
Property crime rate per 1,000	2.00	**	(0.50)	50.19	***	(38.79)	2.47	**	(0.76)
Child abuse and neglect rate per 1,000	0.58	*	(0.14)	0.06	***	(0.04)	0.63		(0.16)
Respiratory hazards index	0.69	*	(0.13)	0.64		(0.19)	0.66	*	(0.13)
Number of observations	746			444			473		
Number of clusters	393			267			256		
Log-Likelihood	-189.38			-85.81			-100.44		
Chi-square	92.59	***		114.03	***		88.69	***	
Pseudo-R^2	0.24			0.50			0.30		
Notes:									
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.									
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.									

Exhibit VI-6. Standardized Cox Models Predicting Hazard of Marijuana Use During Childhood

	Ever in DHA			Currently in DHA			Mostly in DHA		
	Hazard		SE	Hazard		SE	Hazard		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of onset unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	1.15		(0.45)	1.00		(0.50)	1.44		(0.77)
Social capital index	1.39		(0.25)	1.23		(0.22)	2.34	***	(0.57)
Social problems index	1.80	**	(0.38)	1.66		(0.59)	1.60		(0.45)
Social vulnerability score	2.35	*	(0.85)	2.67	*	(1.26)	2.13		(1.04)
Percent African American residents	1.04		(0.22)	0.77		(0.18)	1.07		(0.28)
Percent Latino residents	0.60		(0.21)	0.52		(0.22)	0.55		(0.31)
Occupational prestige score	0.75		(0.21)	0.39	*	(0.16)	0.90		(0.33)
Percent foreign born residents	1.01		(0.29)	1.13		(0.40)	1.13		(0.37)
Living in neighborhood with hospitals and clinics (omitted=no)	1.06		(0.41)	2.21		(0.94)	0.87		(0.48)
Resource factor score	0.79		(0.23)	1.18		(0.35)	0.54		(0.20)
Percent of housing built before 1940	1.46	*	(0.26)	1.62	*	(0.36)	1.22		(0.29)
Violent crime rate per 1,000	0.30	***	(0.09)	0.14	***	(0.06)	0.34	*	(0.17)
Property crime rate per 1,000	1.43		(0.28)	3.07	***	(0.83)	1.72	*	(0.41)
Child abuse and neglect rate per 1,000	1.15		(0.17)	0.77		(0.23)	1.24		(0.26)
Respiratory hazards index	0.68	***	(0.08)	0.84		(0.11)	0.62	**	(0.11)
Number of observations	746			444			473		
Number of clusters	393			267			256		
Log-Likelihood	-370.80			-217.89			-176.27		
Chi-square	215.75	***		207.09	***		235.04	***	
Global PH Chi-square	39.07			26.22			34.71		
Notes:									
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.									
* p < 0.05; ** p < 0.01; *** p < 0.001.									

The social environment also appears to be important here. Higher levels of neighborhood social capital were associated with 82–84 percent–higher odds of marijuana use during childhood. More neighborhood social problems (an index that includes teens smoking marijuana and doing drugs) proved strongly predictive of the odds of marijuana use (2.2–3.3 times higher per standard deviation increase in the social problems index). Finally, at least for youth who are currently living in DHA housing, a one-standard-deviation-higher neighborhood occupational prestige index was associated with 84 percent–lower odds and a 61 percent–lower hazard of marijuana use.[75]

Running Away From Home

Results for our models of running away during childhood are presented in Exhibits VI-7 and VI-8. The first shows (for each of three alternative analysis samples) robust clustered standard error logit model results for ever having run away; the second shows the corresponding AFT frailty models for the timing of this action. Normalized versions of all continuous variables are employed.

Several covariates are predictive in these models. Compared with their younger siblings, children who were first born had 7 percent–longer spells prior to running away. As we have found with other behaviors, older caregivers are less likely to report that their children had run away before 18 years of age (63–64 percent–lower odds per standard-deviation increase). In contrast to prior behaviors, having more siblings was associated with 90–117 percent–greater odds of the focal child running away. Several other predictors emerged for the first time here. Children of immigrants had 15–23 percent–longer spells prior to running away. Children from families that had better educated caregivers, higher incomes, caregivers who used alcohol or drugs while they were raising children, or caregivers who did not work outside of the home experienced significantly greater (order of magnitude in the hundreds of percent) odds of running away.[76]

Numerous aspects of neighborhood safety, social status, demographics, and physical environment predict running away before 18 years of age. Once again, neighborhood crime rates were notable predictors in opposite directions. A school child being raised in a neighborhood that had a one-standard-deviation-higher violent crime rate would have 93–100 percent–lower odds of running away and a 20–30 percent–longer spell prior to onset of the behavior. In contrast, a child being raised in a neighborhood that had a one-standard-deviation-higher property crime rate would have at least 2.2 times–higher odds of running away and 6–7 percent–shorter spells prior to onset. Unlike in the cases of drinking and smoking marijuana, however, child abuse and neglect rates were associated with 5–6 percent–shorter spells prior to running away per standard deviation increase.

[75] This finding applies only to the "currently in DHA sample" and so should be treated with caution.
[76] Several of these parameter estimates are unreliably large because of sparse cell counts, so we do not note them in the text.

Exhibit VI-7. Standardized Logit Models Predicting Childhood Onset of Running Away from Home

	Ever in DHA			Currently in DHA			Mostly in DHA		
	OR		SE	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of onset unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	1.55		(0.96)	1.10		(0.71)	1.77		(1.30)
Social capital index	1.38		(0.24)	1.79		(0.58)	2.05	*	(0.64)
Social problems index	1.85	*	(0.50)	4.03	*	(2.62)	1.57		(0.52)
Social vulnerability score	1.49		(0.75)	5.15		(5.14)	2.78		(2.09)
Percent African American residents	0.76		(0.22)	0.34	*	(0.17)	1.79		(0.76)
Percent Latino residents	1.03		(0.63)	0.24		(0.34)	2.94		(2.00)
Occupational prestige score	0.14	***	(0.07)	0.01	***	(0.01)	0.20	**	(0.12)
Percent foreign born residents	0.28	*	(0.16)	0.31		(0.21)	0.15	**	(0.09)
Living in neighborhood with hospitals and clinics (omitted=no)	0.17	**	(0.12)	0.30		(0.21)	0.07	**	(0.06)
Resource factor score	0.83		(0.28)	0.88		(0.43)	0.71		(0.34)
Percent of housing built before 1940	1.58		(0.41)	3.04	*	(1.71)	2.19		(0.89)
Violent crime rate per 1,000	0.07	***	(0.05)	0.00	***	(0.00)	0.03	***	(0.02)
Property crime rate per 1,000	2.27	**	(0.62)	27.23	*	(36.12)	1.27		(0.80)
Child abuse and neglect rate per 1,000	1.16		(0.30)	0.76		(0.54)	1.52		(0.52)
Respiratory hazards index	1.12		(0.31)	0.58		(0.18)	1.02		(0.38)
Number of observations	810			472			526		
Number of clusters	421			278			273		
Log-Likelihood	-141.08			-57.37			-62.16		
Chi-square	70.25	***		69.33	***		59.98	***	
Pseudo-R^2	0.31			0.60			0.40		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Exhibit VI-8. Standardized AFT Frailty Models Predicting Timing of Running Away from Home During Childhood

	Ever in DHA			Currently in DHA			Mostly in DHA		
	TmR		**SE**	**TmR**		**SE**	**TmR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of onset unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	0.93		(0.04)	1.00		(0.04)	0.95		(0.04)
Social capital index	0.96	**	(0.01)	0.97	*	(0.01)	0.95	*	(0.02)
Social problems index	0.95	*	(0.02)	0.94	*	(0.03)	0.97	*	(0.02)
Social vulnerability score	1.00		(0.04)	0.96		(0.05)	0.94		(0.04)
Percent African American residents	1.04	*	(0.02)	1.05	*	(0.02)	0.97		(0.02)
Percent Latino residents	1.03		(0.04)	1.06		(0.04)	0.96		(0.03)
Occupational prestige score	1.14	***	(0.03)	1.17	***	(0.04)	1.05		(0.03)
Percent foreign born residents	1.08	*	(0.03)	1.02		(0.03)	1.09	*	(0.04)
Living in neighborhood with hospitals and clinics (omitted=no)	1.14	**	(0.05)	1.07		(0.04)	1.14	**	(0.05)
Resource factor score	1.03		(0.03)	1.03		(0.02)	1.04		(0.03)
Percent of housing built before 1940	0.98		(0.02)	0.97		(0.02)	0.97		(0.02)
Violent crime rate per 1,000	1.20	***	(0.05)	1.30	***	(0.07)	1.25	***	(0.05)
Property crime rate per 1,000	0.94	**	(0.02)	0.93	**	(0.02)	0.99		(0.04)
Child abuse and neglect rate per 1,000	0.96	**	(0.02)	0.95	***	(0.01)	0.94	***	(0.02)
Respiratory hazards index	0.98		(0.02)	1.01		(0.01)	0.98		(0.02)
Number of observations	810			472			526		
Number of clusters	421			278			273		
Log-Likelihood	-38.60			22.20			-2.60		
Chi-square	375.92	***		348.62	***		428.22	***	
Notes:									
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics. TmR=Time ratio.									
* p < 0.05; ** p < 0.01; *** p < 0.001.									

Neighborhoods that had higher shares of immigrants and adults employed in prestigious occupations were less likely to have youths running away. A one-standard-deviation increase in the:

- Percentage of foreign-born residents was associated with 72–85 percent–lower odds of and 8–9 percent–longer spells prior to running away.
- Occupational prestige index was associated with 80–99 percent–lower odds of and 14–17 percent–longer spells prior to running away.

Social dimensions of context also proved important predictors of this behavior. A one-standard-deviation increase in the:

- Neighborhood problems index was associated with 85–303 percent–higher odds of and 3–5 percent–shorter spells prior to running away.
- Social capital index was associated with 3–5 percent–shorter spells prior to running away.

Finally, one aspect of the physical environment predicted running away. Having medical facilities in the neighborhood was associated with 83–93 percent–lower odds of and 14 percent–longer spells prior to running away.

Engaging in Violent Behavior

Results for our models of violent behaviors are presented in Exhibits VI-9 and VI-10. The first shows (for each of three alternative analysis samples) robust clustered standard errors logit model results for ever having engaged in violent behaviors before 18 years of age; the second shows the corresponding Cox proportional hazard (robust standard error) models for the timing of this behavior. Normalized versions of all continuous variables are employed.

As in several previous behavioral models, caregivers who were younger, had depressive symptoms, or were disabled were more likely to report that their child had engaged in violent behaviors. Such was also the case for those who had moved less. In particular, children whose caregiver:

- Was a standard deviation older had 54–83 percent–lower odds and 71–89 percent–smaller hazards of engaging in violence.
- Reported depressive symptomatology at the time of our survey exhibited 67–93 percent–greater hazards and substantially higher odds[77] of engaging in violence.
- Was disabled exhibited 147–220 percent–greater hazards of engaging in violence.
- Moved the household a standard deviation more often had 18–22 percent–smaller hazards of engaging in violence.

[77] We view the point estimates as unreliably large.

Exhibit VI-9. Standardized Logit Models Predicting Childhood Onset of Violent Behavior

	Ever in DHA			Currently in DHA			Mostly in DHA		
	OR		**SE**	**OR**		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of onset unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	1.80		(0.64)	1.05		(0.51)	1.95		(0.97)
Social capital index	1.26		(0.20)	1.49	*	(0.28)	1.33		(0.31)
Social problems index	1.18		(0.21)	1.04		(0.28)	1.02		(0.23)
Social vulnerability score	0.60		(0.21)	0.12	**	(0.08)	0.74		(0.33)
Percent African American residents	1.07		(0.21)	0.52		(0.18)	1.13		(0.33)
Percent Latino residents	0.44	*	(0.16)	0.14	**	(0.09)	0.54		(0.27)
Occupational prestige score	0.43	**	(0.13)	0.04	***	(0.02)	0.61		(0.23)
Percent foreign born residents	0.80		(0.22)	0.77		(0.39)	0.73		(0.28)
Living in neighborhood with hospitals and clinics (omitted=no)	0.83		(0.39)	1.09		(0.85)	0.87		(0.49)
Resource factor score	0.82		(0.22)	0.89		(0.32)	0.84		(0.30)
Percent of housing built before 1940	1.47	*	(0.25)	3.04	***	(0.80)	1.85	**	(0.40)
Violent crime rate per 1,000	1.05		(0.32)	0.64		(0.38)	1.15		(0.45)
Property crime rate per 1,000	3.43	***	(0.87)	56.70	***	(34.58)	2.48	**	(0.75)
Child abuse and neglect rate per 1,000	0.46	***	(0.10)	0.21	***	(0.08)	0.57	*	(0.16)
Respiratory hazards index	1.27		(0.21)	1.11		(0.23)	0.86		(0.20)
Number of observations	739			440			473		
Number of clusters	398			272			257		
Log-Likelihood	-226.16			-126.14			-121.66		
Chi-square	133.85	***		131.26	***		96.36	***	
Pseudo-R^2	0.36			0.51			0.38		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Exhibit VI-10. Standardized Cox Models Predicting Hazard of Engaging in Violent Behavior During Childhood

	Ever in DHA			Currently in DHA			Mostly in DHA		
	Hazard		SE	Hazard		SE	Hazard		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of onset unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	1.65		(0.46)	1.37		(0.46)	1.80		(0.75)
Social capital index	1.18		(0.12)	1.28	*	(0.14)	1.32		(0.22)
Social problems index	1.04		(0.14)	0.83		(0.15)	1.00		(0.19)
Social vulnerability score	0.85		(0.17)	0.58	*	(0.15)	0.91		(0.27)
Percent African American residents	0.96		(0.14)	0.89		(0.18)	0.98		(0.24)
Percent Latino residents	0.55	*	(0.14)	0.55	*	(0.16)	0.62		(0.25)
Occupational prestige score	0.45	**	(0.11)	0.22	***	(0.06)	0.60		(0.20)
Percent foreign born residents	0.82		(0.17)	0.74		(0.19)	0.76		(0.26)
Living in neighborhood with hospitals and clinics (omitted=no)	0.48	*	(0.15)	0.44	*	(0.18)	0.82		(0.37)
Resource factor score	1.02		(0.17)	1.24		(0.21)	0.71		(0.19)
Percent of housing built before 1940	1.41	*	(0.21)	1.64	***	(0.24)	1.48	*	(0.29)
Violent crime rate per 1,000	0.78		(0.15)	0.65	*	(0.12)	0.78		(0.24)
Property crime rate per 1,000	1.59	***	(0.19)	2.82	***	(0.41)	1.63	*	(0.33)
Child abuse and neglect rate per 1,000	0.81		(0.11)	0.72	*	(0.10)	0.78		(0.21)
Respiratory hazards index	1.23		(0.15)	0.98		(0.10)	0.99		(0.17)
Number of observations	739			440			473		
Number of clusters	398			272			257		
Log-Likelihood	-692.28			-539.07			-310.19		
Chi-square	352.83	***		342.29	***		282.02	***	
Global PH Chi-square	31.91			23.37			22.52		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* p < 0.05; ** p < 0.01; *** p < 0.001.

Once again, the same pattern of results for neighborhood property crime emerged, but violent crime and child abuse did not, surprisingly, prove predictive of youth violence.[78] A youth being raised in a neighborhood that had a one-standard-deviation-higher property crime rate would have 59–182 percent–higher hazards of engaging in violence and much greater odds of ever doing so before 18 years of age.[79]

The ethnic and occupational composition of the neighborhood demonstrated strong statistical significance, with higher shares apparently reducing youths' use of violence. A one-standard-deviation increase in the:

- Percentage of Latino residents was associated with 66–86 percent–lower odds and a 45 percent–smaller hazard of a youth engaging in violence.
- Occupational prestige score was associated with 57–94 percent–lower odds and 55–78 percent–smaller hazards of a youth engaging in violence.

The same two neighborhood physical context variables that proved predictive of running away revealed the same patterns here. A one-standard-deviation-higher percentage of the neighborhood housing stock built prior to 1940 was associated with at least 1.4 times–higher odds and 41–64—percent–greater hazards of violent behaviors. Having a hospital in the neighborhood was associated with 52–56 percent–smaller hazards of youth engaging in violence.

Gender and Ethnic Differences in Neighborhood Effects

Estimated parameters for our behavioral outcome models stratified by gender and ethnicity are presented in Appendix C. As is the case in all our discussions of stratified results, we employ the "ever in DHA" sample results and normalized continuous covariates. Here again we find substantial heterogeneity in apparent neighborhood effects on behavioral outcomes. Violent and property crime rates proved the exception, exhibiting statistically significant (though opposite-in-direction) relationships in the aggregate sample that were replicated consistently across most strata for multiple behavioral outcomes.

Smoking Cigarettes

The aggregate results for property and violent crime were replicated across several youth strata. We observed for male, female, and Latino youths residing in a neighborhood with a one-standard-deviation-higher rate of property crime produced several-hundred percent–higher odds of smoking; the impact on female youth was the strongest.[80] For a similar difference in violent crime rates, the figures were 84 percent– and 71 percent–lower odds of smoking for male and Latino youth, respectively.

Stratified Cox hazard models revealed for the female and African-American strata relationships for neighborhood problems and nativity composition that did not appear in the aggregate results

[78] The only exception was for the "currently in DHA" sample, where the Cox models showed negative associations between these two rates and youth violent behaviors.
[79] We view the point estimates as unreliably large.
[80] Estimates from logit models ranged from 176 percent to 396 percent for these genders.

above. Youths in a neighborhood that had a one-standard-deviation-higher:

- Neighborhood social problems index had a 70 (126) percent–greater hazard of smoking if they were female (African American).
- Percentage of foreign-born residents had a 183 percent–greater hazard of smoking if they were African American.

Drinking Alcohol

The inverse relationship between violent crime and youth drinking was remarkably similar across all four strata, with 77 percent and 87 percent reductions in the in odds ratios associated with a standard-deviation change in violent crime. Property crime rates proved significant predictors only for male and Latino youth, with the point estimate for the latter almost three times larger.

The two measures of neighborhood related to social status that were significant in the aggregate samples also proved predictive in two (but different) gender and ethnic strata. A standard-deviation-higher:

- Occupational prestige scale was associated with 75 (70) percent lower odds of drinking for male and Latino youth.
- Social vulnerability score was associated with at least 4.2 times–higher odds of drinking for female youth and even greater odds increments for African-American youth.

Social capital emerged as a differential predictor of drinking across three strata, explaining why it did not appear significant in the aggregate samples. A standard-deviation-higher social capital index was associated with identical 52 percent–lower odds of drinking for both female and African-American youth but a 54 percent–*greater hazard* of drinking for male youth.

Finally, neighborhood social problems emerged as a predictor of more drinking among male youth. A standard-deviation-higher social problems index was associated with 90 percent–higher odds of drinking by underage male youth.

Smoking Marijuana

As in the case of drinking, the inverse relationship between violent crime and youth drinking was remarkably similar across all four strata, with 78–99 percent reductions in the odds ratios associated with a standard-deviation change in violent crime. Property crime rates again proved significant predictors only for male and Latino youth, with the point estimate for the latter almost twice as large.

The measures of neighborhood social vulnerability and social problems that were significant in the aggregate samples proved predictive in one or two gender or ethnic strata. The same patterns associated with physical context measures emerged relative to the age of the housing stock and air pollution. A standard-deviation-higher:

- Social vulnerability score was associated with substantially higher odds of smoking marijuana but only for African-American youth.
- Social problems index was associated with 202 percent–higher odds and a 221 percent–greater hazard of smoking marijuana for male youth and an even larger increase in these odds for African-American youth.
- Percentage of dwellings built before 1940 was associated with between 81 percent– and 89 percent–higher odds of male and female youth smoking marijuana.

Finally, several neighborhood indicators emerged as predictors of marijuana use for a particular stratum, though they were not significant in the aggregate samples. A standard-deviation-higher occupational prestige scale was associated with 67 percent–lower odds and a 43 percent–smaller hazard of Latino youth smoking marijuana. A standard-deviation-higher social capital index was associated with 100 percent–higher odds and a 145 percent–greater hazard of male youth smoking marijuana. The presence of caregiver-assessed negative peers in the neighborhood was associated with a 294 percent–greater hazard of this behavior by female youth but was associated with a 92 percent reduction in the odds of such among African-American youth. Perhaps most unexpectedly, larger values of our neighborhood resources factor score predicted lower odds and hazards of marijuana use for male youth but just the opposite (and more strongly) for female youth.[81]

Running Away From Home

Neighborhood crime rates maintained their notable (and opposite-direction) predictive power across many if not all strata. Violent crime maintained the notable homogeneity of impacts across all strata, with a standard-deviation increase predicting a narrow range of 81–99 percent reductions in the odds of running away. Property crime was only strongly associated with female and Latino youths' running away propensities. Also as before, the point estimates of odds ratio changes are almost twice as large for Latinos as for female youth.

Neighborhood social status produced significant differences across strata. Occupational prestige was statistically significant across all strata and associated with a 86–94 percent reduction in the odds of and 12–17 percent–longer spells prior to running away from home. Neighborhood social problems and immigrant share appear to have strong influences primarily in the female and Latino strata. A standard-deviation-higher:

- Social problems index was associated with 125 (237) percent–higher odds of female (Latino) youth running away.
- Percentage of foreign-born residents was associated with 83 (82) percent–lower odds of female (Latino) youth running away but 14 percent–longer spells for African-American youth.

[81] This association may be reflective of successfully getting males off of the streets and away from sources of marijuana through youth involvement in these recreational resources. However, the opposite might occur for female youth: More resources in the neighborhood opens up greater access to being outside and in contact with people or places that might have access to marijuana.

Neighborhood physical context related to housing and hospitals and social capital aspects—all of which were statistically significant in the aggregate models—only proved significant predictors for some strata. A standard-deviation-higher value in percentage of pre-1940–vintage dwellings was associated with 2.8–3.0 times–higher odds of running away for African-American and female youth, respectively; it also shortened the spell prior to running away for female youth. The presence of neighborhood medical facilities lengthened the spell prior to running away by 25 percent for female and African-American youth. Although higher levels of social capital increased the odds of running away for female youth, it was also associated with 4–5 percent reductions in the spells prior to running away not only for females but also for African-American and Latino youth.

Ethnic composition, social vulnerability, and peers emerged as predictors for some strata, even though they were not consistent predictors in the aggregate models. A standard-deviation-higher:

- Percentage of African-American residents was associated with 80 percent reductions in the odds of male youth running away.
- Percentage of Latino residents was associated with 10 percent–longer spells prior to running away for female youth.
- Social vulnerability score was associated with 6 percent–longer spells prior to running away for female youth.

Finally, having negative peers in the neighborhood was associated with 18 percent–shorter spells prior to running away for African-American youth.

Engaging in Violent Behaviors

Our stratified analyses confirmed that our aggregate results indicating the strong predictive power of property crime was manifested widely across groups but were especially strong for female and Latino youth. A standard-deviation-higher property crime rate would be expected to increase the hazards of youth engaging in violent behaviors by 146 percent, 86 percent, and 42 percent for Latino, female, and male youth, respectively; the corresponding increases on the odds would be 375 percent, 711 percent, and 143 percent, respectively. The opposite relationship was manifested for all youth in the case of neighborhood child abuse and neglect rates. A standard-deviation-higher rate would be predicted to lower the odds of engaging in violent behavior by 49–74 percent. Violent crime was not a statistically significant predictor in any stratum.

Two other strong relationships in the aggregate sample proved so widely across strata, with virtual identical strength. Occupational prestige proved to be a consistently strong predictor of fewer violent acts by youth. A standard-deviation-higher occupational prestige score would be expected to lower the hazards of engaging in violent behavior by a remarkably similar 59 percent, 60 percent, and 60 percent for Latino, African-American, and male youth, respectively; comparable reductions in the odds were noted for Latino and male youth. A standard-deviation-higher percentage of dwellings built before 1940 would be expected to heighten the hazard of youth engaging in violent acts by 58 percent, 56 percent, and 55 percent for Latino, African-American, and male youth, respectively.

Few other predictors emerged in the stratified models. Living in a neighborhood where youth got into trouble seemed most influential for females and African-American youth, raising their respective hazards of engaging in violent behavior by 450 percent and 143 percent, respectively. Living among a higher percentage of Latino neighbors reduced the hazard and odds (59 percent and 71 percent, respectively) of violent behavior per standard-deviation increase for African-American youth. Living in a neighborhood that had higher social capital increased this hazard by 36 percent and 65 percent per standard-deviation increase for male and Latino youth, respectively.

Nonlinear Neighborhood Effects

Results for our nonlinear investigations employing spline regressions are presented in Appendix D. Many noteworthy nonlinear relationships between neighborhood indicators and youth behavioral outcomes were uncovered that were robust across models.[82]

Three neighborhood indicators—occupational prestige, percentage of foreign-born residents, and percentage of Latino residents—exhibited distinct threshold relationships—that is, they only had predictive power when they exceeded sample mean values. In the cases of smoking marijuana and running away outcomes, a standard deviation–higher value of prestige in a neighborhood remaining above the mean prestige would be expected to decrease the odds of engaging in these behaviors by 92 percent and 99 percent, respectively. In the cases of underage drinking and running away outcomes, a standard deviation–higher value of the percentage of foreign-born residents in a neighborhood remaining above the mean percentage would be expected to decrease the odds of both by 99 percent. Finally, a standard deviation–higher value of Latino residents in a neighborhood remaining above the mean percentage would be expected to *decrease* the odds of committing violent acts by 81 percent but *increase* the odds of running away by a substantial percentage, though we do not have confidence in the precise parameter estimate.

Diminishing marginal size of relationship also was exhibited by three neighborhood indicators. The negative association between violent crime rates and the odds of either running away from home or smoking marijuana grew progressively weaker at higher ranges of violent crime. A standard-deviation increase in violent crime rates in a neighborhood remaining below the mean of such rates would be expected to reduce the odds of running away and smoking marijuana by 99 percent and 97 percent, respectively; such a change in a neighborhood remaining above the mean violent crime rate would be expected to reduce the odds by only 62 percent and 32 percent, respectively. A declining marginal impact was also exhibited in both cases of the positive associations between neighborhood property crime rates and smoking marijuana and the percentage of pre-1940–vintage housing and running away.

The diminishing marginal effects of violent crime were not evident for all behavioral outcomes, however. For example, violent crime and respiratory risk demonstrated for several behavioral outcomes a nonlinear pattern indicating a V-shaped pattern of marginal impacts. We summarize these results in terms of first how much a standard-deviation increase in violent crime rates in a

[82] These and other reported estimates are based on logit model results for the "ever in DHA" sample, though the nonlinear findings are also consistent with those from the Cox hazard/AFT frailty models in most cases. The effect for the above-mean range is computed by adding the estimated logit coefficients (not odds ratios), and then exponentiating the value to return the "net" odds ratio for the spline segment.

neighborhood remaining below the mean of such rates would be expected to reduce the odds of a particular outcome, and then equivalently how much such a change in a neighborhood remaining above the mean violent crime rate would be expected to increase the odds:

- Smoking: 91 percent decrease, 30 percent increase.
- Violent behaviors: 91 percent decrease, 26 percent increase.

The corresponding figures for a standard-deviation increase in the respiratory risk index are:
- Smoking: 52 percent decrease, 235 percent increase.
- Smoking marijuana: 72 percent decrease, 132 percent increase.

Respiratory risk also demonstrated a statistically significant V-shaped pattern of marginal impacts on the odds of running away from home, though we are not sufficiently confident in the parameter estimates to report them.[83]

Finally, three indicators—occupational prestige, percentage of foreign-born residents, and the neighborhood resources factor score—demonstrated an inverted V-shaped relationship with the odds of smoking. We summarize these results in terms of first how much a standard-deviation increase in a particular indicator in a neighborhood remaining below the mean of this indicator would be expected to increase the odds of smoking, and then equivalently how much such a change in a neighborhood remaining above the mean would be expected to decrease the odds of smoking:

- Prestige: 256 percent increase, 82 percent decrease.
- Foreign born: 505 percent increase, 79 percent decrease.
- Resources factor score: 567 percent increase, 64 percent decrease.

Discussion

The results reported above clearly show that several aspects of the neighborhood safety; social status; and demographic, physical, peer, and social capital context are statistically and substantively important predictors of risky child and youth behaviors. Below, we organize the discussion around these thematic categories of neighborhood context. We note at the outset that some of our results were unexpected and challenging to explain, though lack of empirical consensus around the determinants of youths' risky behaviors has long characterized this field of study; see reviews in Leventhal and Brooks-Gunn (2000) as well as Foster and Brooks-Gunn (2013).

Neighborhood Safety

Our most consistent finding was that neighborhood property crime rates exhibited statistically significant and substantively large positive relationships in the aggregate sample that were replicated consistently across most strata for all risky behavioral outcomes analyzed. These findings were buttressed by those related to the neighborhood social problems index, which

[83] The percentage of Latino residents also manifested a V-shaped relationship with the odds of smoking.

showed this to be a general predictor of marijuana use (especially for male youth and African Americans) and running away (especially for female youth and Latinos) and a predictor of smoking for female youth and African-Americans and drinking for male youth. These observed relationships were expected, inasmuch as several underlying (not mutually exclusive) causal pathways are plausible. In neighborhoods that have more property crime and other socially problematic behaviors[84] there may be:

- Less collective efficacy, with an environment in which not only crime but also risky youth behaviors to go unchallenged in public spaces.
- Weaker collective social norms proscribing risky behaviors by youth.
- Potentially more youth role models of risky behaviors to emulate.
- Higher incidences of youth being victimized by crimes (as we found in Chapter V), which creates psychological reactions leading to risky behaviors.
- Greater access to cigarettes, alcohol, and marijuana through peer or adult networks or gangs that may be connected to the economic payoffs from property crime.
- More incentives for older youth to seek employment (as we document and explain in Chapter VIII), which may provide more disposable income for youths' purchases of cigarettes, alcohol, and marijuana.

What was unexpected was that this aspect of neighborhoods appeared less predictive of the behaviors of African-American youth, although the neighborhood social problems index predicted greater odds of their smoking cigarettes and marijuana.[85] It may be the case that Denver African-American families have distinctive caregiver monitoring strategies or arrange for more of their children's time to spent outside of the neighborhood (such as enrolling in schools outside of the neighborhood, which is permitted in Denver). Whatever its source, this same pattern will emerge for the educational outcomes discussed in the next chapter.

Neighborhood violent crime rates also were associated with risky behaviors but, surprisingly, in opposite ways from the above indicators of neighborhood safety. Violent crime rates exhibited statistically significant and substantively large relationships in the aggregate sample that were replicated consistently across at least two strata for all behavioral outcomes. Youth living in places with more violent crime were, all else being equal, *less likely* to drink, smoke marijuana, run away, and (at least up to a point) smoke cigarettes and engage in violent behaviors. As we explained in Chapter V, these findings should be interpreted as consequences of variations in violent crime at a larger spatial scale while *holding constant violent crime at the smaller scale surrounding the youth's home.*

In this context, we believe that a plausible explanation may follow the same lines as we advanced in the previous chapter. Fear of violence in the wider geographic context may induce more caregiver or self-imposed restrictions on children's movements outside of the home or immediate environs (including not being employed, as we will demonstrate in Chapter VIII).

[84] Recall that our neighborhood social problems index summarizes the following activities: people selling drugs, gang activity, homes broken into by burglars, people being robbed or mugged, and people getting beaten or raped.
[85] Most dramatically, the positive relationship between property crime rates and every risky behavior was statistically and substantively strong for Latino and male youth and weak for African-American youth. It was strong for female youth regarding smoking and violent behaviors.

Such geographic restrictions in activity spaces (and working) could result in (1) more intensive parental monitoring of behaviors or (2) less disposable income of youths available to purchase cigarettes, alcohol, or marijuana. The consequence may be reduced chances of youth engaging in risky behaviors. The nonlinear relationships evinced in the cases of smoking and violent behaviors clearly suggest, however, that there may be limits to the efficacy of these defensive, compensatory responses to violence in the wider neighborhood. In wider neighborhoods that have above-average violent crime rates, the associations between violent crime and smoking and violent behaviors are strongly positive, suggesting that past some threshold some negative behavioral effects of violent crime can no longer be held in check by such limitations in activity spaces. These apparent negative behavioral effects likely are manifestations of psychological and physical reactions associated with intense stress related to potential and actual exposure to violence in these more dangerous places, as we explored in Chapter V.

Neighborhood Social Status

Our results clearly showed that neighborhoods inhabited by higher status, less vulnerable residents were associated with much lower incidences of risky behaviors by our low-income, minority youth, with the possible exception of smoking.[86] Our occupational prestige measure exhibited consistently strong predictive power, indicating lower hazards of all behavioral outcomes across the full sample and most individual strata; in the cases of smoking marijuana and running away, it exhibited a minimum threshold before the apparently salutary effects were manifested. Our neighborhood social vulnerability score was associated with substantially greater likelihoods of drinking (especially for female and African-American youth) and smoking marijuana (especially African-American youth); for male youth, this pattern was evinced for running away from home.

We would posit that higher status neighbors may be associated with several mechanisms that could produce the observed inverse relationships with risky behaviors, including collective socialization, role modeling, and collective efficacy and social control of public spaces in the neighborhood. As several of these causal mechanisms are theoretically expected to operate only after a critical mass has been achieved, the finding of thresholds in some of the neighborhood prestige relationships is particularly supportive. Higher status environments may also be associated with stronger norms supporting educational performance (which we explore in Chapter VII), which may further circumscribe motives for engaging in risky behavior.

Neighborhood Ethnic and Nativity Composition

There were several important relationships between the foreign-born, Latino, and African-American composition of the neighborhood's population and several behavioral outcomes. With one exception, we found that higher percentages of these groups in the neighborhood were associated (typically after exceeding a threshold) with a lower likelihood of risky behaviors.[87] Higher percentages of Latino residents were associated with a lower likelihood of smoking (at

[86] This is one of the few consistent findings in the empirical literature related to neighborhood effects and youths' risky behaviors; see the reviews in Leventhal and Brooks-Gunn (2000) and Matheson et al. (2011).
[87] It is worth recalling that these relationships were observed after controlling for the immigrant and ethnic status of the sample children's parents (which never proved consistently statistically significant covariates, however, in any behavioral outcomes).

least for females) and engaging in violent behaviors (especially for African Americans and past the threshold)[88] but (past the threshold) a higher likelihood of running away. Higher percentages of African-American residents were associated with a lower likelihood of running away, for females and males alike. Higher percentages of foreign-born residents were associated (past the threshold) with a lower likelihood of running away (especially for females and Latinos) and drinking. The exception to the pattern was that higher percentages of foreign-born residents were associated a higher likelihood of smoking (especially for African Americans).

We think our results are consistent with the notion that a dominant immigrant or ethnic group in the neighborhood can play powerful normative, role-modeling, and behavioral monitoring functions whose impacts extend to other youth beyond those in the given group. For example, groups with multigenerational households and extended family networks (more likely immigrant and Latino in Denver) may more heavily monitor the behavior of *all* children residing in the neighborhood. A dominant group of neighbors may serve as adult role models and make resources available to *all* resident low-income children, thereby enhancing collective socialization in the neighborhood. Immigrant families who maintain values and behaviors from their countries of origin may experience reduced intergenerational conflict, which is often linked to initiation of adolescent risky or delinquent behaviors (like drinking and running away). Further, these families may continue to enforce strong cultural proscriptions regarding such behaviors with their second-generation children. These children, in turn, may serve as agents of "positive behavioral contagion" for neighboring peers who are not from immigrant families. This interpretation is also consistent with our findings regarding teen fertility in Chapter IX. Implicit in all these explanations is the notion that a critical mass of the given group must be exceeded before these externalities will extend beyond the given group to the larger resident population. This notion is strongly supported by our finding that both immigrant and Latino indicators exhibited minimum thresholds at which relationships began to be manifested: drinking and running away in the case of immigrant percentage and violence and running away in the case of Latino percentage.

Neighborhood Housing Stock and Environment

The neighborhood's housing stock that was built before 1940 generally demonstrated a pattern of apparent encouragement for several risky behaviors. Sample youth living in older Denver neighborhoods exhibited much higher likelihoods of smoking marijuana (both males and females alike), running away (especially female youth), and engaging in violent behaviors (especially males, Latinos, and African Americans). We think this is likely the result of the external configuration and land use mix of older Denver neighborhoods, not the internal environments associated with older housing per se. This is consistent with the explanation we provided in Chapter IV, where we found that older neighborhoods apparently provided health benefits in the form of reduced chances of obesity, potentially by encouraging more walking activity. Here we are perhaps getting a hint of the downside of walkable, mixed-use neighborhoods: adverse behavioral consequences for youth. The distinctive routine activity spaces inhabited by youth in such neighborhoods may enhance their interactions with peers (thereby maximizing the potential for contagious social processes) while degrading their opportunities to be monitored and

[88] This is contrary to some previous research, but those studies did not use as many neighborhood indicators as we; see the review in Leventhal and Brooks-Gunn (2000).

supervised. An ancillary consequence, as we have shown in Chapter V, is greater exposure to violence.

A different revelation emerged from the respiratory risk index results, which exhibited V-shaped relationships with smoking cigarettes. This relationship was asymmetric, with stronger positive relationships manifested in neighborhoods with above-mean pollution levels. This is consistent with the notion that we were observing a form of threshold relationship here, though we cannot be sure what mechanisms were operating. Perhaps in heavily polluted environments, youth are more likely to smoke, because they see little negative marginal health cost or because they seek relief through smoking from the other degraded health consequences from the pollution. This would be consistent with our finding from Chapter IV that children raised in neighborhoods with higher-than-average respiratory risk exhibited substantially higher odds of being diagnosed with asthma. Whatever the cause, there apparently are air pollution–smoking–poor health synergisms that work in mutually reinforcing ways to the detriment of low-income, minority youth.

Neighborhood Peers and Social Capital

Interesting results emerged related to our measure of bad peer influences in the neighborhood: caregivers who perceived that many youth in their neighborhoods "get into trouble." This neighborhood indicator proved to be a consistent and significant predictor only for African–American youth, with one exception.[89] African-American youth living in neighborhoods with "negative peers" were substantially more likely to drink, run away from home, and engage in violent behaviors.[90] These results offer some tantalizing indications that peer effects may indeed be a vital mechanism for creating a causal link between neighborhood context and youth behaviors, but this may not be as powerful a force for Latino youth. Latino families try to regulate peer networks heavily, and their children are more likely to be involved with family and close friendship (fictive kin) networks. Thus, Latino youth may be intimately engaged with fewer peers and consequently be less influenced by peer pressures.

Finally, our neighborhood social capital indicator exhibited a heterogeneous pattern of apparent impacts contingent on gender and ethnicity. Residing in a neighborhood that had higher levels of social capital was associated with female youth drinking less, male youth drinking and smoking marijuana more, and African-American youth drinking and running away more. We would expect that youth embedded in a neighborhood that had greater social capital would be less likely to engage in risky behaviors because of positive role modeling and collective social control mechanisms, but here this seems supported only in the case of female youth. The opposite results may be arising through the stronger collective socialization force that is also associated with social capital. For male and African-American youth, more social capital may translate into an increased likelihood that norms supportive of risky behaviors are conveyed consistently and more powerfully through the neighborhood context.

[89] The one exception was for female youths' violent behaviors, which were made more likely by negative peers.
[90] Oddly, however, they were less likely to smoke marijuana.

The Curious Case of Smoking

We single out one particular behavior—smoking cigarettes—for special attention here, because it consistently exhibited a strong and provocative pattern across two distinctive dimensions of residential context: occupational prestige and institutional resources. In each case, the relationship was as an inverse V shape: a direct (inverse) relationship for neighborhoods below (above) mean values for the given indicator. We are unsure of the causal processes that might rest behind these observations but forward some plausible possibilities.

Consider first the relationship with prestige. We would first observe that our finding of an inverse V–shaped relationship offers an explanation for the inconsistent findings in the scholarly literature.[91] We offer the following explanation. Compared with low-prestige neighborhoods, those with a modicum of youth from more prestigious backgrounds may have more resources available through local social networks accessible to low-income youth that encourages their consumption of tobacco. In higher prestige neighborhoods, however, the availability of network resources to obtain cigarettes may be offset by predominant antismoking collective norms that influence the preferences of low-income youth.

In the case of the inverse V–shaped relationship with neighborhood resources, a different explanation is required. Compared with neighborhoods that had no public institutional resources, youth in those with a modicum of such (which are primarily parks and playgrounds in Denver) may find that they have more opportunities to occupy activity spaces where they can more easily gather with peers for unsupervised activities like smoking. Denver neighborhoods with the highest score for public institutional resources will not only have parks and playgrounds but also indoor recreation centers and youth counseling facilities. In these latter types of settings, youths are likely better supervised, are not permitted to smoke, and may be discouraged by staff from smoking elsewhere.

Geographic Selection Bias Revisited

Recall in Chapter III that we argued that the estimated value of the "true" neighborhood effect likely lies within the range of estimates garnered from our various analysis samples, which consider different potential types of geographic selection postinitial assignment by DHA. In typical cases of behavioral outcomes reported in Exhibits VI-1 to VI-10, the estimated neighborhood indicator parameters were substantially similar among the "ever in DHA," "currently in DHA," and "mostly in DHA" samples. Thus, we are less inclined to worry here about distortions caused by postassignment geographic selection when considering these behavioral outcomes.

[91] Earlier studies (for example, Ennett et al., 1997; Allison et al., 1999) found that the risks of adolescent smoking were higher in more advantaged neighborhoods, perhaps as a result of lower costs associated with smoking. However, more recent studies have found higher levels of adolescent smoking in more disadvantaged neighborhoods (for example, Matheson et al., 2011; Picket and Pearl, 2001; Xue, Zimmerman, and Caldwell, 2007). Others report no significant neighborhood socioeconomic status relationship with smoking (for example, Wen, Van Duker, and Olsen, 2009; Mistry et al., 2011).

Conclusion

Many aspects of the neighborhood's safety, social status, ethnic and nativity mix, physical environment, and peer and social capital dimensions exhibit substantial predictive power for the odds of risky behaviors by youth ever occurring and the temporal hazard of outcomes occurring. One or more risky behaviors are generally less likely in neighborhoods that have higher violent crime rates (up to a point), foreign-born residents, African-American and Latino residential percentages, and occupational prestige and lower property crime rates, social problems index, social vulnerability, percentages of pre-1940–vintage dwellings, respiratory risks from air pollution, and bad peer influences. The magnitudes of most of these apparent influences are only modestly contingent on gender and ethnicity, although for some aspects of context cross-strata differences are substantial. Nonlinear neighborhood effects appear often; observed nonlinear patterns are inconsistent across indicators, although several exhibit minimum thresholds that can be easily interpreted theoretically.

VII. EDUCATIONAL OUTCOMES

Introduction

In this chapter, we consider a variety of primary and secondary school–related outcomes for low-income, minority youth in our *Denver Child Study*. We analyze whether they ever attended advanced or gifted classes, were placed in special education programs, were suspended or expelled from school, had to repeat a grade, or dropped out of school before receiving their diploma. For all these educational outcomes, we find evidence suggesting strong neighborhood effects emanating from several dimensions of the residential environment.

The approximately 750 children[92] in our educational analysis range in age from 6 to 18 years of age; we confine our analysis to those 12 years of age and older when estimating school dropout behaviors. We ascertain these outcomes on the basis of the *Denver Child Study* caregiver survey respondent's responses. It was beyond the scope of this study to gather performance data based on school administrative records. Participation in high-performance programs was determined on the basis of caregiver responses to the question, "Did __[youth]__ ever attend a special or advanced class or school for gifted students? [if yes, at what age?]." Eleven percent of our sample had such high academic designations, with mean age of such designation at 12.1 years of age. Placement in special education classes was based on the question, "Has __[youth]__ ever been classified by school personnel as needing special education? [if yes, at what age?]." Fourteen percent of our sample had such special education designations, with mean age of designation at 10.6 years of age. Disciplinary problems were measured by caregivers' responses to the question, "Was __[youth]__ ever suspended/expelled from elementary/middle/high school [if yes, which grades?]."[93] In our sample, 23 percent of the youth had been suspended or expelled, with the mean age at such disciplinary actions being 13.2 years of age. Grade repetition was determined on the basis of the caregiver question "Has __[youth]__ ever repeated a grade? [If yes, which grades repeated?]." Ten percent of our sample repeated at least one grade, with an average age of 10.8 years of age at the time of repetition. Dropping out of school was determined if the caregiver said that the youth (18 years of age or less only) "was not attending school and had not graduated;" 13 percent of youth 12 years of age and older were so designated, with the mean age of those dropping out being 16.4 years of age.

We recognize the potential shortcomings of these educational indicators. They are subject to recall error by the caregiver survey respondent, though we intentionally chose outcomes for which this likely would be minimal. They cannot distinguish unambiguously among outcomes that are produced by the youth's academic abilities and behaviors (which are what we hope to measure) and those that are produced by school programs, facilities, policies, and actions by

[92] This applies to the "ever in DHA" group; sample sizes vary somewhat depending on the outcome. The dropping-out outcome was confined to older children, so their sample size was only 571; see Exhibits VII-1 through VII-10 for details.

[93] Separate questions were asked about suspensions and expulsions for each level of school experience; we collapsed this information into one summary indicator of the first occurrence of either a suspension or expulsion at any age.

teachers, counselors, and administrators. As an illustration, a student may be sufficiently high achieving to warrant selection into advanced classes, but a school may not offer such as part of its curriculum; a student may be sufficiently underachieving to warrant repeating a grade but is not required to do so because of an institutional culture of “social promotions.” This confounding is probably strongest for outcomes occurring at the elementary school level, because there will be the strongest potential correlation between neighborhood indicators and school policy resulting from the smaller size of catchment areas. By implication, the suspension or expulsion and dropout outcomes will be the least ambiguous to interpret, given the aforementioned statistics on mean age of onset.

Because all of our educational outcomes are dichotomous measures, we employ multilevel mixed-effects logistic models for parameter estimation. We also estimate either Cox proportional hazards models with robust standard errors or accelerated failure time (AFT) frailty models. As with outcomes reported in earlier chapters, we estimate these models for the previously defined “ever in DHA,” “currently in DHA,” and “mostly in DHA” samples to assess the robustness of our results and bound potential degrees of geographic selection bias post–Denver, Colorado, Housing Authority (DHA) assignment.

All logistic, Cox, and AFT models use the same neighborhood indicators and core covariates common to all our analyses. Our educational outcome analyses add three more covariates in an effort to control for school context.[94] We control for whether the child was attending a neighborhood school (roughly 8 of 10 were) and whether the school was public (roughly 7 of 8 cases). We also employ an index of teachers’ influence. Caregivers were asked, “Please tell me if teachers’ influence on your child[ren] has been very positive, somewhat positive, somewhat negative, very negative, or no influence at all.” We scored the responses 4, 3, 1, 0, and 2, respectively. We also asked an analogous question about school counselors and scored it in the same fashion. We created a composite index of teacher and counselor influence by summing the two scores. In our educational analyses, we measure “contemporaneous” household and neighborhood context as that experienced at age of first occurrence; if an event never occurred, context is measured at 18 years of age (or age at the time of survey if less than 18 years of age).

Estimated Neighborhood Effects on Educational Outcomes

The tables below present nondichotomous predictor variables that are normalized to aid cross-variable comparability of coefficients. As before, we consider only those results that are statistically significant in two or more of the analysis samples for the given model type. Typically, the multilevel mixed-effects logit, Cox proportional hazards, or AFT models provided reinforcing results, so they will be discussed concurrently. Ranges of parameter estimates reported below reflect the variation across the three analysis samples. Instead of interpreting each individual correlation reported, we provide a holistic discussion of results at the end.

[94] Unfortunately, we neither have information on the school attendance history of sampled children nor access to school records. Thus, we can apply only crude proxies for school environment.

Academically Advanced Classes and Gifted Programs

Results for our models of placement in advanced classes or gifted programs are presented in Exhibits VII-1 and VII-2. The first exhibit shows (for each of three alternative analysis samples) the multilevel mixed-effects logistic model results for ever having been so placed; the second exhibit shows the corresponding AFT robust standard error models for the timing of this placement.[95]

The models generally reveal few consistently significant individual-level, household-level, or school-level predictors. Compared with African-American male youth in our samples, African-American females had 172–537 percent–greater odds of ever being placed in advanced or gifted classes, depending on the analysis sample. They were placed in such classes 17–27 percent sooner during their school years than otherwise-identical African-American male counterparts. Youth whose primary caregivers achieved a high school diploma had 174–361 percent–higher odds of ever being in these high-achievement classes and were placed in such 22–26 percent more quickly than comparable colleagues whose caregivers did not have a diploma. Finally, youth in neighborhood-based schools were substantially less likely to be placed in advanced or gifted classes. Youth in neighborhood schools had 64–90 percent–lower odds of and 21–38 percent–longer spells before such placements.[96]

Several neighborhood indicators related to social, status, safety, and physical context proved consistently statistically significant predictors of being placed in advanced or gifted classes. A one-standard deviation-higher neighborhood:

- Social capital scale was associated with 61–80 percent–greater odds of placement.
- Occupational prestige scale was associated with 55–98 percent–lower odds of and 27–52 percent–longer spells before placement.
- Violent crime rate was associated with a 25–45 percent–longer period before placement and 57–95 percent–lower odds of placement.
- Share of dwellings built before 1940 was associated with a 10–14 percent–shorter period before placement.

[95] We employed AFT instead of Cox models here when the global chi-square test rejected the null hypothesis of proportionality—that is, that the effect of a covariate is to multiply the hazard by some constant. In contrast, the AFT model assumes that the effect of a covariate is to multiply the predicted event time by some constant.

[96] Neighborhood-based schools probably are less likely to have specialized classes available for exceptionally well-performing students. We recognize that there may be some endogeneity in this relationship, however. Students who bring special academic talents to school or develop them while in school may be more likely to be reassigned to schools that are not neighborhood based (such as magnet schools).

Exhibit VII-1. Standardized Multilevel Mixed-Effects Logistic Models Predicting Placement into Gifted/Advanced Classes

	Ever in DHA			Currently in DHA			Mostly in DHA		
	OR		SE	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	2.06		(0.97)	1.17		(1.09)	1.81		(1.08)
Social capital index	1.61	*	(0.31)	1.83		(0.66)	1.80	*	(0.42)
Social problems index	1.13		(0.26)	2.89	*	(1.48)	1.05		(0.29)
Social vulnerability score	1.94		(1.01)	0.16		(0.23)	1.18		(0.73)
Percent African American residents	0.74		(0.20)	0.39		(0.22)	0.51		(0.19)
Percent Latino residents	0.70		(0.32)	0.41		(0.39)	0.77		(0.45)
Occupational prestige score	0.45	*	(0.18)	0.02	**	(0.02)	0.30	*	(0.15)
Percent foreign born residents	0.81		(0.28)	0.13	*	(0.11)	0.57		(0.23)
Percent of residents who moved in preceding 12 months	1.06		(0.24)	2.04		(0.97)	1.56		(0.39)
Living in neighborhood with hospitals and clinics (omitted=no)	0.61		(0.30)	0.38		(0.37)	0.62		(0.34)
Resource factor score	0.84		(0.24)	1.32		(0.72)	0.74		(0.24)
Percent of housing built before 1940	1.52		(0.34)	3.97	*	(2.18)	1.60		(0.45)
Violent crime rate per 1,000	0.43	*	(0.19)	0.05	*	(0.06)	0.38		(0.21)
Property crime rate per 1,000	1.33		(0.39)	32.49	**	(36.91)	1.54		(0.62)
Child abuse and neglect rate per 1,000	0.63		(0.18)	0.20	*	(0.14)	0.88		(0.29)
Neurological hazards index (rescaled by 100)	0.78		(0.27)	2.26		(1.74)	0.73		(0.34)
Respiratory hazards index (rescaled by 100)	1.18		(0.34)	0.66		(0.37)	0.99		(0.36)
Number of observations	769			480			446		
Log-Likelihood	-227.36			-120.22			-106.23		
Chi-square	40.48			19.70			52.83		
LR Chi-square (XTME vs. Logistic)	6.98	**		8.90	**		0.00		
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.									
* p < 0.05; ** p < 0.01; *** p < 0.001.									

Exhibit VII-2. Standardized AFT Frailty Models Predicting Timing of Placement into Gifted/Advanced Classes

	Ever in DHA			Currently in DHA			Mostly in DHA		
	TmR		SE	TmR		SE	TmR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	0.87		(0.09)	0.99		(0.12)	0.87		(0.11)
Social capital index	0.94		(0.04)	0.98		(0.04)	0.92		(0.05)
Social problems index	0.96		(0.04)	0.89	*	(0.05)	1.02		(0.06)
Social vulnerability score	0.83		(0.09)	1.18		(0.19)	0.91		(0.10)
Percent African American residents	1.05		(0.06)	1.05		(0.06)	1.10		(0.08)
Percent Latino residents	1.07		(0.10)	1.08		(0.12)	1.02		(0.12)
Occupational prestige score	1.13		(0.08)	1.52	***	(0.17)	1.27	**	(0.11)
Percent foreign born residents	1.02		(0.08)	1.26	**	(0.10)	1.17		(0.10)
Percent of residents who moved in preceding 12 months	1.01		(0.05)	0.94		(0.05)	0.93		(0.04)
Living in neighborhood with hospitals and clinics (omitted=no)	1.09		(0.11)	1.09		(0.13)	1.02		(0.10)
Resource factor score	1.06		(0.07)	1.02		(0.07)	1.13		(0.08)
Percent of housing built before 1940	0.90	*	(0.04)	0.86	**	(0.05)	0.88	*	(0.05)
Violent crime rate per 1,000	1.18		(0.12)	1.45	***	(0.16)	1.25	*	(0.14)
Property crime rate per 1,000	1.00		(0.07)	0.72	***	(0.05)	0.98		(0.10)
Child abuse and neglect rate per 1,000	0.99		(0.06)	1.06		(0.07)	0.99		(0.06)
Neurological hazards index (rescaled by 100)	1.13		(0.08)	0.96		(0.08)	1.08		(0.10)
Respiratory hazards index (rescaled by 100)	0.92		(0.05)	1.03		(0.07)	0.96		(0.06)
Number of observations	769			480			446		
Number of clusters	418			295			254		
Log-Likelihood	-196.63			-98.24			-83.67		
Chi-square	98.29	***		172.86	***		147.23	***	
Notes:									
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics. TmR=Time ratio.									
* p < 0.05; ** p < 0.01; *** p < 0.001.									

Special Education Placement

Results for our models of placement in special education programs are presented in Exhibits VII-3 and VII-4. The first summarizes (for each of three alternative analysis samples) the multilevel mixed-effects logistic model results for ever having been so placed; the second shows the corresponding AFT frailty models for the timing of this placement. Normalized versions of all continuous variables are employed.

Examination of these exhibits reveals that ethnicity, nativity, and mobility of the household were major predictors of placement into special education classes. Latinas had 74–87 percent–lower odds than African-American males to be in special education, and the period prior to such placement was 50–86 percent longer. Youth whose primary caregiver immigrated to the United States had 43–52 percent–longer periods before special education placement. Children from households that moved a standard deviation more often experienced a 17–40 percent–longer spell before being assigned to special education.

Both violent crime rates and property crime rates were strongly associated with special education placement but in opposite directions. A child growing up in a neighborhood that had a one-standard-deviation-higher rate of violent crime exhibited 58–93 percent–lower odds of school personnel designating them for special education and a 33–73 percent increase in the spell in school before this occurs. A similar situation in the case of a variation in rate of property crime evinced 131 percent or higher[97] increases in the odds of special education classification and a 17–31 percent decrease in the duration of the spell before such placement.
Several other neighborhood context variables also proved robustly predictive of special education placement across two or more samples. All else being equal, children in a neighborhood that had one-standard-deviation-higher:

- Occupational prestige score had 72–83 percent–lower odds of ever being placed in special education classes and 49 percent–longer spells before placement.
- Foreign-born resident percentage had 43–73 percent–lower odds of placement in special education classes.
- Percentage of residents moving in during the past year had 35–52 percent–lower odds of placement in special education classes and 16–18 percent–longer duration before assignment.
- Child abuse and neglect rate had 52–83 percent–lower odds of placement in special education classes.

[97] The coefficient for the “currently in DHA” sample we view as unreasonably large and likely a spurious product of the estimation algorithm.

Exhibit VII-3. Standardized Multilevel Mixed-Effects Logistic Models Predicting Placement into Special Education Classes

	Ever in DHA			Currently in DHA			Mostly in DHA		
	OR		SE	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	1.62		(0.58)	0.82		(0.45)	2.09		(1.06)
Social capital index	1.18		(0.17)	0.90		(0.19)	1.47		(0.30)
Social problems index	0.88		(0.16)	1.23		(0.35)	1.04		(0.26)
Social vulnerability score	1.26		(0.54)	0.77		(0.65)	1.80		(1.14)
Percent African American residents	1.20		(0.26)	0.59		(0.19)	1.09		(0.35)
Percent Latino residents	1.67		(0.61)	1.31		(0.82)	2.10		(1.18)
Occupational prestige score	0.63		(0.19)	0.17	**	(0.11)	0.28	**	(0.13)
Percent foreign born residents	0.57	*	(0.16)	0.27	**	(0.14)	0.41	*	(0.18)
Percent of residents who moved in preceding 12 months	0.65	*	(0.14)	1.16		(0.33)	0.48	*	(0.16)
Living in neighborhood with hospitals and clinics (omitted=no)	0.91		(0.38)	1.04		(0.69)	1.02		(0.58)
Resource factor score	0.75		(0.18)	1.04		(0.37)	0.82		(0.26)
Percent of housing built before 1940	1.27		(0.27)	2.06	*	(0.73)	1.63		(0.52)
Violent crime rate per 1,000	0.42	*	(0.15)	0.07	***	(0.05)	0.10	***	(0.05)
Property crime rate per 1,000	2.31	***	(0.54)	21.34	***	(14.21)	6.83	***	(2.55)
Child abuse and neglect rate per 1,000	0.77		(0.17)	0.17	***	(0.07)	0.48	*	(0.16)
Neurological hazards index (rescaled by 100)	1.09		(0.27)	3.84	**	(1.84)	0.95		(0.33)
Respiratory hazards index (rescaled by 100)	0.80		(0.18)	0.27	***	(0.11)	0.78		(0.23)
Number of observations	756			473			435		
Log-Likelihood	-260.75			-139.07			-117.5		
Chi-square	45.60			38.61			61.36	*	
LR Chi-square (XTME vs. Logistic)	0.59			0.70			0.00		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* p < 0.05; ** p < 0.01; *** p < 0.001.

Exhibit VII-4. Standardized AFT Frailty Models Predicting Timing of Placement into Special Education Classes

	Ever in DHA			Currently in DHA			Mostly in DHA		
	TmR		SE	TmR		SE	TmR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	0.84		(0.10)	1.11		(0.13)	0.81		(0.11)
Social capital index	0.99		(0.05)	1.07		(0.06)	0.96		(0.05)
Social problems index	1.04		(0.07)	0.94		(0.06)	0.98		(0.07)
Social vulnerability score	0.87		(0.11)	1.04		(0.18)	0.85		(0.12)
Percent African American residents	0.98		(0.07)	1.04		(0.09)	1.08		(0.09)
Percent Latino residents	0.90		(0.10)	0.89		(0.10)	0.96		(0.13)
Occupational prestige score	1.19		(0.11)	1.49	***	(0.15)	1.49	***	(0.16)
Percent foreign born residents	1.14		(0.10)	1.42	***	(0.12)	1.23		(0.15)
Percent of residents who moved in preceding 12 months	1.16	*	(0.07)	0.94		(0.05)	1.18	*	(0.08)
Living in neighborhood with hospitals and clinics (omitted=no)	1.03		(0.13)	0.97		(0.12)	1.00		(0.12)
Resource factor score	1.11		(0.08)	0.99		(0.07)	1.10		(0.08)
Percent of housing built before 1940	0.95		(0.06)	0.89		(0.06)	0.88		(0.07)
Violent crime rate per 1,000	1.33	**	(0.14)	1.73	***	(0.23)	1.70	***	(0.20)
Property crime rate per 1,000	0.83	**	(0.06)	0.69	***	(0.05)	0.71	***	(0.06)
Child abuse and neglect rate per 1,000	0.98		(0.07)	1.14		(0.08)	1.08		(0.09)
Neurological hazards index (rescaled by 100)	0.99		(0.08)	0.81	*	(0.08)	0.96		(0.09)
Respiratory hazards index (rescaled by 100)	1.03		(0.09)	1.26	***	(0.09)	1.07		(0.08)
Number of observations	756			473			435		
Number of clusters	420			286			256		
Log-Likelihood	-254.04			-136.98			-107.70		
Chi-square	111.13	***		254.67	***		185.50	***	

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics. TmR=Time ratio.

* p < 0.05; ** p < 0.01; *** p < 0.001.

Suspensions and Expulsions

Results for our models of suspensions and expulsions from school are presented in Exhibits VII-5 and VII-6. The first shows (for each of three alternative analysis samples) multilevel mixed-effects logistic model results for ever having had such a disciplinary action; the second shows the corresponding AFT frailty models for the timing of the first suspension or expulsion. Normalized versions of all continuous variables are employed.

Although all other gender and ethnic groups tended toward a lower likelihood of experiencing disciplinary actions at school than African-American males, only Latinas had significantly longer (14–32 percent) spells before such actions occurred. Youth whose caregivers reported depressive symptomatology at the time of survey exhibited 117–171 percent–higher odds of being suspended or expelled and 13–18 percent–shorter spells before such disciplinary actions were taken. Household mobility was associated with slightly longer spells before these actions took place.

As with many other educational outcomes investigated, neighborhood rates of violent and property crime proved strongly predictive (albeit in opposite directions). All else being equal, youth being raised in a neighborhood with a one-standard-deviation-higher violent crime rate would be predicted to have 57–91 percent–lower odds of being suspended or expelled. In contrast, a child being raised in a neighborhood that had a one-standard-deviation-higher property crime rate would have 112 percent or higher odds of suspension or expulsion.[98]

Other findings were related to the potential impacts of the neighborhood physical and social environments. A one-standard-deviation-higher percentage of the neighborhood housing stock built prior to 1940 was associated with 6–10 percent–shorter spells prior to being suspended or expelled from school. Greater neighborhood social capital was associated with an increased likelihood of being suspended or expelled (a 47–55 percent differential for every standard-deviation difference).

Repeating a Grade

Results for our models of repeating a year in school are presented in Exhibits VII-7 and VII-8. The first shows (for each of three alternative analysis samples) multilevel mixed-effects logistic model results for ever having to repeat a grade; the second shows the corresponding Cox proportional hazards (robust standard error) models for the timing of this repetition. Normalized versions of all continuous variables are employed. Characteristics of the youth, household, or school were not consistently predictive of this outcome; only neighborhood safety characteristics were.

Neighborhood rates of violent and property crime proved strongly predictive (again, in opposite directions). All else being equal, youth being raised in a neighborhood that had a one-standard-deviation-higher violent crime rate would be predicted to have 83–100 percent–lower odds of repeating a grade and a 71–94 percent decrease in the hazards of such. In contrast, a child being

[98] The coefficient for the "currently in DHA" sample we view as unreasonably large.

Exhibit VII-5. Standardized Multilevel Mixed-Effects Logistic Models Predicting Suspensions and Expulsions from School

	Ever in DHA			Currently in DHA			Mostly in DHA		
	OR		**SE**	**OR**		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	1.74		(0.64)	0.90		(0.49)	1.12		(0.49)
Social capital index	1.47	*	(0.24)	1.41		(0.30)	1.55	*	(0.29)
Social problems index	1.10		(0.21)	1.57		(0.45)	1.13		(0.25)
Social vulnerability score	1.34		(0.55)	0.52		(0.35)	1.12		(0.53)
Percent African American residents	1.31		(0.29)	0.60		(0.20)	1.48		(0.40)
Percent Latino residents	1.03		(0.37)	0.42		(0.23)	1.84		(0.81)
Occupational prestige score	0.84		(0.26)	0.11	***	(0.07)	0.70		(0.26)
Percent foreign born residents	0.93		(0.25)	0.49		(0.19)	0.52	*	(0.17)
Percent of residents who moved in preceding 12 months	1.20		(0.21)	1.37		(0.35)	1.39		(0.28)
Living in neighborhood with hospitals and clinics (omitted=no)									
Resource factor score	0.68		(0.30)	1.31		(0.84)	0.55		(0.27)
Percent of housing built before 1940	1.33		(0.31)	1.17		(0.39)	1.35		(0.36)
Violent crime rate per 1,000	0.43	*	(0.15)	0.09	***	(0.06)	0.37	*	(0.16)
Property crime rate per 1,000	2.12	**	(0.52)	23.64	***	(16.89)	2.34	**	(0.70)
Child abuse and neglect rate per 1,000	0.72		(0.15)	0.25	***	(0.10)	0.69		(0.17)
Neurological hazards index (rescaled by 100)	0.91		(0.23)	3.19	*	(1.51)	0.60		(0.17)
Respiratory hazards index (rescaled by 100)	1.13		(0.26)	0.39	*	(0.16)	1.13		(0.30)
Number of observations	768			513			437		
Log-Likelihood	-360.01			-210.73			-196.48		
Chi-square	46.89			33.50			38.61		
Chi-square (LR test XTME vs. Logistic)	13.33	***		4.51	*		1.04		
Notes:									
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.									
* p < 0.05; ** p < 0.01; *** p < 0.001.									

Exhibit VII-6. Standardized AFT Frailty Models Predicting Timing of Suspensions and Expulsions from School

	Ever in DHA			Currently in DHA			Mostly in DHA		
	TmR		SE	TmR		SE	TmR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	0.92		(0.06)	1.08		(0.07)	0.98		(0.08)
Social capital index	0.97		(0.02)	1.00		(0.02)	0.94	*	(0.03)
Social problems index	1.01		(0.04)	0.96		(0.03)	1.00		(0.04)
Social vulnerability score	0.89		(0.06)	0.92		(0.06)	0.95		(0.07)
Percent African American residents	0.95		(0.03)	0.99		(0.04)	0.95		(0.05)
Percent Latino residents	0.98		(0.06)	1.02		(0.06)	0.90		(0.07)
Occupational prestige score	0.96		(0.05)	1.18	**	(0.06)	1.02		(0.06)
Percent foreign born residents	0.97		(0.04)	1.07		(0.05)	1.10		(0.06)
Percent of residents who moved in preceding 12 months	1.00		(0.03)	0.99		(0.03)	0.95		(0.03)
Living in neighborhood with hospitals and clinics (omitted=no)	1.07		(0.07)	0.96		(0.06)	1.06		(0.08)
Resource factor score	0.95		(0.04)	0.96		(0.04)	0.99		(0.05)
Percent of housing built before 1940	0.97		(0.03)	0.94	*	(0.03)	0.90	**	(0.04)
Violent crime rate per 1,000	1.11		(0.07)	1.36	***	(0.08)	1.14		(0.08)
Property crime rate per 1,000	0.96		(0.04)	0.83	***	(0.02)	0.94		(0.04)
Child abuse and neglect rate per 1,000	0.96		(0.03)	1.00		(0.03)	0.97		(0.04)
Neurological hazards index (rescaled by 100)	1.05		(0.04)	0.95		(0.04)	1.07		(0.05)
Respiratory hazards index (rescaled by 100)	0.95		(0.03)	1.06		(0.04)	0.98		(0.04)
Number of observations	768			513			437		
Number of clusters	429			312			260		
Log-Likelihood	-252.39			-107.57			-126.30		
Chi-square	93.21	***		146.16	***		82.72	***	
Notes:									
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics. TmR=Time ratio.									
* p < 0.05; ** p < 0.01; *** p < 0.001.									

Exhibit VII-7. Standardized Multilevel Mixed-Effects Logistic Models Predicting Repeating a Grade

	Ever in DHA			Currently in DHA			Mostly in DHA		
	OR		**SE**	**OR**		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	0.70		(0.32)	0.20		(0.28)	0.16		(0.20)
Social capital index	0.78		(0.13)	1.44		(0.74)	1.45		(0.56)
Social problems index	1.48		(0.35)	5.29	*	(4.40)	3.87		(2.79)
Social vulnerability score	4.43	**	(2.47)	34.37		(93.61)	5.78		(7.92)
Percent African American residents	1.09		(0.30)	0.17		(0.16)	0.81		(0.49)
Percent Latino residents	1.81		(0.84)	1.02		(1.67)	2.46		(2.49)
Occupational prestige score	0.83		(0.31)	0.00	**	(0.01)	0.28		(0.27)
Percent foreign born residents	0.52		(0.18)	0.02	**	(0.03)	0.14	*	(0.14)
Percent of residents who moved in preceding 12 months	0.68		(0.17)	2.27		(1.52)	0.91		(0.43)
Living in neighborhood with hospitals and clinics (omitted=no)	0.92		(0.50)	7.76		(15.45)	1.60		(2.06)
Resource factor score	1.62		(0.49)	2.51		(2.38)	1.66		(1.10)
Percent of housing built before 1940	1.33		(0.32)	4.88		(4.10)	2.34		(1.49)
Violent crime rate per 1,000	0.17	***	(0.08)	0.00	***	(0.00)	0.04	*	(0.05)
Property crime rate per 1,000	2.61	***	(0.73)	6.67E+03	**	1.79E+04	5.19	*	(3.38)
Child abuse and neglect rate per 1,000	0.72		(0.18)	0.01	**	(0.01)	0.76		(0.38)
Neurological hazards index (rescaled by 100)	0.99		(0.29)	12.00		(16.19)	0.77		(0.49)
Respiratory hazards index (rescaled by 100)	0.83		(0.26)	0.11	*	(0.12)	0.86		(0.51)
Number of observations	754			472			439		
Log-Likelihood	-198.60			-100.01			-96.79		
Chi-square	48.32			15.54			13.19		
LR Chi-square (XTME vs. Logistic)	0.86			6.59	**		5.32	*	
Notes:									
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.									
* p < 0.05; ** p < 0.01; *** p < 0.001.									

Exhibit VII-8. Standardized Cox Models Predicting Hazard of Repeating a Grade

	Ever in DHA			Currently in DHA			Mostly in DHA		
	Hazard		**SE**	**Hazard**		**SE**	**Hazard**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	0.96		(0.40)	0.74		(0.32)	0.58		(0.42)
Social capital index	0.80		(0.12)	0.85		(0.16)	1.10		(0.29)
Social problems index	1.18		(0.21)	1.23		(0.28)	1.53		(0.52)
Social vulnerability score	3.63	**	(1.65)	4.02		(3.75)	2.61		(1.86)
Percent African American residents	1.11		(0.29)	0.61		(0.17)	0.87		(0.41)
Percent Latino residents	1.79		(0.64)	1.26		(0.50)	1.45		(0.88)
Occupational prestige score	1.03		(0.31)	0.25	*	(0.14)	0.51		(0.28)
Percent foreign born residents	0.64		(0.16)	0.27	***	(0.10)	0.48		(0.20)
Percent of residents who moved in preceding 12 months	0.62		(0.16)	1.11		(0.28)	0.90		(0.34)
Living in neighborhood with hospitals and clinics (omitted=no)	0.82		(0.43)	0.47		(0.33)	0.94		(0.61)
Resource factor score	1.58		(0.41)	1.48		(0.42)	1.13		(0.45)
Percent of housing built before 1940	1.17		(0.23)	1.26		(0.36)	1.46		(0.37)
Violent crime rate per 1,000	0.29	**	(0.12)	0.06	***	(0.03)	0.24	*	(0.14)
Property crime rate per 1,000	1.68	**	(0.32)	2.55	***	(0.61)	1.69	*	(0.40)
Child abuse and neglect rate per 1,000	0.99		(0.19)	0.71		(0.16)	1.24		(0.27)
Neurological hazards index (rescaled by 100)	1.01		(0.21)	3.25	**	(1.24)	0.95		(0.26)
Respiratory hazards index (rescaled by 100)	0.88		(0.23)	0.44	**	(0.13)	0.93		(0.39)
Number of observations	754			472			439		
Number of clusters	422			291			259		
Log-Likelihood	-437.00			-337.64			-191.15		
Chi-square	117.30	***		277.84	***		251.02	***	
Global PH Chi-square	52.45			43.11			38.54		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

raised in a neighborhood that had a one-standard-deviation-higher property crime rate would have 161–419 percent–higher odds[99] of repeating a grade and a 68–155 percent increase in the hazards of such.

Nativity composition of neighborhood also proved predictive. A one-standard-deviation-higher percentage of foreign-born residents in the neighborhood was associated with 86–98 percent–lower odds of repeating a grade.

Dropping Out of School Before Graduating

Results for our models of leaving school without a diploma are presented in Exhibits VII-9 and VII-10. The first shows (for each of three alternative analysis samples) multilevel mixed-effects logistic model results for dropping out of school; the second shows the corresponding Cox proportional hazards (robust standard error) models for the timing of school exits. Normalized versions of all continuous variables are employed.

Two household covariates proved predictive across two or more samples. Children whose parent or caregiver reported depressive symptomatology at the time of our survey exhibited a 113–141 percent–greater hazard of dropping out.[100] Youth of immigrant parents or caregivers exhibited 59–61 percent–lower hazards of dropping out.

Once again, the same pattern of contrary results for neighborhood crime types emerged. A school child being raised in a neighborhood that had a one-standard-deviation-higher violent crime rate would have 75–93 percent–lower odds of dropping out. In contrast, a child being raised in a neighborhood that had a one-standard-deviation-higher property crime rate would have 226–472 percent–higher odds of dropping out and an increase in the hazards of such of 54–73 percent.

Two additional neighborhood variables related to the physical environment and social status proved predictive. A one-standard-deviation-higher percentage of the neighborhood housing stock built prior to 1940 was associated with 114–206 percent–higher odds of dropping out. A one-standard-deviation-higher percentage of the neighborhood occupational prestige score was associated with 84–92 percent–lower odds of a resident youth dropping out and a 52–59 percent decrease in the hazards of such.

Gender and Ethnic Differences in Neighborhood Effects

Estimated parameters for our educational outcome models stratified by gender and ethnicity are presented in Appendix C. As is the case in all our discussions of stratified results, we employ the "ever in DHA" sample results and normalized continuous covariates. Here again we find substantial heterogeneity in apparent neighborhood effects on educational outcomes. Violent and property crime rates proved the exception, exhibiting statistically significant (though opposite-in-direction) relationships in the aggregate sample that were replicated consistently across strata for multiple educational outcomes, though this pattern was least consistent for the African-American stratum.

[99] The coefficient for the "currently in DHA" sample we view as unreasonably large.
[100] We recognize the potential of bidirectional causality here.

Exhibit VII-9. Standardized Multilevel Mixed-Effects Logistic Models Predicting Leaving School Without a Diploma

	Ever in DHA			Currently in DHA			Mostly in DHA		
	OR		**SE**	**OR**		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	1.37		(0.72)	1.83		(1.63)	1.85		(1.67)
Social capital index	1.02		(0.22)	0.84		(0.30)	2.96	*	(1.27)
Social problems index	1.45		(0.37)	1.08		(0.53)	0.65		(0.30)
Social vulnerability score	0.95		(0.45)	0.62		(0.49)	0.42		(0.42)
Percent African American residents	0.66		(0.21)	0.57		(0.28)	1.23		(0.78)
Percent Latino residents	0.31	*	(0.18)	0.23		(0.22)	0.45		(0.43)
Occupational prestige score	0.16	***	(0.08)	0.08	**	(0.07)	0.09	*	(0.09)
Percent foreign born residents	0.62		(0.23)	0.42		(0.25)	0.28		(0.22)
Percent of residents who moved in preceding 12 months	1.09		(0.26)	1.01		(0.39)	3.44	*	(1.65)
Living in neighborhood with hospitals and clinics (omitted=no)	0.50		(0.29)	0.28		(0.28)	0.15		(0.16)
Resource factor score	1.02		(0.34)	0.88		(0.47)	1.67		(1.21)
Percent of housing built before 1940	2.14	**	(0.62)	2.66	*	(1.21)	3.06	*	(1.67)
Violent crime rate per 1,000	0.25	***	(0.10)	0.14	**	(0.10)	0.07	**	(0.06)
Property crime rate per 1,000	3.26	***	(1.03)	5.72	**	(3.34)	4.53	**	(2.46)
Child abuse and neglect rate per 1,000	0.99		(0.29)	1.02		(0.48)	1.44		(0.75)
Neurological hazards index (rescaled by 100)	0.86		(0.30)	1.40		(0.87)	1.20		(0.71)
Respiratory hazards index (rescaled by 100)	0.87		(0.25)	0.44		(0.21)	0.98		(0.48)
Number of observations	571			429			320		
Log-Likelihood	-156.30			-107.40			-54.41		
Chi-square	45.14			24.29			35.36		
LR Chi-square (XTME vs. Logistic)	1.50			6.95	**		0.00		
Notes:									
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.									
* p < 0.05; ** p < 0.01; *** p < 0.001.									

Exhibit VII-10. Standardized Cox Models Predicting Hazard of Leaving School Without a Diploma

	Ever in DHA			Currently in DHA			Mostly in DHA		
	Hazard		SE	Hazard		SE	Hazard		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured at time of first occurrence unless otherwise noted)									
Living in neighborhood with negative peers (omitted=no)	1.32		(0.47)	1.43		(0.77)	1.47		(0.93)
Social capital index	1.06		(0.16)	0.99		(0.16)	2.63	**	(0.90)
Social problems index	1.39		(0.31)	1.00		(0.31)	0.94		(0.25)
Social vulnerability score	0.89		(0.33)	0.91		(0.51)	0.57		(0.38)
Percent African American residents	0.77		(0.16)	0.86		(0.25)	0.92		(0.51)
Percent Latino residents	0.51		(0.21)	0.60		(0.35)	0.70		(0.51)
Occupational prestige score	0.48	*	(0.15)	0.41	*	(0.18)	0.34		(0.25)
Percent foreign born residents	0.97		(0.26)	0.86		(0.31)	0.63		(0.33)
Percent of residents who moved in preceding 12 months	1.32		(0.26)	1.05		(0.27)	3.29	*	(1.54)
Living in neighborhood with hospitals and clinics (omitted=no)	0.94		(0.48)	0.70		(0.44)	0.33		(0.27)
Resource factor score	0.91		(0.31)	0.88		(0.35)	1.44		(0.97)
Age of housing stock									
Percent of housing built before 1940	1.20		(0.22)	1.35		(0.32)	1.98		(0.92)
Violent crime rate per 1,000	0.59		(0.20)	0.52		(0.26)	0.29	*	(0.14)
Property crime rate per 1,000	1.54	*	(0.29)	1.73	*	(0.40)	1.76		(0.75)
Child abuse and neglect rate per 1,000	1.06		(0.22)	1.10		(0.30)	1.03		(0.43)
Neurological hazards index (rescaled by 100)	0.89		(0.22)	1.05		(0.37)	0.79		(0.54)
Respiratory hazards index (rescaled by 100)	1.07		(0.23)	0.88		(0.25)	1.29		(0.70)
Number of observations	571			429			320		
Number of clusters	329			253			196		
Log-Likelihood	-387.50			-267.00			-131.60		
Chi-square	161.00	***		102.30	***		365.60	***	
Global PH Chi-square	37.87			--[a]			--[a]		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

[a]Global PH Chi-square tests in these samples were not statistically significant; exact values available from the authors.

* p < 0.05; ** p < 0.01; *** p < 0.001.

Academically Advanced Classes and Gifted Programs

Only two of the neighborhood indicators that were statistically significant, strong predictors in the aggregate samples described above proved to be so in more than two of the gender-ethnic strata; the others in only one stratum. A one-standard-deviation-higher neighborhood:

- Percentage of dwellings built before 1940 was associated with a 16 percent–shorter spell before placement in advanced classes or gifted programs for Latino youth; an 11 percent–shorter spell for female youth; and 13 percent–shorter spell and 117 percent–higher odds for African-American youth.
- Occupational prestige was associated with 76 percent–lower odds of and 33 percent–longer spells before placement for African-American youth and 72 percent–lower odds for Latino youth.
- Social capital score was associated with a 190 percent–greater odds of placement and a 15 percent–shorter spell prior to placement for African-American youth only.
- Violent crime rate was associated with 91 percent–lower odds of placement and a 50 percent–longer spell before such placement for females only.

Additional neighborhood indicators emerged as powerful predictors of placement in advanced courses or gifted programs for certain strata only and not the entire sample. We found that a one-standard-deviation-higher neighborhood:

- Property crime rate was associated with 115 percent–higher odds of placement for Latino youth.
- Percentage of foreign-born residents was associated with 71 percent–lower odds and 31 percent–longer spells for African-American youth.
- Percentage of African-American residents was associated with 60 percent–lower odds for male youth and 22 percent increases in spell prior to such placement; corresponding figures for African-American youth were 67 percent and 24 percent, respectively.

Special Education Placement

The violent crime and property crime rates that were strongly associated with special education placement in the aggregate samples maintained their power only in the female and Latino strata. Female youth growing up in a neighborhood that had a one-standard-deviation-higher rate of violent crime exhibited 90 percent–lower odds of school personnel placing them into special education classes and an 89 percent increase in the spell before this occurs. The comparable estimates for Latinos were 89 percent and 98 percent lower, respectively. A similar variation in the case of property crime rate evinced a 569 percent increase in the odds of special education placement and a 40 percent decrease in the duration of the spell before such placement occurred for females; for Latinos, there was a 123 percent increase in the odds of placement.

One other neighborhood context variable that was robustly predictive of special education placement across aggregate samples proved so in two strata. All else being equal, youth in a neighborhood that had a one-standard-deviation-higher foreign-born resident percentage had 61 percent– and 67 percent–lower odds of placement for Latino and female youth, respectively. The inverse aggregate relationship between percentage of neighbors moving in during the prior year and special education placement was significant for the Latino stratum only: each standard-deviation increase in the percentages of neighbors moving in during the prior year was associated with a 22 percent–longer spell prior to placement in special education.

Intriguing neighborhood indicators emerged as powerful predictors of participation in special education programs for certain strata only. We found that a one-standard-deviation-higher neighborhood:

- Percentage of Latino residents exhibited 293 percent–higher odds of being placed into special education classes if they were Latinos themselves.
- Percentage of dwellings built before 1940 exhibited 75 percent–lower odds of assignment and 43 percent–longer spells before assignment if they were females.
- Social vulnerability score exhibited 274 percent–greater odds of special education placement and a 38 percent reduction in time to placement if they were Latino.
- Proportions of negative peers exhibited 198 percent–higher odds of assignment and 28 percent–shorter spells before assignment if they were African American.

Suspensions and Expulsions

Neighborhood violent crime rates were equally powerful predictors in both Latino and African-American strata, an exceptional pattern across the educational outcomes we investigated. Youth raised in a neighborhood that had a one-standard-deviation-higher violent crime rate would have 64 percent– and 67 percent–lower odds of suspension or expulsion, respectively, in these two ethnic strata. A modestly larger relationship (71 percent–lower odds and 21 percent–longer spells) was observed for males, but violent crime was not a statistically significant predictor in the female stratum. Property crime rates only proved most strongly predictive in the male and Latino strata, with a one-standard-deviation-higher property crime rate being associated with 203 (162) percent higher odds of male (Latino) youth facing such disciplinary actions. Higher property crime rates also shortened the spell prior to suspension or expulsion for male youth.

Two other predictors that were statistically significant in the aggregate samples proved so in only one stratum. The percentage of housing built before 1940 was predictive of suspensions and expulsions in the African-American strata. African-American youth would have 105 percent–higher odds of and 10 percent–shorter spells prior to school suspension or expulsion living in a neighborhood that had a standard-deviation-higher percentage of housing built before 1940. The positive relationship between social capital and suspensions and expulsions was manifested only in the female stratum. Female youth being raised in a neighborhood with a one-standard-deviation-higher social capital index would have 77 percent–higher odds of being suspended or expelled from school.

The only neighborhood indicator predictive of suspensions and expulsions of a stratum that was not significant in the aggregate models was the presence of negative peers. If caregivers assessed the neighborhood as having many youth who got into trouble, their female youth exhibited a 15 percent–shorter period until they were suspended or expelled from school.

Repeating a Grade

Neighborhood crime rates maintained their notable (and opposite direction) predictive power across many strata, with violent (property) crime negatively (positively) associated with grade repetition. Violent crime rates were equally powerful predictors in all but the African-American strata. Property crime rates held the greatest predictive power for female youth but were also significant in the male and Latino strata. A school child being raised in a neighborhood that had a one-standard-deviation-higher property crime rate would have a 309 percent–, 102 percent–, and 110 percent–higher odds of repeating a grade if the youth were female, male, or Latino, respectively. The only other predictive contextual variable in the aggregate samples was the nativity composition. It remained statistically significant only in the Latino stratum, predicting 62 percent–lower odds of repeating for a standard-deviation-higher percentage of foreign-born residents.

Models of repeating a grade revealed four other neighborhood context predictors for particular strata when they were disaggregated. Youth residing in neighborhoods that had a one-standard-deviation-higher:

- Social vulnerability score had 651 percent– and 448 percent–higher odds of repeating a grade if they were male or Latino, respectively; males also had their hazard of such rise by 495 percent; Latinos had their hazard of such rise by 348 percent.
- Percentage Latino residents reduced the hazard of repeating a grade by 82 percent for African Americans.
- Percentage African-Americans residents increased the hazard of repeating a grade by 142 percent for Latinos.

Dropping Out of School Before Graduating

As in the case of repeating a grade, the same pattern of contrary and statistically significant results for neighborhood crime types consistently emerged across male, female, and Latino strata. Again, the variation in reduction of odds of dropping out associated with a standard-deviation increase in violent crime rate across all four strata is small: 70–80 percent. In contrast, the variation in the higher odds associated with living in a neighborhood that had a one-standard-deviation-higher property crime rate are similar for males and Latinos (340 percent and 402 percent, respectively) but less for females (162 percent). This is the opposite of the pattern in the repeated grade models, where the impact of property crime was largest for females.

Two additional neighborhood context variables related to housing stock age and resident status proved predictive in both the aggregate samples and in several strata. A one-standard-deviation-higher percentage of pre-1940 housing stock was predictive of 349 percent–, 202 percent–, and 132 percent–higher odds of dropping out for females, African Americans, and Latinos, respectively. A one-standard-deviation-higher neighborhood occupational prestige score was associated with 87 percent–, 94 percent–, 83 percent–, and 93 percent–lower odds of a resident male, female, African American, and Latino dropping out, respectively; the associated decreases in hazards is also similar across these strata (73–82 percent).

Several other neighborhood indicators proved to be strong predictors of dropping out in particular strata. Residing in a neighborhood that had caregiver-assessed negative peers was associated with a 278 percent–greater hazard of female youth dropping out. Living in a neighborhood that had a one-standard-deviation-higher:

- Percentage of Latino residents was associated with 91 (86) percent–lower odds and 71 (79) percent lower hazards of dropping out for males (Latinos).
- Social problems index was associated with 192 percent–higher odds and 89 percent–greater hazard of dropping out for males.
- Percentage of foreign-born residents was associated with 85 percent–lower odds and 64 percent–lower hazard of dropping out for females.

Nonlinear Neighborhood Effects

Results for our nonlinear investigations employing spline regressions are presented in Appendix D. A few noteworthy nonlinear relationships were uncovered that were robust across models. We discuss these results further in the following section.

Violent crime rates consistently demonstrated a negative linear relationship with all educational outcomes in our aggregate models. Our nonlinear explorations revealed that these relationships are more accurately described (most clearly for special education, repeating grade, and dropping out outcomes) as diminishing negative marginal effects or perhaps an asymmetric, V-shaped pattern of marginal impacts. In the case of special education assignment, a standard-deviation increase in violent crime rates in a neighborhood remaining below the mean of such rates would be expected to reduce the odds by 86 percent, but such a change in a neighborhood remaining above the mean violent crime rate would be expected to *increase* the odds by 3 percent.[101] In the case of repeating a grade, the corresponding marginal figures for the two segments of the relationship were an 88 percent reduction for below the mean and a 15 percent increase for above the mean. In the case of dropping out, the corresponding marginal figures for the two segments of the relationship were even more dramatic: a 97 percent reduction for below the mean and a 28 percent increase for above the mean.[102]

There is also a hint that the opposite nonlinearity (that is, diminishing marginal positive effects) may characterize the generally positive relationship between property crime rates and educational outcomes exhibited across many outcomes in the aggregate samples. In the case of special education placement, a standard-deviation increase in property crime rates in a neighborhood remaining below the mean of such rates would be expected to increase the odds and the hazard of placement by more than 20 times over an equivalent change in a neighborhood remaining above the mean property crime rate.

[101] These estimates are based on xtmelogit results for the “ever in DHA” sample, though, are consistent with those from the logit model. The effect for the above-mean range is computed by adding the estimated coefficients (not odds ratios), and then exponentiating the value to return the “net” odds ratio for the spline.
[102] This nonlinear relationship was strongly echoed by the Cox proportional hazards model results.

Three predictors—the foreign-born population, pre-1940 housing stock composition, and social problems score of a neighborhood—did not appear to be related to the odds of repeating a grade in the linear model results. In the spline models, however, they exhibited dramatic, inverted V-shaped relationships with these odds that apparently were masked in the linear model. A standard-deviation increase in percentage of foreign-born residents in a neighborhood remaining below the mean of such percentages would be expected to increase the odds of repeating a grade by 737 percent, but such a change in a neighborhood remaining above the mean percentage of foreign-born residents would be expected to *decrease* the odds by 89 percent. The corresponding estimates for the percentage of pre-1940 housing stock were even larger: 1,770 percent increase and 49 percent decrease, respectively. A standard-deviation increase in the social problems index in a neighborhood remaining below the mean of such would be expected to increase the hazard of repeating a grade by 219 percent, but such a change in a neighborhood remaining above the mean percentage of foreign-born residents would be expected to *decrease* the hazard by 29 percent. The foreign-born population exhibited a similar nonlinear relationship with being suspended or expelled. A standard-deviation increase in percentage of foreign-born residents in a neighborhood remaining below the mean of such percentages would be expected to increase the odds of suspension by 412 percent, but such a change in a neighborhood remaining above the mean percentage of foreign-born residents would be expected to *decrease* the odds by 77 percent.[103]

The neighborhood percentage of Latino residents did not appear to be related to the odds of suspension or expulsion in the linear model results. It exhibited a V-shaped relationship in the spline models, however. A standard-deviation increase in the percentage of Latino residents in a neighborhood remaining below the mean of such percentages would be expected to decrease the odds of suspension or expulsion by 73 percent, but such a change in a neighborhood remaining above the mean percentage of Latino residents would be expected to *increase* the odds by 119 percent.

Finally, one nonlinear relationship indicated the presence of minimum threshold before any strong relationship emerged. In the cases of repeating a grade and dropping out, the respiratory hazards index appeared to have no relationship when it remained below average; only when the respiratory hazards index assumed values above its mean was there any predictive power. A standard-deviation increase in this index occurring in a neighborhood remaining above the mean of this index would be expected to increase the odds (hazard) of repeating a grade by a substantial 357 (238) percent and the odds (hazard) of dropping out by 478 (363) percent.

Discussion

The results reported above clearly show that several aspects of the neighborhood safety, physical, social, and demographic context are statistically and substantively important predictors of many outcomes related to educational performance. Below, we organize the discussion around thematic categories of neighborhood context.

[103] The aforementioned patterns for foreign-born and pre-1940 characteristics were echoed in the Cox model results, as well.

Neighborhood Safety

The most dramatic and consistent finding was that neighborhood violent and property crime rates apparently had opposite effects on educational outcomes. Violent and property crime rates exhibited statistically significant and substantively large relationships in the aggregate sample that were replicated consistently across at least two strata for multiple educational outcomes, though this pattern was least consistent for the African-American stratum. As might be expected, youth living in more violent neighborhoods had a lower likelihood of taking advanced or gifted classes. Unexpectedly, places that had more violent crime were associated with *reduced* likelihood of being placed in special education, being suspended or expelled, repeating a grade, or dropping out before receiving a diploma. Precisely the opposite relationships were manifested for property crime rates (except in the case of advanced or gifted classes). For both types of crime, relationships exhibited with:

- Special education outcomes were strongest for female and Latino youth.
- Suspensions and expulsions were strongest for male and Latino youth.
- Grade repetition and dropping out were strongest for male, female, and Latino youth.

The unexpected direct relationships between violent crime rates and multiple positive educational performance measures suggest what might be termed a “compensatory effect.” As we introduced in Chapters V and VI, one possible explanation may be that fear of violence induces more caregiver or self-imposed restrictions on youths’ movements outside of home, immediate environs, and school (including not being employed, as we explore in the next chapter). Analogous sorts of reactions may occur in schools located in more violent neighborhoods that, though directly aimed at protecting children from violence, indirectly yield proeducation spillovers. The ironic consequence of these compensatory personal and institutional behaviors may be superior school performance and reduced chances of having disciplinary problems. This relationship may be mediated by risky behaviors that yield negative consequences for educational performance, fully consistent with the findings reported in Chapter VI. The nonlinear relationships evinced in the cases of special education assignment, grade repetition, and dropping out clearly suggest, however, that there are limits to the efficacy of these defensive, compensatory responses to neighborhood violence by parents, students, and schools. In neighborhoods with *above-average* violent crime rates the associations between violent crime and these three outcomes are strongly negative, suggesting that past some threshold the corrosive educational effects of neighborhood violent crime can no longer be held in check. These negative effects could represent manifestations of psychological and physical reactions associated with intensified stress related to potential and actual exposure to violence (as we explored in Chapter V) or the upsurge in likelihood of risky behaviors (as we observed in Chapter VI).

Several underlying causal pathways are plausible for understanding the observed inverse relationships between property crime rates and multiple measures of educational performance. In neighborhoods with more property crime there may be more incentives to engage in risky behaviors (as we demonstrated in Chapter VI) and for older youth to seek employment (as we document in the next chapter), which may work to the detriment of their school performance.[104] In such neighborhoods, there also will be higher incidences of youth witnessing and being victimized by violence (as we demonstrated in Chapter V), which creates distractions at least and psychological trauma at worst that can impede academic achievement. Finally, in Chapter IV we demonstrated that property crime is strongly predictive of higher risks of asthma, neurodevelopmental disorders, internalizing behavior, and use of behavioral health services, all of which could interfere with children's academic performance.

Why the aforementioned relationships are distinctly weaker for African-American children remains a subject for further explorations, especially because the same finding emerged in Chapter VI regarding risky behaviors and neighborhood safety. It may be the case that Denver African-American families have more success in defending their children against the potential harms of neighborhood crime, either by distinctive caregiver monitoring strategies or by arranging for more of their children's time to be spent outside of more crime-ridden neighborhoods (such as enrolling in schools outside of the neighborhood, which is permitted in Denver).[105]

Neighborhood Housing Stock and Environment

Youth living in older Denver neighborhoods that have higher percentages of pre-1040–vintage dwellings exhibited several inferior educational outcomes: much higher rates of suspensions and expulsions (especially if they were African American), repeating a grade (though with strong diminishing marginal impacts), and dropping out (especially if they were not males).[106] Our explanation is that older Denver neighborhoods serve as a proxy for traditional street patterns, mixed land uses, and associated routine activity spaces, as we have amplified in prior chapters. We have previously found that growing up in such neighborhoods is associated with greater exposure to violence (Chapter V) and higher likelihoods of risky behaviors (Chapter VI), both of which may generate negative impacts on educational performance.[107]

Neighborhood Social Status

A neighborhood's superior occupational status often proved predictive of multiple positive educational outcomes. Residing in a higher-prestige neighborhood was associated with reduced likelihoods of special education placement (especially for African Americans and females), repeating a grade (only for females), dropping out (all strata), and perhaps being suspended or

[104] Neighborhoods that have more property crime can create incentives to work for at least two reasons. There may be higher incidences of teens being victimized by property crimes, which creates a stronger need to replace stolen or damaged goods. There also may be increased status competition from perpetrators of property crime involving the ostentatious display of personal consumption items. In addition, there may be a correlation between property crime and greater amounts of nonresidential land uses, which may serve as a proxy for locally available employment opportunities (which we cannot measure in our models).

[105] This distinction is not the result of insufficient variation in violent crime rates across the African-American stratum; on the contrary, the variation is larger than for the Latino stratum.

[106] The exception to this pattern is that older housing was associated with a slightly shorter period before placement into advanced or gifted classes and female students' lower likelihood of being placed in special education classes.

[107] We do not interpret these results as implying that older housing offers a less healthy environment for youth cognitive and behavioral development, given that our findings in Chapter IV revealed no relationships between this variable and asthma, developmental disorders, or mental health outcomes.

expelled (at least for those currently living in DHA). These results have intuitive appeal from the perspective of local networks, norms, and role models related to these educational behaviors. Neighborhoods that surround their youth with higher prestige workers likely expose them to norms and role models that encourage educational success and perhaps provide access to networks of information about postsecondary school opportunities, prerequisites, and payoffs.[108] Mediated causal pathways are also possible. We demonstrated in Chapters IV, V, and VI that higher status neighborhoods strongly predicted better child health outcomes, less exposure to violence, and fewer risky behaviors, any or all of which could provide clear educational payoffs for children and youth.

The one unexpected result was that neighborhood occupational prestige was inversely related to being in advanced or gifted classes for African-American and Latino youth alike as well as the full sample. This might be attributed to our sample youth from such prestigious neighborhoods attending more competitive schools with a higher achieving student body, thus reducing their chances of being selected for the advanced programs or being designated as "gifted" relatively, even if their performance was enhanced in absolute terms. Alternatively, schools in higher prestige Denver neighborhoods may hold stereotypes about Latino and African-American students being less talented.

Neighborhood Ethnic and Nativity Composition

We identified several important, direct relationships between the foreign-born composition of the neighborhood's population and positive educational outcomes. For the full sample, higher percentages of foreign-born residents were associated with several positive outcomes: lower odds of either being placed in special education classes (especially for female and Latino youth) or repeating a grade of school (especially for Latinos); for female youth, this variable also predicted significantly lower odds of dropping out. In the cases of suspensions or expulsions and repeating grades, nonlinear results indicate the apparent marginal benefits are strongest when the immigrant population constitutes a larger share of the neighborhood. These results are consistent with the notion that immigrant populations can play powerful normative, role-modeling, and behavioral monitoring functions that are proeducational when they become a culturally significant force in the neighborhood. The fact that the majority of such immigrants in Denver originated from Mexico can also explain why these educational results typically appear strongest for Latino and female youth, who might be expected to be most influenced by the aforementioned collective socialization and monitoring forces. It is worth noting that the apparent positive educational externalities stemming from foreign-born neighbors were observed even after controlling for the immigrant status of the sample youths' parents (which only rarely proved a statistically significant covariate, however). The pathway(s) from immigrant neighbors to superior educational outcomes may also be mediated, as in the case of occupational prestige. We demonstrated in Chapter VI that neighborhoods that have larger immigrant concentrations strongly predicted fewer risky behaviors, which could provide clear educational payoffs for children and youth. One less felicitous outcome—less likelihood of African-American youth taking advanced or gifted classes—was associated with higher percentages of foreign-born neighbors. This may be the result of schools in immigrant-dense areas diverting limited

[108] This mimics results from Gautreaux, which showed how higher economic expectations in advantaged neighborhoods positively influenced lower income teen in-movers (Rosenbaum, DeLuca, and Tuck, 2005).

curricular resources away from advanced courses to more basic, remedial, and English as a Second Language classes.

Although never statistically significant consistently across the full analysis samples, the ethnic composition of the neighborhood revealed some intriguing and asymmetric relationships for Latino and African-American youth. Higher percentages of Latino residents were associated with both favorable and unfavorable educational consequences for Latino youth: reduced odds of dropping out and (at least up to a point) being suspended or expelled[109] and increased odds of special education placement. These findings imply that Latino community norms and behavioral monitoring may operate in a similar fashion as those described above for immigrants to create proeducation outcomes. These positive externalities are understandably stronger for Latino youth, who are most immersed in and vulnerable to such neighborhood collective processes. Because a majority of foreign-born residents of Denver are primarily of Mexican origin, this raises the prospect of substantial proeducation effects—especially for Latino but also for African-American youth—in neighborhoods inhabited by greater shares of Latino immigrants, all else being equal. This effect may be mediated through risky behaviors, consistent with our findings in Chapter V. The result related to special education may be a function of language and cultural competency. Latino youth more embedded within Latino communities may develop fewer skills in mainstream English and culture, which may penalize them in the perceptions of school personnel making decisions about who is assigned to gifted and advanced programs.

Different results emerged for the African-American composition of the neighborhood. Stratified analyses revealed that higher percentages of African-American residents were associated with lower odds of taking advanced or gifted classes for resident African-American and male youth and higher odds of repeating a grade for resident Latino youth. We cannot forward a strong case for why these results emerged. It may be related to different collective norms and behavioral monitoring strategies in the African-American communities in Denver. It may also be explained by idiosyncrasies in the schools in such areas. For example, schools in heavily African-American neighborhood may be less likely to offer advanced classes. Such schools may also be less likely to provide bilingual or English as a Second Language classes, thereby increasing the likelihood of grade repetition by Latino students who are not native English speakers.

Neighborhood Peers

A final interesting result emerged related to our measure of bad peer influences in the neighborhood: caregivers who perceived that many youth in their neighborhoods “get into trouble.” Although this neighborhood indicator never proved to be a consistent and significant predictor across the three analysis samples, it did emerge as important in some strata for some outcomes. Female youth living in neighborhoods that had “negative peers” were much more likely to be suspended or expelled and to drop out before graduating; African-American youth in such places were more likely placed in special education classes. These results offer some tantalizing indications that peer effects may indeed be a vital mechanism for creating a causal link between neighborhood context and individual educational outcomes.

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[109] The last relationship was nonlinear, however, and suggested that high concentrations of Latino residents may have harmful behavioral consequences for students.

Geographic Selection Bias Revisited

Recall in Chapter III that we argued that the estimated value of the “true” neighborhood effect likely lies within the range of estimates garnered from our various analysis samples, which consider different potential types of geographic selection postinitial assignment by DHA. In many cases of educational outcomes reported in Exhibits VII-1 to VII-10, the estimated neighborhood indicator parameters were substantially different among the “ever in DHA,” “currently in DHA,” and “mostly in DHA” samples, so unfortunately, our likely “true” estimate was not narrowly circumscribed. Fortunately, however, there was no pattern of one particular sample consistently producing the largest or smallest set of parameter estimates for the neighborhood indicators. Thus, we are less inclined to worry here about distortions caused by postassignment geographic selection. Instead, we suspect that the wide variance of point estimates was the result of the sensitivity of our maximum-likelihood estimators when key multivariate combinations exhibited small cell counts in particular samples.

Conclusion

Many aspects of neighborhood context are statistically and substantively important predictors of a battery of school-related outcomes, though sometimes in unexpected ways. Aspects of the neighborhood’s violent and property crime rates, physical environment, social status, ethnic mix, and nativity mix exhibit substantial predictive power in both models predicting the odds of educational outcomes ever occurring and the duration before such outcomes occur. Educational outcomes generally are more favorable in neighborhoods that have higher occupational prestige and percentages of foreign-born and Latino residents and lower rates of property crime and pre-1940–vintage dwellings. Outcomes generally are better in neighborhoods that have moderate rates of violent crime than with none but grow progressively worse as violent crime rates exceed average levels. The magnitudes of most of these apparent influences typically appear to be contingent on the gender and ethnicity of the youth. Nonlinear neighborhood effects do not appear to be the norm, though violent crime consistently manifests a V-shaped relationship with the odds of educational outcomes. The few nonlinear patterns observed are inconsistent across indicators, although respiratory risk exhibits a theoretically defensible minimum threshold before negative outcomes are manifested.

VIII. LABOR MARKET OUTCOMES

Introduction

In this chapter, we consider a variety of labor market–related outcomes for two older groups of low-income, minority youth in our *Denver Child Study*: teens 14–17 years of age and young adults 18–33 years of age. For the teen group, we analyze whether they were gainfully employed before reaching adulthood, whether they were employed more than 20 hours per week, and a continuous measure of how many hours they were employed weekly during this period. For the young adult group, we analyze whether since turning 18 years of age they primarily worked full time, attended school after high school, and neither worked nor attended postsecondary school. For both groups, we find evidence of strong neighborhood effects, though sometimes with unexpected aspects of context operating in surprising ways.

Teen Labor Market Analysis

The subjects in our teen analysis range from 14 to 33 years of age at the time of survey (average age: 20), though here we examine only their labor outcomes when they were younger than 18 years of age. In this sample, we have a slight overrepresentation of Latino males (32 percent) compared with the other gender-ethnic groups: Latina females comprise 26 percent, African-American females 24 percent, and African-American males 18 percent.[110] We analyze three teen labor market outcomes for the period prior to turning 18 years of age: (1) whether they were ever employed, (2) whether they worked an average of 20 or more hours per week when employed,[111] and (3) the number of hours worked weekly on average (including zero). We ascertain these outcomes on the basis of the *Denver Child Study* caregiver survey respondent's responses to the questions, "Were any of your children employed before age 18? If yes, on average how many hours per week did __[youth]__work before age 18?" Forty-four percent of our sampled teens worked prior to 18 years of age, and 27 percent worked more than 20 hours per week during their high school years, on average. Sample teens worked 8.8 hours weekly, averaged across workers and nonworkers.

Because the first two teen labor outcomes are dichotomous measures, we employ logit models with clustered robust standard errors for parameter estimation.[112] The last measure for weekly hours worked is highly positively skewed, because 56 percent of the sample worked zero hours. We therefore employ the well-known Tobit estimation procedure using clustered standard errors

[110] These statistics apply to the "ever in DHA" sample but are comparable in the "majority of high school in DHA sample," as well. Complete descriptive statistics for all variables related to these samples are available from the authors.

[111] We model this dichotomous outcome in addition to a continuous measure of work hours because of the sizable scholarly literature indicating that 20 hours of work weekly is a threshold that separates high schoolers based on a variety of academic performance measures, with those working more intensively being associated with poorer performance (D'Amico, 1984; Steinberg and Dornbusch, 1991;Steinberg, Fegley, and Dornbusch, 1993; Warren, 2002; Warren, LePore, and Mare, 2000).

[112] In one or more of our strata, the multilevel mixed-effects logistic models failed to converge, so for consistency, we employ logits throughout.

(Tobin, 1958).[113] As with outcomes reported in earlier chapters, we estimate these models for the previously defined "ever in DHA," "currently in DHA," and "mostly in DHA" samples to assess the robustness of our results.

Both logistic and Tobit models use the same core covariates common to all our analyses. Here, we measure "contemporaneous" family and neighborhood context as the average experienced from 14 years of age through the year in which a teen begins working or through 17 years of age if the teen never worked (or age at the time of survey if before 17 years of age).[114] Thus, these analyses can be interpreted as investigating the degree to which employment outcomes evinced before turning 18 years of age have any relationship with the average neighborhood conditions to which they were exposed during high school up to the point where they started working. Our labor market outcome analyses add two more covariates. The age of the caregiver when she or he gave birth or fathered the focal child is included as a control of the caregiver's experience and sophistication in coping with life challenges while raising a child, potentially affecting the child's life trajectory. We also add the annual growth rate in U.S. gross domestic product (GDP) during the year in which the youth first worked (or time of survey or 17 years of age, whichever is earlier). This is intended as a control for the strength of the macro economy and thus the job market prospects confronting the youth during high school.[115] We employ the same set of neighborhood indicators as before, with the exception of omitting the respiratory risk and neurological risk indicators. Unfortunately, these indicators were not available during the period when many of our sample youth were in high school, so their inclusion in the model forced an unacceptable diminution of sample size.

Young Adult Labor Market Analysis

The young adults in our analysis range in age from 18 to 33 years of age at the time of survey (average age: 22) and are almost evenly divided by gender and ethnicity: Latinas(os) comprise 24 (29) percent and African-American females (males) 24 (23) percent, respectively.[116] For this group, we define three labor market–related outcomes. The first outcome is "primarily working full time," ascertained on the basis of the *Denver Child Study* caregiver survey respondent's first (mutually exclusive) categorical response to the question, "Since turning 18, has _[youth]_ *primarily* been working full time, working part time, not working but attending school, or neither working nor attending school?" We define the second outcome as "*not* being employed (either part or full time) *or* enrolled in postsecondary education or training," assessed by the same question above. The third outcome is "attended school past grade 12," which we assess by a caregiver response to the question, "How many years of schooling did [youth] complete?" being

[113] The coefficient of a covariate in a Tobit model should be interpreted as the net effect of (1) the change in the dependent variable for those with positive values, weighted by the probability of having such values; and (2) the change in the probability of having positive values, weighted by the expected value of the dependent variable when it is positive (McDonald and Moffit, 1980).

[114] If the teen ever worked, the parent or caregiver was asked the teen's age at this point. We did not use hazard models here to probe the timing of first work because of the narrow span of feasible years involved.

[115] Recall that localized labor market prospects are implicit in our neighborhood social vulnerability score, which includes within it census tract unemployment rate. Unfortunately, tract-specific information on the location of jobs was unavailable for most of the years relevant for our study sample.

[116] These statistics apply to the "ever in DHA" sample but are comparable in the "majority of high school in DHA sample," as well. Complete descriptive statistics for all variables related to these samples are available from the authors.

greater than 12 years. Note that the first two outcomes are mutually exclusive responses to the same question, but the third is not because it is based on a different question.[117] In our analysis sample, 42 percent primarily worked full time, 13 percent completed at least a year of postsecondary education, and 17 percent neither primarily worked nor attended postsecondary school as young adults.

Because we have no information about the residential locations of our sample young adults after 18 years of age, we must employ a different means of operationalizing "contemporaneous contexts" compared with the labor outcome models for teens or any of the other child outcomes considered in previous chapters of this report. Here, we compute the *average* contexts experienced by the young adult during 14-18 years of age, both circumstances in their families and neighborhood contexts. So, instead of measuring context for a given year of onset, we use the average context for an entire developmental stage. Thus, these analyses can be interpreted as investigating the degree to which average neighborhood conditions to which youth were exposed during high school have any relationship with the likelihoods of their employment and education outcomes evinced as young adults.

All of our young adult labor market outcomes are dichotomous, so we employ multilevel mixed-effects logistic models (or logits when the mixed-effects models did not converge) as our primary analytical procedure. These models use the same core covariates common to all our analyses but add the same two covariates as above: caregiver age at time of focal child's birth and annual growth rate in U.S. GDP during the year in which the youth turned 18 years of age. We employ the same set of neighborhood indicators as before, again omitting the respiratory risk and neurological risk indicators because of sample size considerations, as explained above. The nature of this age group also requires us to modify slightly the specification of the various analysis samples that we have previously compared to test the robustness of our findings. Here, we will replicate our analyses using two samples[118] of young adults that we label "ever in DHA" and "mostly in DHA." Both samples required (1) family quasi-random assignment to Denver, Colorado, Housing Authority (DHA) housing before the youth reached 14 years of age and (2) covariates observed for the majority of years during 14 to 18 years of age. The "mostly in DHA" category includes the prior criteria plus the youth spent the *majority of 14–18 years of age living in DHA housing*. Most of the contextual exposure this latter sample had accumulated as adolescents involved the randomly assigned neighborhood; this is not necessarily true in the former sample, because it includes some families who selected out of the DHA-assigned location before the child reached adolescence.

Estimated Neighborhood Effects on Labor Market Outcomes

As with other chapters, we first highlight the main findings without comment, reserving interpretation and explanations for a final section of the chapter so we can be more holistic in our discussion.

[117] A subject could have acquired some postsecondary education but still "primarily" worked full time.
[118] Unlike prior analyses, we cannot specify a "currently in DHA" sample, because we do not know the residential location of young adults from our survey.

Teens

Results for our models of teen labor market outcomes are presented in Exhibits VIII-1 to VIII-3. The first two show logit model results for ever having been employed and being employed for more than 20 hours weekly before turning 18 years of age, respectively; the third shows the Tobit model results for average weekly hours worked during this period. All present nondichotomous variables that are normalized to aid cross-variable comparability of coefficients. As before, we consider only those results that are statistically significant in two or more of the analysis samples.

The models generally reveal few consistently significant individual- or household-level predictors. Younger teens clearly were less likely to work. Compared with those 18 years of age and older at the time of survey, 15-year-olds had 90–93 percent–lower odds of ever working and never were employed more than 20 hours per week; on average, they worked 25–27–fewer hours weekly, depending on the analysis sample. Compared with those 18 years of age and older at the time of survey, 16-year-olds had 65–71 percent–lower odds of ever working and on average worked 10–12–fewer hours weekly. Latino males had 66–75 percent–lower odds of working 20 hours per week or more, compared with African-American males. Teens whose families experienced a one-standard-deviation-higher stressor index had 38 percent–lower odds of being employed and would be predicted to work 3–4 hours less, on average. Finally, as expected, a one-standard-deviation-higher annual growth rate in GDP during a youth's teen years was associated with between 37 percent and 61 percent–higher odds of working 20 or more hours weekly.

Neighborhood crime indicators proved statistically significant predictors, though in opposite directions. Higher rates of property crime were associated with greater teen employment prospects, but the opposite association was exhibited by violent crime rates. A one-standard-deviation-higher neighborhood property crime rate was associated with 78–109 percent–higher odds of being employed. A one-standard-deviation-higher neighborhood violent crime rate was associated with 59–60 percent–lower odds of being employed 20 or more hours per week and (in the "ever in DHA" sample) 5.5 fewer hours worked weekly.

Several other neighborhood context indicators proved consistently statistically significant predictors of teen employment, though in surprising directions. Teens in a neighborhood that had a one-standard-deviation-higher household turnover rate had 119 percent–higher odds of working 20 or more hours weekly. Neighborhoods that had a one-standard-deviation-higher percentage of pre-1940 housing stock were associated with 49–56 percent–higher odds of ever working as a teen and about 4 more weekly hours of work. Teens experiencing a one-standard-deviation-higher neighborhood child abuse and neglect rate during their high school years would be predicted to work 4.7–5.3 more hours weekly, depending on the analysis sample.

Exhibit VIII-1. Standardized Logit Models Predicting Teen Employment

	Ever in DHA			Currently in DHA			Mostly in DHA		
	OR		**SE**	**OR**		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values measured as average during high school unless otherwise noted)									
Proportion of time living in neighborhood with negative peers	1.07		(0.18)	1.15		(0.25)	1.22		(0.26)
Social capital index	1.16		(0.16)	1.16		(0.18)	1.14		(0.18)
Social problems index	1.25		(0.24)	1.25		(0.31)	1.23		(0.29)
Social vulnerability score	0.79		(0.24)	0.55		(0.22)	0.59		(0.22)
Percent African American residents	0.74		(0.16)	0.84		(0.26)	0.86		(0.25)
Percent Latino residents	0.56		(0.20)	0.71		(0.31)	0.73		(0.30)
Occupational prestige score	0.66		(0.18)	0.74		(0.23)	0.76		(0.23)
Percent foreign born residents	1.06		(0.26)	0.89		(0.26)	0.88		(0.25)
Percent of residents who moved in preceding 12 months	1.17		(0.20)	1.32		(0.30)	1.35		(0.30)
Proportion of time living in neighborhood with hospitals and clinics	1.28		(0.18)	1.03		(0.19)	1.14		(0.20)
Resource factor score	0.81		(0.19)	1.17		(0.33)	1.02		(0.29)
Percent of housing built before 1940	1.23		(0.19)	1.56	*	(0.33)	1.49	*	(0.29)
Violent crime rate per 1,000	0.55		(0.17)	0.73		(0.29)	0.73		(0.27)
Property crime rate per 1,000	1.78	*	(0.43)	2.09	*	(0.60)	1.78	*	(0.49)
Child abuse and neglect rate per 1,000	1.50	*	(0.30)	1.41		(0.32)	1.48		(0.33)
Number of observations	444			339			352		
Number of clusters	272			218			226		
Log-Likelihood	-244.50			-176.00			-185.40		
Chi-square	82.44	***		77.86	***		81.38	***	
Pseudo-R^2	0.20			0.24			0.23		

Notes:
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.
* p < 0.05; ** p < 0.01; *** p < 0.001.

Exhibit VIII-2. Standardized Logit Models Predicting Teen Employment for 20+ Hours per Week

	Ever in DHA			Currently in DHA			Mostly in DHA		
	OR		SE	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured as average during high school unless otherwise noted)									
Proportion of time living in neighborhood with negative peers	1.28		(0.23)	1.21		(0.30)	1.32		(0.33)
Social capital index	1.07		(0.15)	1.09		(0.18)	1.10		(0.18)
Social problems index	0.88		(0.19)	0.86		(0.24)	0.82		(0.21)
Social vulnerability score	0.77		(0.22)	0.77		(0.28)	0.79		(0.28)
Percent African American residents	0.76		(0.18)	0.80		(0.25)	0.81		(0.23)
Percent Latino residents	0.74		(0.29)	1.21		(0.57)	1.19		(0.54)
Occupational prestige score	0.56		(0.17)	0.60		(0.21)	0.57		(0.19)
Percent foreign born residents	0.85		(0.23)	0.57		(0.20)	0.54		(0.18)
Percent of residents who moved in preceding 12 months	1.28		(0.23)	2.19	**	(0.56)	2.19	**	(0.56)
Proportion of time living in neighborhood with hospitals and clinics	1.27		(0.18)	1.11		(0.22)	1.19		(0.23)
Resource factor score	0.87		(0.20)	1.03		(0.33)	0.89		(0.28)
Percent of housing built before 1940	1.08		(0.18)	1.35		(0.30)	1.39		(0.30)
Violent crime rate per 1,000	0.59		(0.17)	0.41	*	(0.15)	0.40	*	(0.15)
Property crime rate per 1,000	1.30		(0.32)	1.12		(0.37)	1.02		(0.32)
Child abuse and neglect rate per 1,000	1.17		(0.27)	1.33		(0.35)	1.40		(0.36)
Number of observations	399			300			313		
Number of clusters	244			195			203		
Log-Likelihood	-217.40			-145.10			-152.30		
Chi-square	43.32			50.82			49.22		
Pseudo-R^2	0.112			0.197			0.193		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Exhibit VIII-3. Standardized Tobit Models Predicting Teen Weekly Hours Worked

	Ever in DHA			Currently in DHA			Mostly in DHA		
	Coeff.		SE	Coeff.		SE	Coeff.		SE
Neighborhood Characteristics (all continuous variables reflect standardized values measured as average during high school unless otherwise noted)									
Proportion of time living in neighborhood with negative peers	2.08		(1.52)	1.71		(1.71)	2.45		(1.73)
Social capital index	0.83		(1.30)	0.60		(1.33)	0.65		(1.35)
Social problems index	0.58		(1.71)	0.36		(1.92)	0.01		(1.92)
Social vulnerability score	-3.73		(2.88)	-4.32		(3.17)	-3.92		(3.23)
Percent African American residents	-3.24		(2.05)	-1.86		(2.44)	-1.66		(2.47)
Percent Latino residents	-5.76		(3.18)	-2.55		(3.56)	-2.88		(3.61)
Occupational prestige score	-5.54	*	(2.34)	-3.25		(2.57)	-3.73		(2.59)
Percent foreign born residents	0.47		(2.24)	-0.63		(2.54)	-0.85		(2.56)
Percent of residents who moved in preceding 12 months	1.83		(1.67)	3.21		(1.89)	3.19		(1.94)
Proportion of time living in neighborhood with hospitals and clinics	2.38		(1.29)	0.10		(1.53)	0.78		(1.50)
Resource factor score	-2.21		(2.13)	1.55		(2.35)	0.23		(2.39)
Percent of housing built before 1940	2.67		(1.42)	4.00	*	(1.67)	4.17	*	(1.69)
Violent crime rate per 1,000	-5.54	*	(2.55)	-4.11		(2.77)	-4.50		(2.83)
Property crime rate per 1,000	4.35		(2.29)	3.72		(2.45)	2.76		(2.48)
Child abuse and neglect rate per 1,000	4.80	*	(1.99)	4.72	*	(2.07)	5.25	*	(2.13)
Constant	4.80	*	(1.99)	6.57		(4.75)	6.19		(4.71)
Ancillary parameter	19.60	***	(1.14)	18.31	***	(1.21)	18.88	***	(1.23)
Number of observations	442			337			350		
Log-Likelihood	-981.17			-740.64			-767.44		
Chi-square	115.68	***		104.08	***		102.98	***	
Pseudo-R^2	0.06			0.07			0.06		

Notes:
Tobit coefficients presented; standard errors in parentheses. Models control for child, caregiver and household characteristics.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Young Adults

Results for our multilevel logit (or logit) models of young adult labor market outcomes are presented in Exhibits VIII-4 through VIII-6. All present nondichotomous variables that are normalized to aid cross-variable comparability of coefficients. Consistent with our discussion of other outcomes earlier in this report, below we will emphasize results that are robust across both samples applicable to this age group.

As in the case of teen labor market outcomes, few individual- or household-level predictors proved statistically significant across samples. Those who were one standard deviation older at the time of the survey were substantially more likely (231–556 percent–higher odds, depending on the sample) to have primarily worked full time and less likely (54–76 percent–lower odds) to have primarily neither worked nor attended school since turning 18 years of age. Latino males had 235–556 percent–higher odds than African-American males of primarily working full time, all else being equal. If the young adult's household had a one-standard-deviation-higher log of income during high school, their odds of neither working full time nor attending school were reduced by 61–75 percent.

Neighborhood nativity and ethnic composition proved predictive. Higher percentages of neighborhood foreign-born populations were strongly associated with more felicitous young adult outcomes, whereas the opposite was the case for percentages of Latino population. Young adults who spent their high school years in a neighborhood that had a one-standard-deviation-higher percentage of foreign-born residents had, all else being equal, 169–458 percent–higher odds of primarily working full time and 64–85 percent–lower odds of neither working nor attending school. In contrast, young adults who spent their high school years in a neighborhood with one-standard-deviation-higher percentage of Latino residents have, all else being equal, 69–82 percent–lower odds of primarily working full time and at least 3 times–higher[119] odds of neither working nor attending school.

Two other neighborhood context variables proved predictive but in unexpected ways. Our composite indicator of neighborhood social vulnerability proved positively associated with educational achievements as a young adult. Those who spent their high school years in a neighborhood that had one-standard-deviation-higher social vulnerability score would be predicted to have 291–529 percent–higher odds of obtaining some postsecondary schooling. Higher rates of violent crime were associated with 81–92 percent–lower odds of neither working nor attending school and (in the "ever in DHA" sample) 5 times–higher odds of obtaining postsecondary education.

[119] The point estimate for the "mostly in DHA" sample is unrealistically large, reflecting an idiosyncrasy in the maximum likelihood algorithm in both the logit and multilevel logit models.

Exhibit VIII-4. Standardized Multilevel Mixed-Effects Logistic Models Predicting Full-Time Employment Among Young Adults

	Ever in DHA			Majority in DHA		
	OR		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values calculated as an average of measures taken during high school stage unless otherwise noted)						
Proportion of time living in neighborhood with negative peers	1.54		(0.36)	1.85		(0.63)
Social capital index	1.21		(0.24)	1.20		(0.30)
Social problems index	1.32		(0.30)	1.26		(0.42)
Social vulnerability score	0.63		(0.23)	0.55		(0.29)
Percent African American residents	0.80		(0.26)	1.14		(0.63)
Percent Latino residents	0.31	*	(0.16)	0.18	*	(0.14)
occupational prestige score	0.79		(0.30)	1.22		(0.72)
Percent foreign born residents	2.69	**	(1.02)	5.58	**	(3.20)
Percent of residents who moved in preceding 12 months	0.91		(0.21)	0.80		(0.27)
Percent of time living in neighborhood with hospitals and clinics	1.29		(0.24)	1.36		(0.36)
Resource factor score	0.40	**	(0.14)	0.76		(0.35)
Percent of housing built before 1940	1.28		(0.29)	1.02		(0.35)
Violent crime rate per 1,000	1.52		(0.62)	2.21		(1.57)
Property crime rate per 1,000	1.32		(0.44)	1.41		(0.73)
Child abuse and neglect rate per 1,000	0.88		(0.31)	1.07		(0.55)
Number of observations	323			235		
Log-Likelihood	-169.66			-112.11		
Chi-square	36.61			26.45		
LR Chi-square (XTME vs. Logistic)	0.38			0.76		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Exhibit VIII-5. Standardized Multilevel Mixed-Effects Logistic Models Predicting Post-Secondary Education Among Young Adults

	Ever in DHA			Majority in DHA		
	OR		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values calculated as an average of measures taken during high school stage unless otherwise noted)						
Proportion of time living in neighborhood with negative peers	1.05		(0.30)	1.34		(0.61)
Social capital index	1.15		(0.29)	1.41		(0.49)
Social problems index	1.14		(0.31)	1.71		(0.75)
Social vulnerability score	3.91	*	(2.23)	6.29	*	(5.32)
Percent African American residents	0.92		(0.41)	0.56		(0.42)
Percent Latino residents	0.68		(0.46)	0.27		(0.27)
occupational prestige score	2.25		(1.34)	1.46		(1.11)
Percent foreign born residents	2.69	*	(1.19)	3.27		(2.12)
Percent of residents who moved in preceding 12 months	0.69		(0.22)	0.50		(0.26)
Proportion of time living in neighborhood with hospitals and clinics	1.22		(0.32)	0.91		(0.34)
Resource factor score	1.23		(0.54)	0.65		(0.39)
Percent of housing built before 1940	0.54		(0.19)	0.81		(0.38)
Violent crime rate per 1,000	6.12	**	(4.03)	3.45		(3.04)
Property crime rate per 1,000	0.29	*	(0.17)	0.22		(0.20)
Child abuse and neglect rate per 1,000	0.21	*	(0.15)	0.41		(0.42)
Number of observations	323			235		
Log-Likelihood	-88.38			-51.07		
Chi-square	37.70			28.46		
LR Chi-square (XTME vs. Logistic)	0.00			0.00		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Exhibit VIII-6. Standardized Logit Models Predicting Young Adult was Neither in School Nor Employed

	Ever in DHA			Majority in DHA		
	OR		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values calculated as an average of measures taken during high school stage unless otherwise noted)						
Proportion of time living in neighborhood with negative peers	1.02		(0.23)	0.67		(0.18)
Social capital index	1.14		(0.21)	1.82	*	(0.45)
Social problems index	0.60		(0.18)	0.38	**	(0.14)
Social vulnerability score	0.66		(0.33)	1.07		(0.81)
Percent African American residents	1.14		(0.42)	3.53		(2.86)
Percent Latino residents	4.11	*	(2.41)	32.66	***	(31.25)
occupational prestige score	0.49		(0.21)	0.50		(0.44)
Percent foreign born residents	0.36	*	(0.17)	0.15	**	(0.09)
Percent of residents who moved in preceding 12 months	1.56		(0.52)	2.94	**	(1.24)
Percent of time living in neighborhood with hospitals and clinics	0.86		(0.22)	0.50		(0.18)
Resource factor score	1.45		(0.61)	1.60		(1.02)
Percent of housing built before 1940	0.99		(0.25)	0.76		(0.43)
Violent crime rate per 1,000	0.19	**	(0.11)	0.08	**	(0.07)
Property crime rate per 1,000	1.65		(0.57)	1.56		(0.79)
Child abuse and neglect rate per 1,000	2.34	*	(0.87)	1.72		(0.72)
Number of observations	323			235		
Number of clusters	194			154		
Log-Likelihood	-108.69			-64.57		
Chi-square	76.35	***		66.42	**	
Pseudo-R^2	0.25			0.42		

Notes:

Logistic models were used for this outcome because of convergence problems with multilevel mixed-effects logistic models.

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Gender and Ethnic Differences in Neighborhood Effects

Estimated parameters for our models stratified by gender and ethnicity are presented in Appendix C. As is the case in all our prior discussions of stratified results, we employ the "ever in DHA" sample results, with the same estimation procedure employed across all strata as in the aggregate analyses to ensure comparability. Here again, we find substantial heterogeneity in apparent neighborhood effects. Indeed, in rare cases—most notably the violent crime rate—statistically significant relationships in the aggregate sample were replicated consistently across more than one stratum.

Teens

In the case of teens 14–17 years of age, the aforementioned aggregate relationships between neighborhood crime rates and teen labor market outcomes were strongly observed only in the male and African-American strata. Violent crime rates proved to be a consistent, statistically significant predictor for African Americans in all three teen outcomes. A standard-deviation increase in violent crime was associated with 83 percent–lower odds of working, 74 percent–lower odds of working 20 hours or more, and 9.7 fewer hours worked weekly, on average, for African Americans. For males, the corresponding figures were almost as large: 61 percent–lower odds of working 20 hours or more and 7.5 fewer hours worked weekly, on average. The positive relationship between neighborhood property crime rates and ever working was strong only for the African-American sample.

The associations between neighborhood pre-1940–vintage dwellings and teen labor force outcomes that emerged as significant in the aggregate models were almost exclusively produced from relationships emerging from the Latino stratum. For this group, a standard-deviation increase in the percentage of older dwellings was associated with 109 percent–higher odds of working and 7.1 more hours worked weekly, on average.

The aggregate positive relationship between neighborhood child abuse and neglect rates and hours worked manifested itself for females (7.9 more hours per standard-deviation increase) and African Americans (14.3 more hours). This indicator also predicted substantially higher odds of African Americans ever working as teens and working more than 20 hours weekly.

Prestige emerged as a statistically and economically significant predictor of fewer teen hours worked in two strata. A one-standard-deviation-higher neighborhood prestige score was associated with 7.6 fewer hours worked weekly by Latino teens and 8.0 fewer hours by male teens.

Finally, two additional aspects of context proved important for African-American teens. Access to medical facilities was associated with 94 percent–higher odds of ever working before 18 years of age, 254 percent–higher odds of working 20 hours or more, and 5.8 more hours worked weekly. For males, such access was associated with 4.0 more hours worked. African-American teens residing during high school in a neighborhood that had a one-standard-deviation-higher social vulnerability score would be predicted to have 80 percent–lower odds of ever working as teens and 10 fewer hours worked, on average.

Young Adults

The percentage of foreign-born residents proved to be a robustly powerful predictor of all young adult labor market outcomes, though in quite dissimilar magnitudes across several strata. Those spending their high school years in a neighborhood that had a one-standard-deviation-higher value of this indicator would be predicted to have their odds of primarily working full time boosted by roughly a factor of three for males and Latinos, twice the magnitude measured for the aggregate sample. The identical situation would be predicted to boost the odds of undertaking postsecondary education by 910 percent and 1,270 percent for females and Latinos, respectively; again, this is far larger than the magnitude for the aggregate sample. This variable's association with the odds of neither working nor undertaking postsecondary education was virtually identical across the four strata.

The percentage of Latino residents also evinced several divergent patterns of significance across strata. Those spending their high school years in a neighborhood that had a one-standard-deviation-higher value of this indicator would be predicted to have their odds of primarily working full time reduced by 78 percent and 94 percent for males and African Americans, respectively. The identical situation would be predicted to reduce the odds of undertaking postsecondary education by 94 percent for Latinos.

The aforementioned unexpected result for neighborhood social vulnerability and postsecondary schooling was manifested only in the Latino stratum. For Latinos, high school exposure to greater levels of neighborhood social vulnerability was associated with substantially higher (about 1,200 percent) odds of undertaking postsecondary education. However, the violent crime results were more broadly represented across strata. High school exposure to higher violent crime rates was strongly associated with higher odds of postsecondary education for both females and African Americans, and with lower odds of neither working nor attending school for both females and males.

Other neighborhood indicators emerged as statistically and economically significant predictors of young adult outcomes in a particular stratum, even though they were not so in the aggregate sample. Residing during high school years in a neighborhood that had a one-standard-deviation-higher:

- Social problems scale was associated with 141 percent–higher odds of primarily working full time after 18 years of age for females, 303 percent–higher odds of postsecondary education for Latinos, and 75 percent–lower odds of neither working nor attending school for Latinos.
- Property crime rate was associated with 92 percent–lower odds of females acquiring postsecondary education.
- Child abuse and neglect rate was associated with 100 percent–lower odds of African Americans acquiring postsecondary education and vastly greater odds of females neither primarily working nor going to school.
- Social capital index was associated with 113 percent–higher odds of primarily working full time after 18 years of age for Latinos and 770 percent–higher odds of postsecondary education for African Americans.

- Percentage of African-American residents was associated with 73 percent–lower odds of primarily working full time after 18 years of age and substantially higher odds of neither working nor attending school for African Americans only.
- Percentage of residents moving in during the past year was associated with vastly higher odds of African Americans neither primarily working nor going to school.
- Occupational prestige score was associated with 98 percent–lower odds of females neither primarily working nor going to school.
- Pre-1940 housing stock percentage was associated with a 101 percent–higher odds of primarily working full time after 18 years of age for males and a 89 percent–lower odds of acquiring some postsecondary education for African Americans.

Nonlinear Neighborhood Effects

Results for our nonlinear investigations employing spline regressions are presented in Appendix D. Only one noteworthy nonlinear relationship was uncovered. Social capital exhibited an inverted V-shaped relationship with teens' likelihood of working more than 20 hours per week. This unusual relationship undoubtedly precluded it appearing statistically significant in the core models. A standard-deviation increase in the social capital index in a neighborhood remaining below the mean of this index would be expected to increase the odds of employment over 20 hours by 81 percent, but such an increase in a neighborhood remaining above the mean social capital index would be expected to *decrease* the odds by 39 percent. [120] This implies that neighborhoods with either extremely low or high social capital may impede teens finding full-time employment; in the former case because there may be no local social networks to pass on job-related information and in the latter case because most of the networks are local and perhaps bereft of "bridging social capital."

Discussion

The results reported above clearly show that several aspects of neighborhood context are statistically and substantively important predictors of teen and young adult outcomes related to work and postsecondary education, though not necessarily identically for all groups. Below, we organize the discussion around thematic categories of neighborhood context.

Neighborhood Safety

In understanding impacts on labor market outcomes, our results indicate that "neighborhood safety" should not be viewed as a homogeneous, unidimensional construct. On the contrary, we have found that property crime and child abuse indicators on the one hand and violent crime and social problem indicators on the other hand appear to generate distinctive consequences. For low-income (especially male and African-American) teens, living in a neighborhood during high school with higher violent crime rates seems to reduce their teen employment prospects, but living in one with higher property crime or child abuse rates seems to have the opposite effect (especially for African-American and female youth). For low-income (especially female) young

[120] The effect for the above-mean range is computed by adding the estimated coefficients (not odds ratios), and then exponentiating the value to return the "net" odds ratio for the spline.

adults, living during high school in a neighborhood that has higher violent crime rates or social problems seems to increase their chances of acquiring postsecondary education, but living in one with higher property crime or child abuse rates seems to have the opposite effect.

The observed inverse relationship between violent crime and teen employment is expected, though the underlying causal pathways may be numerous. In violent neighborhoods, there may be:

- Fewer teen job opportunities within them or nearby (which we cannot measure in our models).
- Higher incidences of teens being victimized (see Chapter V) and reacting in ways that render them less willing or able to secure employment.
- Greater fear among teens to seek employment in places and times that might make them more vulnerable to being victimized.
- Greater reluctance among caregivers to allow teens to seek employment for fear that it might make them more vulnerable to being victimized.

Although we can rule out none of the above mechanisms, we think that the latter two are more consistent with our finding of stronger effects among African-American males, who are much more likely to be victimized.

The observed inverse relationship between the odds of acquiring postsecondary education and property crime or child abuse rates is to be expected. Prior research (Coulton et al., 2007) has suggested that high child abuse and neglect rates are emblematic of neighborhoods that have weak collective norms and social structures for supporting the healthy, holistic development of children and youth. This interpretation is buttressed by our finding related to residential instability, which also has been shown to degrade neighborhood intergenerational closure (Sampson, Morenoff, and Earls, 1999). Higher property crime may also indicate that these are places where the underground economy may be most likely to draw teens into activities anathema to young adults seeking postsecondary education. It is also possible that the impact of property crime on the odds of acquiring postsecondary education is mediated by one or more pathways through health, exposure to violence, risky behaviors, and primary and secondary education outcomes. We demonstrated in earlier chapters that higher property crime is strongly associated with a greater likelihood of neurodevelopmental disorders, internalizing behaviors, behavioral health service utilization, exposure to violence, engaging in risky behaviors, and exhibiting poor educational performance as a youth, all of which could constrain a young adult's willingness and ability to acquire postsecondary education.

The observed direct relationship between indicators of violence and young adult female postsecondary educational attainments and (possibly) full-time employment[121] were unexpected. One possible explanation works through the indirect effect of family responses to neighborhood violence that (perhaps unwittingly) enhance educational performance and prosocial behaviors during high school. If fear of violence induces more caregiver monitoring or self-imposed restrictions on teens' movements outside of home and school (including not being employed as a

[121] Our neighborhood social problems index, which is comprised heavily of items reflecting violent crime perceptions, was strongly predictive of full-time work for young adult females.

teen), a consequence may be superior high school performance and reduced incidences of antisocial and risky behaviors (such a teen childbearing, as we document in Chapter IX), which in turn could lead to greater odds of postsecondary schooling and employment. Considerable ethnographic research documents the efforts of low-income parents to protect their children from exposure to violence (Furstenberg et al., 1999; Anderson, 1999; Galster and Santiago, 2006). Another explanation may be spurious correlation. It might be that schools and public or private agencies of all kinds offered compensatory services and facilities in more violent Denver neighborhoods, enhancing educational performance in secondary schools and thereby boosting early adult chances for employment and education.

The observed direct relationships between property crime and abuse rates and teen employment prospects (especially for African-American and female youth) are also unexpected. Several underlying causal pathways are plausible, however. In neighborhoods that have more property crime, there may be:

- Higher incidences of teens being victimized by property crimes, which creates a stronger need to replace stolen or damaged goods that can create incentives to work.
- Increased competition from perpetrators of property crime involving the ostentatious display of personal consumption items, which can create incentives to work.
- A correlation between property crime and greater amounts of nonresidential land uses, which may serve as a proxy for locally available employment opportunities (which we cannot measure in our models).

In neighborhoods that have higher child abuse and neglect rates, there may be stronger incentives for teens to escape from unpleasant home environments via work. The relationship may also be spurious. Such neighborhoods may be places of intensified scrutiny from low-income families by welfare agency staff who are potential reporters of maltreatment (Cancian et al, 2010). Children there may not be subjected to greater incidences of maltreatment, but there is greater likelihood of official *reporting* of such treatment when it occurs. The other activities of welfare agency staff may yield benefits for teen employment in these neighborhoods.

Neighborhood Ethnic and Nativity Composition

We have identified several important though offsetting relationships between Latino and foreign-born composition of the neighborhood's population and young adult outcomes. For the full sample, higher percentages of foreign-born residents are associated with higher odds of working full time and acquiring postsecondary education and lower odds of neither working nor attending school. We think that these results likely reflect immigrant communities' proeducation and pro-work values and their ability to more closely monitor teen activities (such as drinking, using drugs, and unprotected sex, as we demonstrated in Chapters V and IX) that might risk future educational and employment prospects. Of interest, we could detect no significant statistical differences in these aforementioned relationships between African-American and Latino teens. This suggests that the mechanism(s) behind the observed relationship transcends intragroup culture. Norms and values might well spread from immigrant families and students to others in the neighborhood or classroom, of course. Moreover, immigrant households may have more adults (from multiple generations) who are not in the workforce, on average. This cadre of home-based adults may provide more opportunities for supervised study and recreation in homes for not only their own children but also neighboring children. All these ruminations are consistent with our finding in Chapter IX that foreign-born residents apparently convey positive externalities to all neighborhood youth in discouraging teen parenting.

Higher percentages of Latino residents are strongly associated with the opposite outcomes as immigrant communities noted above. Moreover, the neighborhood's percentage of residents who are African American also appears to matter for African-American teens living there. Neighborhoods that have greater African-American predominance are associated with inferior young adult economic prospects: less likelihood of working full time and greater likelihood of neither working nor attending school. These results for Latino and African-American neighborhoods may have multiple causes. We think a persuasive potential cause may be that minority neighborhoods are more likely to have active underground or informal economies, thus providing networks and role models that more easily lead teens into young adulthoods of little steady employment or higher education. Our results that higher property crime rates are associated with lower odds of postsecondary education (for women) are consistent with this explanation. Another may be that minority youth from more identifiable minority neighborhoods in Denver are stigmatized and thereby have more opportunities foreclosed. Yet another may be that such neighborhoods are less healthy (we could not control for environmental pollutants), yielding inferior health outcomes that erode prospects for postsecondary education and employment. Finally, we cannot discount the possibility that such neighborhoods convey the opposite set of norms as those described above for immigrant-dense neighborhoods.

Because a majority of foreign-born residents of Denver are Latino (primarily of Mexican origin), this raises the issue of net effects in neighborhoods inhabited by Latino immigrants. The answer is contingent on outcome, sample, and stratum considered. In the case of full-time employment, results indicate a small, net negative association for the full "ever in DHA" sample but zero relationship in the "mostly in DHA" sample. For Latino teens in the "ever in DHA" sample, there is a strong net positive association.[122] In the case of postsecondary education, opposite results emerge. There is a substantial net positive association between Latino immigrant percentage and odds of postsecondary education for the full "ever in DHA" sample but a net negative association in the Latino stratum. In the case of neither working nor attending school, there is a strong positive net association for the full samples and for Latinos. Holistically, these results are consistent with the argument that Denver neighborhoods that have higher Latino (Mexican) immigrant shares culturally promote full-time work at the cost of acquiring postsecondary education.

Neighborhood Social Status

Two indices related to neighborhood social status proved predictive of teen and young adult labor outcomes in several strata: occupational prestige and neighborhood social vulnerability. Residing in a higher prestige neighborhood during high school was associated with a substantially reduced likelihood of young adult females' neither working nor attending school. Residing in a socially vulnerable neighborhood was associated with much lower teen

[122] We calculated this using parameters from the "ever in DHA" sample xtmelogit model. We added the coefficients (not odds ratios) of the Latino and foreign-born variables, and then exponentiated the result to secure the "net" estimate.

employment prospects for African-American youth. These results have intuitive appeal from the perspective of local networks, norms, and role models related to these outcomes. Less socially vulnerable neighborhoods that surround their teens with high-prestige workers likely intensely expose these youth to norms and role models that durably encourage educational achievements and adult labor force participation and to networks of information about these productive opportunities and the "soft skills" required to exploit them. Higher prestige, less socially vulnerable neighborhoods also seem to discourage risky behaviors (as we demonstrated in Chapter V) that might impede postsecondary employment and educational success.

Our finding that higher prestige neighborhoods apparently lead Latino and male teens to work fewer hours is consistent with this longer term emphasis on education and work in such neighborhoods. Given the longstanding evidence on the deleterious effects of too-intensive teen labor force participation (generally more than 20 hours weekly) on high school academic performance (D'Amico, 1984; Steinberg and Dornbusch, 1991;Steinberg, Fegley, and Dornbusch, 1993; Warren, 2002; Warren, LePore, and Mare, 2000), it follows that neighborhoods imparting stronger norms supporting educational performance might discourage work during high school. Another factor may also be at play here. Higher prestige neighborhoods may represent more competitive localized labor markets in which low-income males are likely to be less attractive job applicants than their better heeled teen neighbors. Our results are also consistent with those produced by recent qualitative research on both the Moving To Opportunity (MTO) and Gautreaux programs (as well as many prior statistical analyses).[123] Some low-income MTO caregivers in advantaged (presumably less-vulnerable, higher prestige than originally occupied) neighborhoods stressed during interviews the value of adult role modeling of work habits for their teens and the "soft skill" enhancement that improved their employment prospects (Briggs, Popkin, and Goering, 2010; Briggs et al., 2011). This mimics results from Gautreaux that showed how higher economic expectations in advantaged neighborhoods positively influenced lower income teen in-movers (Rosenbaum, DeLuca, and Tuck, 2005).

The finding that neighborhood social vulnerability was associated with an increased likelihood of gaining postsecondary education (especially among Latinos) was less expected, however. We would posit that collective proeducation norms assume increased potency in more distressed Latino neighborhoods, because education is seen as a means of escaping the hardships they have witnessed.

[123] Although we note that the prior literature has a range of results on similarly conceived "neighborhood disadvantage" variables, we stress that our results are not strictly comparable for two reasons. First, our index sums neighborhood percentages of unemployment, poverty, female-headed households and renters; it does not include ethnic, racial, or nativity measures, as do most others. Second, our models control for a host of other neighborhood characteristics that are often associated with "disadvantaged neighborhoods" but for which other studies have no direct measures, notably crime, child abuse, institutional resources, bad peer influences, social problems, social capital, and occupational prestige. Thus, other studies' "neighborhood disadvantage" variables serve as ambiguous proxies for a wide range of other attributes besides social status and should not be used as precedents for results using our social vulnerability indicator.

Neighborhood Housing Stock and Institutions

The share of the neighborhood's housing stock that was built before 1940 had an unexpected pattern of inconsistent impacts across the strata. On the negative side, for African Americans, older housing was associated with a lower likelihood of acquiring postsecondary education. On the positive side, for males it was associated with a higher likelihood of full-time work as a young adult; for the full sample (and especially Latinos), it was associated with greater odds of working and more hours worked as a teen.

The negative results are consistent with the notion that older housing offers a less healthy environment for youth educational development.[124] Inferior health outcomes may flow into reduced chances for postsecondary education, both directly if the health problems are chronic (thereby affecting the ability to attend postsecondary school) and indirectly through inferior primary and secondary educational achievements (which are consistent with the findings for the pre-1940 housing variable in Chapter VII). Another potential causal mechanism here could be related to risky behaviors as well as exposure to violence, which we found to be higher in older neighborhoods (see Chapters V and VI), likely because of associated differences in neighborhood physical characteristics. Many of the risky behaviors in question would make it more difficult for youth to perform well academically and to build credentials that would permit their enrolling in higher education. Exposure to neighborhood and school violence as witnesses and victims could similarly inhibit youths' academic foundation for higher education.

In contrast, for other youth, this older housing characteristic was associated with improved employment outcomes for both teens and young adults. The foregoing concerns over health may still be relevant, so there must be some offsetting factor at work. Perhaps what is occurring is a spurious correlation with job accessibility. Older (often heavily Latino-occupied) neighborhoods are close to the Denver Central Business District and the Lo-Do entertainment district, both huge generators of entry-level jobs during the period under investigation.

Finally, we think it intriguing that spending more of one's high school years in a neighborhood well served by a hospital or health clinic proved strongly predictive of superior performance in all three teen employment measures for African Americans. This result is suggestive that, given the well-documented inferior health status and health insurance coverage of African-American youth as a group (Nazroo, 2003), their young economic success may crucially hinge on the local proximity of care-giving institutions, especially in emergency situations.

Geographic Selection Bias Revisited

Recall from Chapter III that we argued that the estimated value of the "true" neighborhood effect likely lies within the range of estimates garnered from our various analysis samples, which consider different potential types of geographic selection postinitial assignment by DHA. In all cases of teen labor outcomes reported in Exhibits VIII-1 through VIII-3, the estimated neighborhood indicator parameters were not substantially different between the "ever in DHA" and "mostly in DHA" (during high school) samples, so our likely "true" estimate is narrowly

[124] Because in these models we cannot control for respiratory and neurological pollutants, it is possible that age of housing stock also serves as a proxy for environmental quality here, which we saw affected child health in Chapter IV.

circumscribed. Unfortunately, this was not the case for the young adult outcome analyses, where parameters were substantially larger in the sample that spent most of their high school years living in DHA housing. It is thus possible for our older cohorts that there may be more substantial unmeasured differences between the caregivers of those who raised their teens in DHA housing most years during 14–18 years of age and those who did not (primarily had left DHA by the time their children reached high school).[125] We of course do not know whether these unmeasured differences operated to bias the observed neighborhood effects upward or downward.[126]

Conclusion

Many aspects of neighborhood context are statistically and substantively important predictors of teen and young adult outcomes related to work and postsecondary education. Aspects of the neighborhood's safety, ethnic and nativity mix, social status, and housing stock all exhibit substantial predictive power for teen and young adult employment and postsecondary educational attainments. In general, teen employment will be more likely in neighborhoods that have lower violent crime rates and occupational prestige, higher percentages of pre-1940–vintage housing, and higher property crime and child abuse rates. Young adult full-time employment will be more likely for those raised during high school in neighborhoods that have higher percentages of foreign-born residents and lower percentages of Latino residents. Postsecondary education will be more likely for those raised during high school in neighborhoods that have lower property crime and child abuse rates but higher shares of socially vulnerable populations and higher violent crime rates. These apparent influences appear more complicated and nuanced than conventionally posited, however. Especially noteworthy is the typical contingency of the neighborhood effect magnitude based on gender and ethnicity.[127] Indeed, virtually no neighborhood indicator employed had consistently significant predictive power across more than two strata. We also note that the importance for young adults of contexts experienced while they were in high school speaks to the temporal durability of these neighborhood effects during the teenage developmental stage.[128]

[125] We remind the reader that those who left DHA comprise a heterogeneous group: both the economically successful and those who may have been evicted for lease violations.

[126] We can surmise, however, that the unmeasured differences among caregiver types considerably narrowed for the younger cohort. Recall that the teen sample includes all in the young adult sample plus others who were 14–17 years of age at the time of our survey. For the teen labor outcomes analysis, this meant adding 123 younger observations to the "ever in DHA" young adult sample; the comparable figure for the "mostly in DHA" sample was 117.

[127] This has been observed previously in observational data models of neighborhood effects on economic outcomes; see, for example, Crowder and South (2003) and Galster, Andersson, and Musterd (2010).

[128] This has been observed previously in observational data models of neighborhood effects on economic outcomes; see, for example, Wheaton and Clarke (2003); Sampson, Sharkey, and Raudenbush (2008); and Musterd, Galster, and Andersson (2012).

IX. MARRIAGE AND CHILDBEARING

Introduction

In this chapter, we consider marriage and cohabitation, teen childbearing and fathering, and nonmarital childbearing or fathering in young adulthood for low-income, minority youth in our *Denver Child Study*. We analyze whether these youth married or began living with a partner between the 15 and 24 years of age inclusive, ever gave birth to or fathered a child from 15 to 19 years of age inclusive, or gave birth to or fathered a child outside of marriage between 18 and 24 years of age inclusive. We find evidence suggesting strong neighborhood effects emanating from several dimensions of the residential environment for each of these outcomes.

The sizes of our analysis samples were 488 (marriage or cohabitation), 471 (teen childbearing and fathering), and 367 (nonmarital childbearing and fathering in young adulthood).[129] Study participants in our three analysis samples ranged in age from 15 to 35 years of age at the time of the survey. For our outcomes on marriage/cohabitation and teen childbearing/fathering, we confine our analysis to those 15 years of age and older, as this is consistent with the majority of the literature; we restrict our analysis of nonmarital childbearing/fathering in young adulthood to those 18 years of age and older. Marriage/cohabitation indicators were derived from *Denver Child Study* caregiver survey respondent's answers to the question, "Has__[youth] ever been married or lived with someone? (If yes, at what age?)." Nearly one 1 of 4 youth in our sample had married or cohabitated with someone when they were between 15 and 24 years of age; the mean age at the time of marriage or cohabitation was 19 years of age. We ascertain our childbearing/fathering outcomes on the basis of caregiver survey respondents' responses to the question, "Has __[youth]__ ever given birth to or fathered children of their own? (If yes, at what age?)." Approximately 17 percent of our sample had birthed or fathered a child during ages 15–19 inclusive; the mean age of such an event was 17.2 years of age. One out of 4 young adults in our sample had birthed or fathered a child outside of marriage between 18 and 24 years of age; the mean age at the time of this nonmarital birth was 20 years of age. Between 26 percent and 32 percent of all three samples was comprised of Latino females; the remainder of the samples was comprised of Latinos (23–31 percent), African-American males (21 percent), and African-American females (18–20 percent).

We recognize the potential shortcomings of these indicators. All are subject to recall error by the caregiver survey respondent, although we intentionally chose outcomes for which this error would be minimal. Although caregivers would almost always be aware of whether their daughters and sons were living with a spouse or partner or of their daughter giving birth, it is quite possible that they could be unaware of whether their sons had fathered children. Given this expected gender asymmetry, we will place particular emphasis here on the stratified childbearing results for female youth.

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[129] This applies to the "ever in DHA" samples for each outcome; the corresponding sample sizes for the "mostly in DHA" samples were 245, 365, and 282, respectively.

Because our outcome measures are dichotomous, we employ logit models with robust standard errors adjusting for clustering at the family level for our parameter estimations.[130] We also estimate Cox proportional hazards models with robust standard errors for estimating the hazards of marriage/cohabitation and childbearing.[131] As with outcomes reported in earlier chapters, we estimate these models for the previously defined “ever in DHA” and “mostly in DHA” samples to assess the robustness of our results and bound potential degrees of geographic selection bias following Denver, Colorado, Housing Authority (DHA) assignment. The “currently in DHA” sample was too small to examine these marriage and childbearing outcomes. The logistic and Cox proportional hazards models use the same neighborhood indicators and core covariates common to all our analyses, with the exception of a small number of theoretically important additions. Our analyses of marriage and cohabitation control for whether youth in our sample had birthed or fathered a child prior to living with a spouse or partner. The childbearing/fathering analyses include three additional variables in an effort to control for a number of individual- and neighborhood-level indicators that are often cited in the literature as important predictors of teen or nonmarital childbearing and fathering. In addition to the core covariates, we control for whether the youth:

- Reached puberty early (roughly 1 in 10 reached puberty early; on time/late is the reference category).
- Had a caregiver who was a teen parent (roughly 1 in 4 had been; not a teen parent is the reference category).
- Had a caregiver who gave birth to the sampled youth outside of marriage (roughly 6 out of 10 did; not is the reference category).

In addition to the core neighborhood-level indicators, we incorporated another measure in the teen childbearing/fathering models to account for the percentage of all births in the neighborhood born to teens. Because of significant missing data, small cell counts, or problematic joint distributions, we removed our indicators of neurological risk and respiratory risk from these models as well as our indicators of child abuse and neglect rates and the presence of medical facilities. We also removed percentage of Latino residents in the neighborhood from our teen childbearing/fathering models because of the high correlation with the percentage of foreign-born residents. Similar to our adolescent and young adult labor analyses, in this chapter we operationalize family and neighborhood contexts as averages during high school starting with 15 years of age through the age of marriage/cohabitation or at birth or fathering of a child. If these marriage or childbearing outcomes never occurred during childhood, our neighborhood indicators are measured as averages from 15–18 years of age or age at the time of survey if younger than 18 years of age for both logit and Cox models.

[130] Because the xtmelogit models failed to converge in some model runs, we present logit models with robust standard errors for these analyses.

[131] Global chi-square tests indicated that the Cox models were the appropriate specifications here rather than the accelerated failure time models.

Estimated Neighborhood Effects on Marriage and Childbearing

Exhibits IX-1 through IX-6 present standardized logit and Cox proportional hazards model results for “ever in DHA” and “mostly in DHA” samples. We incorporate robust standard errors for both types of models to account for clustering of children in families. As before, we consider only those results that are statistically significant in both of the analysis samples for the given model type. Ranges of parameter estimates reported below reflect the variation across the two analysis samples. As with other chapters, we will first highlight the main findings without comment, reserving interpretation and explanations for a final section of the chapter so we can be more holistic in our discussion.

Marriage and Cohabitation

Results for our models of marriage/cohabitation during adolescence and young adulthood are presented in Exhibits IX-1 and IX-2. The first exhibit shows logit models for ever having lived with a spouse or partner between 15 and 24 years of age; the second exhibit shows the corresponding Cox models estimating the hazards of this event occurring.

The models revealed only one significant individual-level or household-level predictor of living with a spouse or partner between 15 and 24 years of age. Compared with youth in our samples who did not bear or father a child prior to marriage or cohabitation, youth who had given birth or fathered children were 13–87 times more likely to begin living with a spouse or partner.

Several neighborhood indicators related to social status, physical, and safety context consistently proved statistically significant predictors of living with a spouse or partner during adolescence or young adulthood. A one-standard-deviation-higher neighborhood:

- Occupational prestige score was associated with 80–96 percent–lower odds and 59 percent–lower hazards of living with a spouse or partner.
- Percentage of pre-1940–vintage dwellings in the neighborhood was associated with 2.1–4.6 times–higher odds of living with a spouse or partner but also with 37–112 percent–greater hazards of living together.
- Property crime rate was associated with 4–15.8 times–higher odds of living with a spouse or partner as well as 71–155 percent–greater hazards of living together.
- Violent crime rate was associated with a 68–96 percent reduction in the odds of living with a spouse or partner but also with a 34–76 percent reduction in the hazard of the same.

Exhibit IX-1. Standardized Logit Models Predicting Marriage or Cohabitation Between the Ages of 15 and 24

	Ever in DHA			Mostly in DHA		
	OR		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values calculated as an average of measures taken during high school stage unless otherwise noted)						
Lived in neighborhood with negative peers for 50% or more of high school stage (omitted=no)	0.85		(0.36)	1.77		(1.17)
Social capital index	1.21		(0.22)	1.40		(0.40)
Social problems index	1.54		(0.41)	1.38		(0.53)
Social vulnerability score	0.47		(0.21)	0.59		(0.51)
Percent African American residents	0.59		(0.20)	0.30	*	(0.15)
Percent Latino residents	0.42		(0.25)	0.15	*	(0.14)
Occupational prestige score	0.20	**	(0.10)	0.04	***	(0.03)
Percent foreign born residents	0.71		(0.24)	0.81		(0.41)
Percent of residents who moved in preceding 12 months	1.07		(0.23)	0.99		(0.37)
Resource factor score	1.03		(0.30)	1.00		(0.47)
Percent of housing built before 1940	2.10	*	(0.62)	4.62	***	(2.03)
Violent crime rate per 1,000	0.32	***	(0.10)	0.04	***	(0.03)
Property crime rate per 1,000	4.08	***	(1.33)	15.88	***	(10.36)
Number of observations	488			245		
Number of clusters	289			157		
Log-Likelihood	-153.96			-53.52		
Chi-square	91.44	***		119.00	***	
Pseudo-R^2	0.41			0.59		
Notes:						
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.						
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.						

Exhibit IX-2. Standardized Cox Models Predicting Hazard of Marriage or Cohabitation Between the Ages of 15 and 24

	Ever in DHA			Mostly in DHA		
	Hazard		**SE**	**Hazard**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values calculated as an average of measures taken during high school stage unless otherwise noted)						
Lived in neighborhood with negative peers for 50% or more of high school stage (omitted=no)	1.06		(0.28)	2.45		(1.19)
Social capital index	1.21		(0.16)	1.33		(0.32)
Social problems index	1.32		(0.19)	1.16		(0.22)
Social vulnerability score	1.00		(0.27)	1.60		(0.84)
Percent African American residents	0.80		(0.15)	0.58		(0.18)
Percent Latino residents	0.71		(0.22)	0.40		(0.20)
Occupational prestige score	0.80		(0.15)	0.41	*	(0.16)
Percent foreign born residents	1.35		(0.32)	1.51		(0.53)
Percent of residents who moved in preceding 12 months	0.81		(0.15)	0.66		(0.19)
Resource factor score	0.97		(0.21)	0.76		(0.26)
Percent of housing built before 1940	1.37	**	(0.16)	2.12	***	(0.42)
Violent crime rate per 1,000	0.66	*	(0.14)	0.24	***	(0.09)
Property crime rate per 1,000	1.71	***	(0.18)	2.55	***	(0.44)
Number of observations	488			245		
Number of clusters	289			157		
Log-Likelihood	-544.97			-203.41		
Chi-square	169.91	***		199.53	***	
Global PH Chi-square	41.21			32.45		
Notes:						
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.						
* p < 0.05; ** p < 0.01; *** p < 0.001.						

Teen Childbearing and Fathering

Results for our models of teen childbearing and fathering are presented in Exhibits IX-3 and IX-4. The first shows estimates produced by logit models for ever having birthed or fathered a child as a teen; the second shows the corresponding Cox models for estimating the hazard of becoming a teen parent. In both exhibits, we present findings for our two alternative analysis samples. In Appendix C, we report findings for the "ever in DHA" female stratum, because they represent the overwhelming number of observations of the dependent variable here. We investigated this additional stratum as a robustness check to assuage concerns that the highly asymmetric values of the dependent variable across genders might lead to unrepresentative results in the aggregate samples.[132]

The models revealed few consistently significant individual-level or household-level predictors. Compared with African-American males in our samples, Latino females were 4.4–5 times more likely to become a teen parent. Youths whose caregivers had graduated from high school had 64–71 percent–lower odds of ever becoming a teen parent, compared with youths whose parents did not have a diploma.

Several neighborhood indicators related to demographic, status, and safety context proved consistently statistically significant predictors of becoming a teen parent. A one-standard-deviation-higher neighborhood:

- Percentage of Latino individuals in the neighborhood was associated with 66–75 percent–lower odds and 43–62 percent–lower hazards of becoming a teen parent.
- Occupational prestige score was associated with 56–60 percent–lower odds of becoming a teen parent.
- Property crime rate was associated with 2.2–2.6 times–higher odds of becoming a teen parent.

[132] There was a nontrivial fraction (10 percent) of males in our sample who fathered children as teens. In comparison, 25 percent of females in our sample gave birth as teens.

Exhibit IX-3. Standardized Logit Models Predicting Giving Birth or Fathering a Child Between the Ages of 15 and 18

	Ever in DHA			Majority in DHA		
	OR		**SE**	**OR**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values calculated as an average of measures taken during high school stage unless otherwise noted)						
Lived in neighborhood with negative peers for 50% or more of high school stage (omitted=no)	0.70		(0.30)	0.57		(0.29)
Social capital index	1.15		(0.20)	1.10		(0.22)
Social problems index	1.51		(0.37)	1.47		(0.42)
Social vulnerability score	0.77		(0.26)	0.89		(0.39)
Percent African American residents	0.73		(0.20)	0.49	*	(0.15)
Percent Latino residents	0.34	***	(0.11)	0.25	***	(0.10)
Occupational prestige score	0.44	**	(0.14)	0.40	*	(0.17)
Percent of residents who moved in preceding 12 months	1.20		(0.25)	1.14		(0.25)
Lived in neighborhood with hospitals and clinics during all of high school stage (omitted=no)	0.82		(0.40)	1.01		(0.62)
Resource factor score	0.98		(0.30)	1.08		(0.43)
Percent of housing built before 1940	1.41		(0.26)	1.28		(0.30)
Violent crime rate per 1,000	0.54		(0.17)	0.43		(0.21)
Property crime rate per 1,000	2.29	***	(0.54)	2.64	**	(0.87)
Percent of teen births	1.25		(0.24)	1.63		(0.42)
Number of observations	471			365		
Number of clusters	285			229		
Log-Likelihood	-163.74			-116.65		
Chi-square	85.83	***		101.50	***	
Pseudo-R^2	0.24			0.29		
Notes:						
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.						
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.						

Exhibit IX-4. Standardized Cox Models Predicting Hazard of Giving Birth or Fathering a Child Between the Ages of 15 and 18

	Ever in DHA			Majority in DHA		
	Hazard		**SE**	**Hazard**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values calculated as an average of measures taken during high school stage unless otherwise noted)						
Lived in neighborhood with negative peers for 50% or more of high school stage (omitted=no)	0.85		(0.28)	0.80		(0.30)
Social capital index	1.11		(0.15)	1.05		(0.17)
Social problems index	1.29		(0.23)	1.25		(0.27)
Social vulnerability score	0.96		(0.22)	1.32		(0.45)
Percent African American residents	0.90		(0.20)	0.62		(0.16)
Percent Latino residents	0.57	*	(0.14)	0.38	**	(0.12)
Occupational prestige score	0.69		(0.14)	0.60		(0.18)
Percent of residents who moved in preceding 12 months	1.26		(0.22)	1.30		(0.22)
Lived in neighborhood with hospitals and clinics during all of high school stage (omitted=no)	1.00		(0.41)	1.04		(0.57)
Resource factor score	0.88		(0.21)	1.09		(0.35)
Percent of housing built before 1940	1.17		(0.15)	1.24		(0.19)
Violent crime rate per 1,000	0.71		(0.16)	0.60		(0.21)
Property crime rate per 1,000	1.44	*	(0.24)	1.21		(0.35)
Percent of teen births	1.21		(0.20)	1.53		(0.37)
Number of observations	471			365		
Number of clusters	285			229		
Log-Likelihood	-427.85			-300.79		
Chi-square	128.87	***		108.26	***	
Global PH Chi-square	42.30			40.13		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Nonmarital Childbearing in Young Adulthood

Results for our models of nonmarital childbearing in young adulthood are presented in Exhibits IX-5 and IX-6. The first exhibit shows (for each of two alternative analysis samples) logit models with robust standard errors adjusting for clustering at the family level for ever having birthed or fathered a child outside of marriage between 18 and 24 years of age; the second exhibit shows the corresponding Cox robust standard error models for the hazard of experiencing a nonmarital birth.

In contrast to our previous marriage and childbearing outcomes, there were no consistently significant individual-level or household-level predictors of nonmarital childbearing/fathering in our logistic regression models. Nonetheless, two neighborhood indicators related to status and physical context proved statistically significant predictors of nonmarital births in our logistic regression models only. A one-standard-deviation-higher neighborhood:

- Occupational prestige score in the neighborhood was associated with 50–54 percent–lower odds of experiencing a nonmarital birth.
- Percentage of pre-1940–vintage housing stock was associated with 1.6 times–higher odds of experiencing a nonmarital birth.

Gender and Ethnic Differences in Neighborhood Effects

Estimated parameters for our three models stratified by gender and ethnicity are presented in Appendix C. As is the case in all our discussions of stratified results, we employ the “ever in DHA” sample results and normalized continuous covariates.

Marriage/Cohabitation During Adolescence and Young Adulthood

We find considerable heterogeneity in size and significance of apparent neighborhood effects on marriage/cohabitation between males and females and between Latino and African-American youth and young adults. Among the four strong predictors in the aggregate samples, only the neighborhood property crime rate yielded statistically significant coefficients across all four strata. The range of variation associated with a standard-deviation-higher property crime rate was 3–21 times–higher odds, with the highest being manifested for African Americans. Residence in neighborhoods that had higher occupational prestige was associated with 72–99 percent–lower odds of marriage/cohabitation for Latino, female, and African-American youth. Similar differences (48–98 percent) in the odds and hazards of marriage/cohabitation were observed for male, Latino, and African-American youth residing in neighborhoods with one-standard-deviation-higher violent crime rates. Female and African-American youth living in neighborhoods that had one-standard-deviation-higher percentages of pre-1940 dwellings had 1.4–8 times–higher odds and hazards of living together with a spouse or partner.

Exhibit IX-5. Standardized Logit Models Predicting Nonmarital Births Occurring Between the Ages of 18 and 24

	Ever in DHA			Majority in DHA		
	OR		SE	OR		SE
Neighborhood Characteristics (all continuous variables reflect standardized values calculated as an average of measures taken during high school stage unless otherwise noted)						
Lived in neighborhood with negative peers for 50% or more of high school stage (omitted=no)	0.61		(0.23)	0.59		(0.30)
Social capital index	1.34		(0.23)	1.27		(0.25)
Social problems index	1.27		(0.22)	1.17		(0.25)
Social vulnerability score	0.63		(0.17)	0.56		(0.19)
Percent African American residents	1.08		(0.28)	0.81		(0.22)
Percent Latino residents	0.72		(0.27)	0.66		(0.28)
Occupational prestige score	0.50	**	(0.12)	0.46	**	(0.13)
Percent foreign born residents	0.73		(0.19)	0.65		(0.22)
Percent of residents who moved in preceding 12 months	1.32		(0.23)	1.51	*	(0.30)
Lived in neighborhood with hospitals and clinics during all of high school stage (omitted=no)	0.51		(0.18)	0.61		(0.28)
Resource factor score	0.91		(0.27)	1.09		(0.36)
Percent of housing built before 1940	1.60	**	(0.28)	1.65	*	(0.34)
Violent crime rate per 1,000	0.72		(0.23)	0.73		(0.28)
Property crime rate per 1,000	1.44		(0.34)	1.62		(0.52)
Child abuse and neglect rate per 1,000	0.77		(0.20)	0.69		(0.21)
Number of observations	367			282		
Number of clusters	216			181		
Log-Likelihood	-172.66			-126.64		
Chi-square	72.86	***		60.61	**	
Pseudo-R^2	0.17			0.17		

Notes:

Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Exhibit IX-6. Standardized Cox Models Predicting Hazard of Nonmarital Births Occurring Between the Ages of 18 and 24

	Ever in DHA			Majority in DHA		
	Hazard		**SE**	**Hazard**		**SE**
Neighborhood Characteristics (all continuous variables reflect standardized values calculated as an average of measures taken during high school stage unless otherwise noted)						
Lived in neighborhood with negative peers for 50% or more of high school stage (omitted=no)	0.62		(0.19)	0.57		(0.24)
Social capital index	1.27		(0.17)	1.23		(0.19)
Social problems index	1.15		(0.15)	1.10		(0.18)
Social vulnerability score	0.71		(0.17)	0.64		(0.20)
Percent African American residents	1.12		(0.22)	0.98		(0.20)
Percent Latino residents	0.88		(0.28)	0.90		(0.31)
Occupational prestige score	0.76		(0.15)	0.72		(0.17)
Percent foreign born residents	0.96		(0.20)	0.77		(0.21)
Percent of residents who moved in preceding 12 months	1.12		(0.18)	1.29		(0.21)
Lived in neighborhood with hospitals and clinics during all of high school stage (omitted=no)	0.60		(0.16)	0.71		(0.27)
Resource factor score	1.05		(0.24)	1.18		(0.30)
Percent of housing built before 1940	1.28		(0.18)	1.29		(0.22)
Violent crime rate per 1,000	0.85		(0.21)	0.81		(0.22)
Property crime rate per 1,000	1.32		(0.26)	1.41		(0.38)
Child abuse and neglect rate per 1,000	0.80		(0.17)	0.76		(0.17)
Number of observations	367			282		
Number of clusters	216			181		
Log-Likelihood	-481.30			-320.80		
Chi-square	71.53	***		58.98	**	
Global PH Chi-square	37.35			36.88		
Notes:						
Exponentiated coefficients; robust standard errors in parentheses. Models control for child, caregiver and household characteristics.						
* p < 0.05; ** p < 0.01; *** p < 0.001.						

Two new neighborhood indicators emerged as strong predictors of marriage/cohabitation for particular strata, though not in the aggregate samples. Most of these emerged as predictors among African-American youth and young adults. Residing in a neighborhood that had a standard-deviation-higher:

- Percentage of African-American neighbors was associated with 64 percent– and 85 percent–lower odds of living with a spouse or partner for females and African Americans, respectively.
- Social problems index was associated with 2.2–4.5 times–higher odds of living with a spouse or partner for males and African Americans and with a 2 times–higher hazard of the same for males.
- Percentage of foreign-born individuals was associated with 94 percent–lower odds of living with a spouse or partner for African Americans but a 2 times–higher hazard of the same for males.
- Social vulnerability score was associated with 99 percent–lower odds of living with a spouse or partner for African Americans.
- Social capital index was associated with a 41 percent–greater hazard of living with a spouse or partner for females.

Teen Childbearing and Fathering

We find marked gender and ethnic heterogeneity in estimates of neighborhood indicator relationships with teen childbearing and fathering. Nevertheless, the three neighborhood indicators that were strong predictors in the aggregate samples proved to be so across several strata, as well. The percentage of Latino residents in the neighborhood continued to be a strong predictor of lower risks of teen childbearing and fathering for female and African-American teens. For females in our study, a one-standard-deviation-increase in the occupational prestige score was associated with a 69 percent reduction in the odds of becoming a teen parent. An equivalent increase in the property crime rate was associated with 4.6 times–higher odds of becoming a teen parent.

Two additional neighborhood indicators emerged as statistically significant predictors in only one or two strata, though not in the aggregate samples. Residing in a neighborhood that had a standard-deviation-higher:

- Social problems index was associated with 4.2 times–higher odds of becoming a teen parent for Latino youth.
- Percentage of African-American individuals in the neighborhood was associated with 56 percent–lower odds of females becoming a teen parent.

Although we found significant gender and ethnic differences in estimated neighborhood parameters in our Cox models, these occurred sporadically across the different groups, and each one was significant for only one stratum. Moreover, these results did not augment what we found in the logistic regression results.

Nonmarital Childbearing and Fathering

We find relatively few gender or ethnic differences in apparent neighborhood effects on nonmarital births during young adulthood, with all but one confined to the results of our logistic regression analyses. Neither of the strong neighborhood indicators in the aggregate samples were statistically significant predictors of nonmarital childbearing/fathering in more than two strata. For males and African Americans only, a one-standard-deviation-higher neighborhood occupational prestige score was associated with 56–75 percent–lower odds of experiencing a nonmarital birth. Higher percentages of pre-1940–vintage housing stock increased the odds of having a nonmarital birth by 70 percent but only for male youth.

Three additional neighborhood indicators emerge as statistically significant predictors in our Latino stratum. For Latino teens, a one-standard-deviation-higher neighborhood:

- Percentage of African-American individuals in the neighborhood was associated with 81 percent–lower odds of experiencing a nonmarital birth.
- Social problems index was associated with 2.2 times–higher odds of experiencing a nonmarital birth.
- Child abuse and neglect rate was associated with 60 percent–lower odds of experiencing a nonmarital birth.

Nonlinear Neighborhood Effects

Results for our nonlinear investigations employing spline regressions are presented in Appendix D. For all three outcomes investigated in this chapter, we found distinctive but opposite nonlinear relationships with violent and property crime rates. The relationships among teen parenting, nonmarital fertility, cohabiting outcomes, and violent crime exhibited diminishing marginal negative effects; property crime exhibited diminishing marginal positive effects. Logistic models consistently showed these relationships, which typically were replicated by the Cox proportional hazard models.[133] Higher rates of violent (property) crime in a neighborhood lowered (raised) the odds and the hazard of all three outcomes much more strongly in neighborhoods that had below-average values of violent (property) crime than in those with above-average values. These differences were substantial. A standard-deviation increase in violent crime was associated with a:

- 99 (80) percent decrease in the odds (hazards) of marrying/cohabiting as a teen in ranges below the mean violent crime rate; in ranges above the mean, the corresponding figures were 44 (34) percent.
- 96 percent decrease in the odds of giving birth/fathering a child as a teen in ranges below the mean violent crime rate; in ranges above the mean, the corresponding figure was 26 percent.

[133] The exceptions were that the Cox parameters were insignificant for both crime rates in the teen parenting model and for property crime in the out-of-wedlock childbearing model.

- 96 (89) percent decrease in the odds (hazards) of experiencing a nonmarital birth in ranges below the mean violent crime rate; in ranges above the mean, the corresponding figures were 5 (8) percent.

A standard-deviation increase in property crime was associated with at least 9-fold–higher odds of all three outcomes in ranges below the mean property crime rate; in ranges above the mean, the odds only increased by 15 percent (nonmarital childbearing/fathering), 150 percent (giving birth/fathering a child as a teen), and 213 percent (marrying/cohabiting as a teen).

Two other neighborhood characteristics exhibited nonlinear relationships with one outcome; both suggested diminishing marginal positive impacts. A standard-deviation increase in the percentage of pre-1940–vintage dwellings was associated with a 600 percent increase in the odds of marrying/cohabiting as a teen in ranges below the mean rate; in ranges above the mean, the corresponding figure was only 42 percent. A standard-deviation increase in child abuse and neglect rates was associated with a 569 (308) percent increase in the odds (hazards) of giving birth out of wedlock in ranges below the mean rate; in ranges above the mean, the corresponding figures were 60 (45) percent *decreases*.

Discussion

The results reported above clearly show that several aspects of the neighborhood safety, demographic, social status, and physical environment are statistically and substantively important predictors of marriage and fertility during adolescence and young adulthood. Below, we organize the discussion around thematic categories of neighborhood context.

Neighborhood Safety

As with our other analyses, the most dramatic and consistent finding was that neighborhood rates of property crime and violent crime apparently have opposite relationships with marriage/cohabitation and teen childbearing and fathering. Property crime rates exhibited statistically significant and substantively large relationships in the aggregate sample that were replicated for all strata (marriage/cohabitation) and for female and Latino youth (teen childbearing and fathering). Precisely the opposite relationships were manifested for violent crime rates. Places with more violent crime exhibited a reduced likelihood of living with a spouse or partner (in the aggregate sample and most strata) or experiencing a nonmarital birth (in the African-American stratum). The inverse relationships between violent crime rates, marriage/cohabitation, and nonmarital childbearing/fathering were partially unexpected. In the case of marriage/cohabitation, living in more violent neighborhoods might reduce the availability of marriageable partners. In the case of nonmarital childbearing/fathering, one possible explanation may again be one we have drawn on in earlier chapters. Increased fear of crime may cause caregivers to impose geographic restrictions on youths' movements outside of home and their immediate environments. There also may be more intense monitoring by caregivers in neighborhoods that have higher threats of violence. Both factors may lead to the situation where youths are less likely to have unsupervised periods and places to engage in risky sexual activity that could lead to a nonmarital births. This explanation is consistent with what we have discussed in the context of exposure to violence in Chapter V, other risky behaviors in Chapter VI, and educational outcomes in Chapter VII.

The observed direct relationship between property crime rates, marriage/cohabitation, and teen childbearing and fathering is expected. We think that this finding can be interpreted consistently with that we presented in Chapter VI in the context of the positive relationship between property crime and other risky behaviors. Property crime, social disorder, and other risky behaviors may be visible indicators of neighborhoods in which informal social control is diminished. As noted above, increased social disorder has been consistently linked in the literature with higher incidences of risky sexual behaviors among teens (Harding, 2003; Way, Finch, and Cohen, 2006). In turn, higher incidences of pregnancy resulting from these risky behaviors may produce higher pressures for youth to get married or to live with the partners who birthed/fathered their children. There may be another link between property crime and fertility that is transmitted through educational performance, which we found in Chapter VII to be inversely related to property crime. Weak educational performance indicators have been found elsewhere to be predictive of risky sexual behaviors (Manlove, 1998).

Another aspect of neighborhood safety proved to be an important predictor of cohabitation and childbearing outcomes for particular strata. The extent to which caregivers perceived the existence of social problems in their immediate environs served as an important risk factor for marriage/cohabitation (for males and African Americans), teen childbearing and fathering (for males and Latinos), and nonmarital childbearing/fathering (for Latinos). Although these findings were not replicated in the aggregate samples, they suggest that male and African-American youth may marry or move in with partners as a way of coping with or escaping from the negative neighborhood conditions of their adolescence. Further, Latino youth are at greater risk for becoming parents when they live in these neighborhoods that caregivers perceive to be riddled with a variety of social problems, many of which are associated with crime and disorder. This finding is consistent with our finding above for property crime and as such may reflect analogous causal mechanisms.

Neighborhood Ethnic and Nativity Composition

We identified several substantively important, inverse relationships between the minority ethnic and nativity composition of the neighborhood's population and a variety of marriage and fertility outcomes. Both male and female youths raised in neighborhoods that had higher percentages of Latino neighbors would be expected to have reduced chances of becoming teen parents. We found that growing up in a neighborhood that has higher percentages of African-American neighbors was predictive of a lower likelihood of marriage/cohabitation for female and African-American youth, teen parenting for females, and nonmarital childbearing/fathering for young adult Latinos. Finally, higher percentages of immigrant neighbors predicted less chance of African-American youths cohabiting. Analogous to our earlier results regarding risky behaviors (in Chapter VI) and educational outcomes (in Chapter VII), these results are consistent with the notion that Latino and immigrant populations play powerful normative, role-modeling, and behavioral monitoring functions that discourage both marriage and childbearing, especially outside of marriage (Erickson, 1998). The apparent protective nature of the Latino composition of the neighborhood for teen parenting extended to young African-American residents, as well, suggesting that these mechanisms can reach beyond same-ethnic lines. There may be a different normative mechanism at play generating our results for African-American composition of the neighborhood. In places that have greater concentrations of African Americans, there may be less pressure for girls or African-American youth to get married or to have children as teens, controlling for the status and other characteristics of the neighborhood, because marriage is not viewed as the primary rite of passage into adulthood within low-income African-American communities.

Neighborhood Social Status

Living in a neighborhood that has superior occupational prestige apparently served as a protective factor for marriage/cohabitation, teen childbearing and fathering, and nonmarital childbearing across the aggregate samples. These results have intuitive appeal from the perspective of local networks, norms, and role models related to marriage and childbearing. Neighborhoods that surround their youths with higher prestige neighbors likely expose these youth to norms and role models that discourage risky behaviors and encourage educational and occupational success, thereby modeling alternative pathways to adulthood besides parenthood. They also may expose youth to more role models who are married. These claims are fully consistent with the relationships for neighborhood prestige we observed in Chapters VI, VII, and VIII. This theory is also supported by Crane (1991), who found that the percentage of high-status employees in the neighborhood was inversely related to teen childbearing, and Brewster (1994), who found that higher female employment rates in the neighborhood protected against teen pregnancy. Higher prestige neighborhoods could also be related to norms and information related to unprotected intercourse, not sexual activity in general.

Neighborhood Physical Environment

We found intriguing results related to the age of a neighborhood's housing stock, marriage/cohabitation, and nonmarital childbearing/fathering. Higher percentages of pre-1940–vintage homes were associated with higher odds of living with a spouse or partner (overall and especially for female and African-American youth) as well as fathering a child out of wedlock in young adulthood (overall and especially for males). We think it unlikely that these relationships emerged because of physical characteristics of older dwellings themselves. Rather, we again draw on an argument we have made earlier in Chapter IV: This indicator may serve as a proxy for the design, density, and land use mix of the neighborhood. If older neighborhoods in Denver encourage more interactions among youth, including relationships that might lead to sexual activity, these interactions may result in higher rates of nonmarital births, which, in turn, may lead to higher rates of marriage/cohabitation.

Geographic Selection Bias Revisited

In typical cases of the three marriage and fertility outcomes reported in Exhibits IX-1 through IX-6, the estimated neighborhood indicator parameters were substantially similar between the "ever in DHA" and "mostly in DHA" samples. Thus, we are less inclined to worry here about major distortions caused by postassignment geographic selection.

Conclusion

A number of aspects of neighborhood context are statistically and substantively important predictors of teen and young adult cohabitation and childbearing behaviors, though sometimes in unexpected ways. Aspects of the neighborhood's safety, social status, ethnic and nativity mix, and physical environment exhibit substantial predictive power models predicting the odds and the temporal hazard of living with a spouse or partner, becoming a teen parent, or experiencing a nonmarital birth during young adulthood. Risks for one or more of these outcomes (for at least one stratum or more) diminish in neighborhoods that had higher violent crime rates; occupational prestige; and percentages of foreign-born, Latino, or African-American residents. The risks increase in neighborhoods that have higher rates of property crime, caregiver reports of neighborhood social problems, and percentages of dwellings built before 1940. These relationships are manifested particularly strongly and generally for African-American youth.

X. EXTENSIONS AND VARIATIONS ON THE CORE APPROACH

Introduction

In this chapter, we describe two experimental modifications of the core approach that we have employed thus far in this report. The first probes how the power of neighborhood effects may vary across developmental stages. The second probes the consequences of measuring neighborhood context over a different time frame.

Experiments With Differential Effects Across Developmental Stages

Recent child-development theory predicts that the relative influence of distal contexts like neighborhood should vary across developmental stages, primarily because caregivers will perform stronger mediating roles for younger children and different causal mechanisms will have different saliency at different ages (Leventhal and Brooks-Gunn, 2000; Booth and Crouter, 2001; Foster and Brooks-Gunn, 2013). Our core analyses are unable to investigate this possibility directly by focusing on whether and when a certain outcome ever occurred, because they do not consider the degree to which context played a more powerful role during certain developmental stages in the period before onset. Here, we explore this possibility by considering a variety of health and educational outcomes that frequently occur in our sample during more than one developmental stage.

Our Developmental Stage-Specific Approach

For our experiments, we used conventional specifications for developmental stages, labeling them with their roughly corresponding phases in school:

- 0–5 years of age: Preschool (PS).
- 6–11 years of age: Elementary School (ES).
- 12–14 years of age: Middle School (MS).
- 15–18 years of age: High School (HS).

We employed two health indicators (asthma and neurodevelopmental disorders) and three educational outcomes (attending gifted programs or advanced classes, placement in special education classes, and being suspended or expelled from school). We then ran a series of mixed-effects logistic regressions predicting whether the particular outcome occurred[134] on samples stratified by developmental stage—that is, for all youth in our sample who were of the appropriate age at time of survey or older to be included in the given stage being analyzed. We then compared the estimated magnitude of the neighborhood indicators' odd ratios across the developmental stages to conduct our test. We computed cross-indicator averages for all the estimated parameters and replicated this only for comparisons in which one or both parameters are significantly different from zero. We converted the estimated odds ratios into their

[134] The educational outcomes could have occurred in non-mutually exclusive ways during ES, MS, or HS. For health outcomes, we model whether onset first occurred in the stage and also model whether it has been previously diagnosed and remains ongoing during the stage.

corresponding percentage differences in the odds associated with a unit change in the indicator before averaging. We also checked the sensitivity of our results with alternative developmental stages.

In addition, we assessed the sensitivity of our results to alternative ways of measuring neighborhood context. In one set of models, we measured the neighborhood context variables and covariates as averages *only* for the particular developmental stage being analyzed,[135] roughly corresponding to the contemporaneous measurements we have employed throughout our core analyses. In another set of models, we measured the neighborhood context variables and covariates as averages from birth cumulatively through the particular developmental stage being analyzed.

Results From Our Developmental Stage Neighborhood Context Experiments

Results of our experiments comparing effects across developmental stages are summarized in Exhibit X-1. It presents the average differences in the (converted) odds ratios between the particular developmental stages portrayed.

The results for asthma clearly indicate that neighborhood indicators have the least powerful predictive power during the PS stage and the most power during the MS stage. This outcome appertains regardless of whether indicators are measured contemporaneously or cumulatively. Results for developmental disorders also show that the comparative power of neighborhood context is greater during the MS stage than during the ES stage. The magnitudes of average odds ratios differences reported in Exhibit X-1 appear substantial, with the strength of the effect during middle school registering at least in double-digit differences in percentage point impacts. Emerging evidence from recent studies using the National Longitudinal Study of Adolescent Health (for example, Matjasko, Needham, Grunden, and Farb, 2010) suggest that certain stages within adolescence may be more susceptible to neighborhood contexts than others.

The three educational outcomes reveal distinct patterns of cross-stage differences depending on which outcome is considered. When enrollment in either gifted/advanced classes or special education placement is the outcome, it is clear that neighborhood effects during HS are generally considerably larger than the equivalent indicators measured during ES. In contrast, the relationships for the suspension/expulsion outcome are the opposite. The comparative power of neighborhood effects between HS and MS stages for all three educational outcomes depends on whether the neighborhood indicators are measured contemporaneously or cumulatively. In the former situation, effects during HS are stronger; in the latter situation, the opposite is exhibited. These findings suggest holistically that contemporaneous context most powerfully predicts educational outcomes during HS, whereas cumulative context does so during MS.

Our exploration into potential variations in magnitudes of neighborhood effects across different developmental stages confirms the conventional wisdom that such differences exist and can be substantial.[136] Moreover, we have found that at which stage neighborhood effects appear stronger

[135] For youth whose age places them within a developmental stage, we compute the averages only over the years of the stage during which the child has been alive.
[136] We note that our method of averaging odds ratios obscures potentially larger cross-stage variations in effects for particular neighborhood indicators.

varies both by outcome in question and sometimes whether neighborhood context is measured contemporaneously or cumulatively. We thus caution against making broad generalizations about "at which stage in a child's life are neighborhood influences most important," given the apparent multicontingent nature of the answer.

Experiments With Cumulative Exposure Measures

As noted in Chapter II, there is emerging evidence from several studies that neighborhood context may have stronger impacts on child and youth development if exposure persists over a sustained period; see Aaronson (1998); Wheaton and Clarke (2003); Turley (2003); Sampson, Sharkey, and Raudenbush (2008); and Musterd, Galster, and Andersson (2012). We explore this possibility with selected outcomes from the *Denver Child Study*.

Our Cumulative Neighborhood Context Approach

Recall that our core analyses presented in Chapters IV–IX measured neighborhood context and other household covariates contemporaneously with the age of onset of the given outcome (or time of survey or 18 years of age, whichever younger). In our experiments here, we altered these variables so that they were measured cumulatively over the period prior to onset (or time of survey or 18 years of age, whichever is younger). Specifically, for all covariates we computed the averages over this period.

Employing such cumulative measures raises another methodological challenge, however. For some youth in our sample, comparatively little of their childhood may have been spent residing in Denver, Colorado, Housing Association (DHA) housing (or subsequent to the assignment to the same). This means that the specter of geographic selection bias might unwittingly be reintroduced for all experiences of pre-DHA assignment. To minimize such contamination, we restricted our sample for these cumulative measure explorations to those youth who had resided in DHA housing a majority of (1) the given developmental stage when context is measured contemporaneously and (2) their childhood up through the given developmental stage when context is measured cumulatively.[137]

Our quantitative approach here replicated the one we employed above to investigate cross-stage differences, in this case comparing differences in estimated odds ratios for identical, multilevel, mixed-effects logit models, except that in one the covariates are measured contemporaneously and in the other cumulatively. We computed cross-indicator averages of all the estimated parameters and replicated this only for comparisons where one or both parameters were significantly different from zero. As before, we converted the estimated odds ratios into their corresponding percentage differences in the odds associated with a unit change in the indicator, and then averaged across all the indicators for the given measurement type. We also probed the sensitivity of our results to alternative developmental stages. Again, we employed the same selection of health and educational outcomes.

[137] We used the same sample restrictions for the comparative contemporaneous measure models.

Results From Our Cumulative Neighborhood Context Experiments

Results of our experiments comparing effects between contemporaneous and cumulative neighborhood measures are summarized in Exhibit X-2. It presents the differences in the average estimated parameters between contemporaneous and cumulative neighborhood measures for the particular developmental stages portrayed.

A consistent pattern emerges for our health outcomes. Neighborhood effects measured as cumulative exposures appear stronger, on average, than those measured contemporaneously but only when the outcome in question is observed during the MS developmental stage. The typical difference in odds ratios for this stage ranges from 17 to 31 percentage points when only statistically significant parameters are compared.[138] This finding is consistent with a growing body of scholarly literature: See Aaronson (1998); Wheaton and Clarke (2003); Turley (2003); Sampson, Sharkey, and Raudenbush (2008); and Musterd, Galster, and Andersson (2012). It is interesting, however, that this conclusion is not supported when outcomes are modeled in ES. One potential explanation may be a statistical artifact: The two measures may not differ appreciably at this early stage in a child's life. A behavioral reason may be that, at least for these outcomes, PS neighborhood context is less important than that to which youths have been cumulatively exposed during later developmental stages; thus, including it in the cumulative measure adds little.

Quite a different pattern emerges for our educational outcomes. With these outcomes, there is no clear pattern of cumulative measures being stronger; indeed, if anything, during HS the contemporaneous measures appear marginally stronger for gifted/advanced classes and suspensions/expulsions outcomes. Our results suggest that no general conclusion can be reached about the comparative strength of contemporaneous and cumulative measures of context; it appears to depend on outcome.

[138] The average difference calculated for developmental disorders was heavily influenced by three unrealistically large (but statistically insignificant) odds ratios, as detailed in the note above. We have confidence in the sign of the average differences for both ES and MS, however, when these outliers are excluded.

Exhibit X-1. Average difference in neighborhood indicator odds ratios across child developmental stages

Outcome: Asthma

When Neighborhood Context Is Measured:

	Contemporaneous			Cumulative
	PS–ES	PS–MS	ES–MS	ES–MS
All ORs	−0.08	−0.08	0.01	−0.02
Signif ORs	−0.05	−0.17	−0.22	−0.29

Outcome: Developmental Disorder

When Neighborhood Context Is Measured:

	Contemporaneous			Cumulative
	PS–ES	PS–MS	ES–MS	ES–MS
All ORs	N/A	N/A	−0.01*	−0.13*
Signif ORs	N/A	N/A	−0.11	−0.36

Outcome: Participated in Gifted/Advanced Classes

When Neighborhood Context Is Measured:

	Contemporaneous			Cumulative		
	ES–MS	ES–HS	MS–HS	ES–MS	ES–HS	MS–HS
All ORs	<0*	−0.09	>0*	−0.03	−0.01	−0.02
Signif ORs	***	−0.11	−0.09	−0.2	***	0.14

Outcome: Assigned to Special Education Programs

When Neighborhood Context Is Measured:

	Contemporaneous			Cumulative		
	ES–MS	ES–HS	MS–HS	ES–MS	ES–HS	MS–HS
All ORs	−0.03	−0.10	−0.07	−0.01	−0.09	−0.08
Signif ORs	0.08	−0.21	−0.09	0.29	−0.18	***

Outcome: Suspended or Expelled from School

When Neighborhood Context is Measured:

	Contemporaneous			Cumulative		
	ES–MS	ES–HS	MS–HS	ES–MS	ES–HS	MS–HS
All ORs	0.03	0.00	−0.03	0.00	0.06	0.06
Signif ORs	0.34	0.08	−0.19	0.12	0.35	0.22

^ Values shown are average differences in the percentage differences in changes in odds ratios associated with unit change in neighborhood indicators.
* Value uncertain because of three unusually large odds ratios; see text for explanation.
*** No statistically significant parameters estimated; N/A = no model could be estimated.
PS = preschool; ES = elementary school; MS = middle school; HS = high school; OR = odds ratio; N/A = not applicable

Exhibit X-2. Average difference in estimated neighborhood indicator parameters^ between contemporaneous and cumulative measures of context

Outcome: Asthma

	Developmental Stage		
	ES	MS	HS
All ORs	0.01	−0.01	N/A
Signif ORs	0.02	−0.17	N/A

Outcome: Developmental Disorder

	Developmental Stage		
	ES	MS	HS
All ORs	−0.01*	−0.13*	N/A
Signif ORs	−0.03	−0.31	N/A

Outcome: Gifted/Advanced Class

	Developmental Stage		
	ES	MS	HS
All ORs	−0.03	>0*	0.03
Signif ORs	***	−0.13	0.08

Outcome: Special Education

	Developmental Stage		
	ES	MS	HS
All ORs	0.00	0.02	0.01
Signif ORs	−0.03	***	−0.01

Outcome: Suspended or Expelled

	Developmental Stage		
	ES	MS	HS
All ORs	−0.02	−0.05	0.05
Signif ORs	−0.08	−0.03	0.12

^ Values shown are average differences in the percentage differences in changes in odds ratios associated with unit change in neighborhood indicators
* Value uncertain due to three unusually large odds ratios; see text for explanation;
*** No statistically significant parameters estimated; N/A no model could be estimated
ES = elementary school; MS = middle school; HS = high school; OR = odds ratio; N/A = not applicable

Conclusion

The experimental extensions of our core model have revealed several insights into the nuanced, contingent-laden nature of neighborhood effects. First, we have found differences in the apparent magnitude of neighborhood effects across developmental stages, although which stage appears stronger varies both by the outcome in question and whether neighborhood context is measured contemporaneously or cumulatively. Neighborhood context effects on health outcomes measured during MS appear especially strong, however, compared with earlier stages. Second, we have found that neighborhood context measured as cumulative lifetime exposure provides stronger effects on health outcomes than when it is measured contemporaneously with the outcome, although this relationship does not hold during early stages of children's lives nor for educational outcomes. Our results suggest that no general conclusion can be reached about the comparative strength of contemporaneous and cumulative measures of context; it appears to depend on outcome.

XI. CONCLUSIONS AND IMPLICATIONS

Quantifying Neighborhood Effects on the Development of Low-Income Latino and African-American Children and Youth

Our *Denver Child Study* (DCS) explored the extent to which multiple dimensions of neighborhood context affected the physical and behavioral health, exposure to violence, risky behaviors, education, youth and young adult labor market and educational outcomes, and marriage and fertility behaviors of Latino and African-American children and youth from low-income families. Our study used a natural experiment involving the Denver, Colorado, Housing Authority (DHA), which since 1969 has operated public housing units located in a wide range of neighborhoods throughout the city and county of Denver. Because the initial assignment of households on the DHA waiting list to vacant public housing units (and, thus, to neighborhoods) mimics a random process, this program provided an unusual opportunity for reducing parental geographic selection bias and observing the unusual combination of low-income, minority youths raised for extended periods in advantaged (as well as disadvantaged) neighborhoods.

In this study, we analyzed data from several administrative sources and data we collected from telephone and in-person surveys with Latino or African-American current and former DHA tenants. Our surveys provided retrospective information on a battery of youth outcomes, family characteristics, and residential histories. By merging this information, we created a pseudo-longitudinal panel providing for each year of children's lives detailed characteristics about their families, neighborhoods, and outcomes in the domains noted above. We statistically analyzed relationships between outcomes and neighborhood indicators while controlling for child and family characteristics, employing logistic, hazard, and accelerated failure time models. We estimated models for three overlapping samples of families who spent different periods in DHA housing as a test for robustness and report only results that yield consistent patterns across samples.

Based on these analyses, we can answer our research questions as follows.

Among Latino and African-American children and youth who spent at least two years living in DHA public housing, are there statistically and economically significant differences in their outcomes in six domains (behavioral and physical health, exposure to violence, risky behaviors, education, employment, and marriage and childbearing) that can be attributed to differences in their neighborhood environments (controlling for family and individual characteristics)?

The short answer is a resounding YES. Many aspects of neighborhood context proved to be statistically and substantively important predictors of child and youth outcomes, though sometimes in unexpected ways. Aspects of the neighborhood's safety, physical environment, social status, ethnic mix, and nativity mix were associated with large differences in the odds, hazards, and timing of virtually all outcomes investigated. In particular, neighborhoods that had higher occupational prestige and percentages of foreign-born populations and lower property crime rates and scores on a social problems index had more favorable outcomes across the board. The consequences of higher neighborhood percentages of Latino and African-American ethnic composition and lower percentages of pre-1940–vintage housing were generally favorable though more mixed depending on the outcome. Particular indicators seemed to exert their influence only on selected child outcomes: higher respiratory risk index predicting poorer health outcomes, more risky behaviors, and inferior education outcomes; bad peers in the neighborhood predicting more exposure to violence and risky behaviors.

Does the answer depend on gender, ethnicity, or developmental stage?

The magnitudes of most of the aforementioned apparent neighborhood influences typically appeared to be contingent on the gender and ethnicity of the child or youth. The evidence did not suggest, however, that any particular gender or ethnicity was generally more sensitive to neighborhood context. Instead, the relative sensitivity depended on the outcome in question. Differences in magnitudes of neighborhood effects across developmental stages were exhibited for several outcomes and could be substantial. At which stage neighborhood effects appear stronger varied by outcome in question and sometimes whether neighborhood context was measured contemporaneously or cumulatively. We thus caution against making broad generalizations about "for whom and at which developmental stage are neighborhood influences most important," given the apparent multicontingent nature of the answer.

Does the answer depend on whether neighborhood environment is measured concurrently with the outcome or cumulatively throughout childhood prior to the outcome?

Neighborhood effects on health measured as cumulative exposures appeared stronger, on average, than those measured contemporaneously but only when the outcome in question was observed during the middle school developmental stage. Quite a different pattern emerged for educational outcomes. With these outcomes, there was no clear pattern of cumulative measures being stronger; indeed, if anything, for the high school stage, the contemporaneous measures appeared marginally stronger for some outcomes. Our results suggest that no general conclusion can be reached about the comparative strength of contemporaneous and cumulative measures of context; it appears to depend on outcome.

Are the relationships between neighborhood context and child outcomes linear or nonlinear—that is, suggestive of thresholds past which neighborhood effects differ in magnitude?

Nonlinear neighborhood effects did not appear to be the norm, though for some indicators (especially violent crime) they were consistently manifested. Observed nonlinear patterns were often dissimilar across indicators, although a few (respiratory risk, occupational prestige, social vulnerability) often exhibited theoretically supported minimum thresholds. Others (of particular note, violent crime) exhibited V-shaped or inverse V-shaped relationships with particular outcomes. Once again, no generalizations can be made: Nonlinear relationships appear to be contingent on neighborhood indicator and outcome in question.

Discussion of Effects From Residential Context

Neighborhood Safety

Neighborhood indicators in the domain of safety provided the most consistent explanatory power across our domains of child and youth well-being. Some of the relationships manifested were to be expected; others were surprising but revealing. As expected, our social problems index (a caregiver assessment of disorder, property, and especially violent crime in the immediate environs) and property crime rate (measured at the approximate scale of two encompassing census tracts) were strongly associated with a wide range of negative outcomes in virtually every domain investigated. Unexpectedly, violent crime rates (measured at the approximate scale of two encompassing census tracts) exhibited the opposite associations, especially in places that had below-average violent crime rates. We think that this finding reflects the net effects produced by the conflicting forces impinging on children arising from violent crime in the broader neighborhood, controlling for crime in the immediate environs—negative direct effects from crime and alterations in caregiver actions in response to such that are intended to ameliorate them. Caregivers may respond in several ways in an effort to shield their children from violent crime in the wider environs, such as limiting youths' activity spaces closer to home and expanding caregiver monitoring activities. So long as violent crime stays below average, these compensatory actions apparently yield net positive outcomes for children that manifest themselves as reduced exposure to violence (as caregivers would hope), fewer risky behaviors, and improved educational performance (as caregivers would like but perhaps not have expected). Unfortunately, our findings suggest that the efficacy of such compensatory caregiver responses will be overwhelmed in neighborhoods with above-average violent crime rates. In such cases, more crime is, as conventionally predicted, associated with poorer child outcomes in health, exposure to violence, risky behaviors, and educational performance. Our results here provide implicit testimony to the importance of both measuring neighborhood characteristics at different geographic scales and probing for nonlinear relationships.

Neighborhood Social Status

Residing in a higher occupational prestige neighborhood was one of the most consistent predictors of favorable child outcomes in almost every domain. These results have intuitive appeal and are consistent with prior scholarship on the importance of local networks, norms, and role models in transmitting neighborhood effects. Neighborhoods that surround their children with higher prestige workers likely expose them to norms and role models and provide access to networks of richer information that ultimately promote better health, less exposure to violence, fewer risky behaviors, better educational performance, and less nonmarital childbearing. There are theoretical reasons why neighborhood social status could directly affect each of these outcomes; many mediated causal pathways are also possible. For example, better child health outcomes, less exposure to violence, and fewer risky behaviors should provide clear educational payoffs for children and youth; better secondary educational achievement, in turn, might deter nonmarital childbearing as young adults.

Another measure of neighborhood status, our social vulnerability score (summed percentages of poor, unemployed, renter, and female-headed households) also proved a consistently predictive aspect of context. As would be expected, our evidence suggests that a more socially vulnerable neighborhood will generate (through potentially a variety of mechanisms) several negative outcomes for children and youth: more risky behaviors and less likelihood of marriage (for African Americans). The evidence also supports the notion that in places that have above-average concentrations of vulnerable populations, caregivers are less likely to seek medical treatment when their children present with symptoms and less likely to know about and report their children's exposure to violence.

Neighborhood Ethnic and Nativity Composition

Our evidence implies that higher percentages of foreign-born residents create a collective socialization context that supports the positive development of low-income, minority children and youth in many ways: less likelihood of being victimized by neighborhood violence (for boys), fewer risky behaviors (with the exception of smoking), superior educational performance, better employment rates as young adults, and increased chances of marriage (for young women). Less positively, our findings also suggest that high immigrant concentrations can discourage parents from seeking diagnoses of adverse health symptoms, raise the chances of boys witnessing neighborhood violence, and reduce the chances that young adult African Americans will marry.

A similar portrait emerges for the Latino percentage in the neighborhood that we also believe can best be explained by their distinctive normative and cultural structures. Low-income, minority children raised among more Latino neighbors experienced better outcomes in terms of witnessing neighborhood violence, risky behaviors, educational performance, and teen childbearing. As in the case of immigrants, however, the portrait of neighborhood effects is not uniformly positive. Our findings suggest that high Latino concentrations can discourage parents from seeking diagnoses of adverse health symptoms, raise the chances of being victimized by neighborhood violence or witnessing school violence, and reduce the chances that young adults will be employed full time.

In contrast, the percentage of African-American neighbors rarely predicted child outcomes, and when it did the results again were mixed. Higher concentrations of African-American residents apparently reduced the chances of running away and women having children as teenagers but decreased the chances of young women and African Americans getting married and discouraged parents from seeking diagnoses of their children's adverse health symptoms.

Neighborhood Physical Characteristics

We believe that our findings offer persuasive evidence that neighborhoods built before 1940 in Denver have distinctive design, structural, and land use features that independently engender a variety of effects on resident children and youth. It appears that most of these effects are detrimental for children: greater exposure to violence, larger likelihood of risky behaviors, weaker educational performance, and higher odds of bearing children outside of marriage as young adults. Some outcomes, however, are more positive: lower incidence of obesity, greater chance of working as a teen, and greater chance of being married as a young adult.

The quality of the ambient environment also seems to have a powerful impact on several child outcomes, at least after pollution concentration thresholds have been surpassed. This strongly suggests a biological mechanism through which this neighborhood effect is transmitted. High levels of neighborhood respiratory risk pollutants apparently led to substantially heightened chances of asthma attacks, smoking, and weak educational performance. High levels of neurological risk pollutants also apparently produced several detrimental health outcomes for female and African-American youth.

Contrasting Findings With the Moving To Opportunity Demonstration

Given its salience, the findings from the Moving To Opportunity (MTO) analysis should be compared with those from the DCS, though we acknowledge at the outset that precise comparisons are impossible due to fundamental differences in measurement and analytical design. In the domains of behavioral and physical health, exposure to violence, and risky behaviors, however, we see both studies finding similar neighborhood effects. We believe that our study suggests larger impacts of neighborhood in these realms than MTO, however. Results are quite different in the realms of educational, labor market, and marriage and childbearing outcomes, where we continue to find strong neighborhood effects, whereas MTO found essentially none. We think that there are several reasons for these differences between the studies' outcomes.

First, there are differences in the samples of low-income families investigated:

- Baseline conditions differ dramatically. In MTO, all families were selected from dilapidated public housing located in extremely disadvantaged neighborhoods; in DCS, all families were selected from well-maintained public housing located in a wide variety of neighborhoods. If there are durable damaging effects on children from living in concentrated disadvantage—as we found from our labor findings—the MTO design reduces the potentially salutary impacts of subsequent environments.
- In the full DCS sample, 56 percent of the children are Latino; only 30 percent of MTO families are Latino (Sanbonmatsu et al., 2011). The neighborhood effects measured by DCS for many of our educational, labor market, and childbearing outcomes appear stronger for Latinos.

Second, the neighborhood "treatments" differ substantially:

- MTO offers an uncontrolled, "bundled" treatment: a disadvantaged public housing development neighborhood; a nonpublic housing development neighborhood; and a census tract with less than 10 percent poverty (at least for a year), followed by whatever neighborhood bundles of attributes voucher holders subsequently choose.[139] DCS disentangles variations in exposure to a wide variety of distinct attributes comprising the neighborhood bundle. If particular neighborhoods contain two attributes that generate countervailing effects on a given child outcome, they may be cancelled out by the MTO design.

[139] MTO disaggregates aspects of the neighborhood context in measuring baseline and final conditions and assesses cross-group differences in these differences but never tests whether these different neighborhood components relate differently to child and youth outcomes.

- Treatment exposure (both in terms of consistency and duration) is lower in MTO, because many control families were forced to move as their public housing was demolished, and the two experimental groups used vouchers. In contrast, our sample spent considerable time in public housing and did not participate in the voucher program. As a consequence, the DCS sample of households had a 6-year mean (5-year median) DHA residential duration, approximately twice as long as reported for the MTO experimental group (mean: 2.7 years; median: 3.3 years). Theory suggests that several neighborhood effect mechanisms require a minimum duration of exposure before their impact will come into play. Moreover, even if the average context is the same during a period of a child's life, two places well above and below average may yield different consequences for a child than the one that was consistently experienced. For instance, two cases having the same mean but different variances of the given neighborhood indicator may not create identical "exposure" to that indicator; longer duration exposure thus creates an important difference in the consistency of exposure.
- In MTO, the neighborhood treatment is confounded with another treatment that generally has deleterious effects on children: moving. On average, DCS children moved 2.9 times during childhood (median: 2.0 moves). Unfortunately, we have no comparable data for MTO children.

Third, MTO has a wider set of outcome measures than DCS. Moreover, although many measures in MTO (like DCS) rely on self-reporting and parental reporting, MTO also has some direct measurement of outcomes that use biometrics, school records, and other administrative records. We would argue, however, that there is no reason why reliance on parental recall would bias measured neighborhood effects upward. Moreover, we would note that parental perceptions of child outcomes often shape their behaviors vis-à-vis their children and so have validity in their own right.

Fourth, children and youth were living in quite different metropolitan contexts in MTO and DCS. MTO sites were Boston, New York, Baltimore, Chicago, and Los Angeles; DCS was conducted in Denver only. Denver has many demographic and geographic features that make it unlike any of the MTO sites. Denver is a newer, faster growing (except for Los Angeles) metropolitan area. It has no concentrated, impoverished, heavily disinvested African-American ghetto; the African-American population represents a relatively small share of the overall population. In contrast, Latinos are a substantial share. Ethnic residential segregation is lower. Denver has a unified city–county government and thus has much less geographic variation in local fiscal capacity and public services than in the other sites. All of these distinctions imply that Denver offers very different opportunity structures, local cultural norms, public expectations, and institutional supports than the MTO sites. They may play themselves out in complicated ways that manifest themselves in greater power for neighborhood effects.

Implications

We think that the DCS can contribute to the formulation and reform of assisted housing and community development policy. Our findings suggest that well-formulated and targeted assisted housing and urban revitalization programs can yield substantial payoffs in multiple outcome domains by changing the developmental context of low-income, minority children and youth, either by changing the character of neighborhoods or by changing the neighborhoods in which these children reside. Our study has pinpointed particular attributes of the residential environment that seem most predictive for a wide variety of positive outcomes, thus giving a strategic guide to policymakers as to which directions and investments are likely to yield the greatest social gains.

APPENDIX A. INVESTIGATING QUASI-RANDOM ASSIGNMENT IN OUR NATURAL EXPERIMENT

Introduction

Although often advocated (for example, Oakes, 2004), some question whether natural experiments can be leveraged to draw convincing implications about causal neighborhood effects. The main reservation from doing so has been the lack of assurance that they in fact produce a quasi-random assignment of households and thus convincingly avoid geographic selection bias. This appendix uses our natural experiment involving public housing in Denver, Colorado, and investigates whether it convincingly produced an essentially random allocation of households across neighborhoods.

Methods of Analyzing Randomness of Initial Assignment

A few investigations of neighborhood effects employing natural experiments have probed the degree to which quasi-random assignment was achieved. Three methods have been employed. First, the allocation processes employed in the natural experiments are described in detail in an effort to uncover points at which nonrandom selections could occur (for example, Oreopoulos, 2003; Edin, Fredricksson, and Åslund, 2003; Jacob, 2004; Lyle, 2007; Piil Damm, 2009; 2014). Second, the sample of individuals analyzed is divided across two or more locations, and their mean characteristics are compared statistically. Third, regression is used to assess whether there are any non-zero relationships between individual characteristics and neighborhood characteristics. We employ all three strategies here and present a fourth, original approach involving Monte Carlo simulation.

Possibilities for Tenant Self-Selections and Staff Selections in the Denver Housing Authority Allocation Process

First, we explore the possibility of selection arising because the tenant can potentially choose between two Denver Housing Authority (DHA) units that may be located in quite different neighborhoods. Our independent evaluation of DHA records showed that 70 percent of the applicants accepted their first offer and 19 percent rejected the first but accepted their second. Eight percent rejected both offers and, after falling to the bottom of the waiting list and again rising to the top, were given a third offer that they accepted. Only 3 percent rejected 3 or more offers.

Perhaps more revealing than acceptance rates is probing whether applicants ended up in neighborhoods they would have selected on their own. Before their initial assignment to a DHA dwelling, clients were asked by DHA whether they had any geographic location preferences. DHA administrative data show that 42.5 percent of the clients in our sample did not articulate any locational preference, approximately one-third expressed general geographical areas (for example, Southwest Denver), while the remaining 23.5 percent provided responses that ranged from specific addresses to specific DHA developments (for example, North Lincoln Campus of Learners). To assess whether those who stated a preference were assigned to a housing unit in their specified area, a number of different approaches were taken. For those who specified a particular address, we determined whether that address was the DHA unit to which the client was initially assigned. For those who specified a preference for a particular DHA development, we used the unit number reported by DHA (which has an abbreviation of the development embedded in it) to assess whether the initial DHA unit was located within that development. For those who specified a preference for a particular neighborhood, we relied on our survey data to determine whether the original DHA unit was in the specified neighborhood. Finally, initially assigned DHA units were mapped to identify where within the Denver metropolitan area they were located for those who specified a preference for a particular part of the metro area. When these assessments had been made, we were able to calculate frequencies and percentages for those who specified a geographic preference and got it (N = 190; 25.8 percent) and those who specified a geographic preference but did not get a housing unit that met that preference (N = 233; 31.7 percent). If the vast majority of households in our sample had a strong geographic preference and were granted this preference by the DHA assignment process, one would challenge the process as one producing a quasi-random assignment, but our analyses indicate to the contrary that the vast majority of the respondents to our survey (74.2 percent) were either instances where there was no geographic preference articulated or where the client's stated preference was not honored. Because we are unable to ascertain the geographic location of all potential DHA unit vacancies that arose during the times that each client was assigned to his or her initial unit, we are unable to perform any formal statistical tests to determine whether the frequencies we obtained for those who were assigned their expressed preference were any different than what would be expected by chance.

A second potential source of selection can arise from the actions of the DHA staff. If the staff have multiple vacancies to consider at one time, dwelling offers may be made on the basis of observable characteristics of the applicants at the top of the waiting list. Though our interviews with DHA staff uncovered no suggestions that this occurred, we nevertheless must acknowledge this possibility.

In sum, a close examination of the DHA dwelling allocation process leaves some room for selection. A nontrivial share of DHA applicants did not accept their first offer from DHA (30 percent) or ended up in a neighborhood they said they preferred (26 percent). It also may be possible that DHA staff practiced some selection in their dwelling offers, though we have no direct evidence of this. The degree to which this potential for selection was manifested is tested below.

Comparisons of Individual Characteristics Across Space

A second way we test the randomness of the DHA assignment process is by ascertaining the degree to which there are any systematic patterns of where individuals with particular characteristics end up residing in their first DHA units. In other words, we investigate whether certain types of households end up disproportionately allocated to particular places, whether it be because of DHA practices or to choices made by applicants regarding, for instance, refusing first options. We parse space in two ways: across DHA housing developments and by census tracts. In both variants, we examine a wide range of individual characteristics—26 variables in all—measuring attributes that are typically gathered in surveys used in neighborhood effects research and many others that are not (but we have acquired through our aforementioned survey). These individual characteristics are listed in columns of Exhibit A-1.[140]

Our method involves regressing each individual characteristic on a series of dummy variables. In one variant, these dummies signify different DHA developments; in the other, they signify census tracts.[141] We stratify these regressions by family size (zero or one child, two children, three or more children), because there is a distinct geographic pattern in Denver of where public housing units of various bedroom configurations are located. Our test of quasi-random assignment is whether the place-based dummy variables denoting where DHA households were originally placed are significantly different from zero.[142] If they are, we reject the null hypothesis of random assignment of applicants to DHA dwellings.

[140] Note that in our study, we consider only Latino and African-American residents of DHA; thus, we measure only African-American ethnic status, with Latino ethnicity being the reference group.
[141] The scattered-site DHA developments are not identified in their allocation process by individual address but rather by broader geographic area encompassing several census tracts (though we are aware of the tract of each development). This produces the seemingly anomalous situation shown in Exhibits A-1 and A-2, where apparently many more tracts are represented than "developments."
[142] Here, *number of children in the household* refers to the number of eligible children for our study and not the total number of all children in the household. So, it is possible for households with 0–1 eligible children to have other siblings with the same father.

Exhibit A-1A. Relationships between DHA resident characteristics and DHA developments: Households with 0–1 Child

DHA Development	P/C is single parent (1=yes, 0=no)		P/C employment status at time of DHA move-in (1=employed, 0=not employed)		P/C hourly wage at time of DHA move-in		P/C disability status at time of survey (1=yes; 0=no)		P/C received TANF at time of DHA move-in (1=yes, 0=no)		P/C receiving Food Stamps at time of DHA move-in (1=yes, 0=no)		P/C had checking account at time of DHA move-in (1=yes, 0=no)		P/C had health insurance at time of DHA move-in (1=yes, 0=no)	
	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
Arrowhead Townhouses	-0.111	0.638	-1.133	0.113	-2.653	0.607	-0.0889	0.652	-1.156	0.062	-1.044	0.146	-0.956	0.215	-0.911	0.209
Columbine Homes	-0.500	0.052	-0.300	0.698	-4.701	0.402	-0.200	0.351	-0.267	0.691	-0.267	0.732	0.1000	0.905	-0.133	0.865
Curtis Park Home	-0.100	0.667	-0.200	0.775	-2.984	0.556	-8.31e-15	1.000	0.1000	0.869	0.200	0.776	-7.11e-15	1.000	-9.46e-15	1.000
FHA Repossessed East	-7.78e-16	1.000	0.200	0.886	6.466	0.524	-0.200	0.606	-0.600	0.621	-0.600	0.670	-0.400	0.791	0.200	0.888
Goldsmith Village	-1.03e-15	1.000	-0.133	0.886	-0.251	0.970	-0.200	0.439	-0.267	0.741	0.0667	0.943	0.600	0.552	-0.467	0.623
South Lincoln	-0.240	0.248	-1.080	0.086	-6.033	0.184	-8.12e-15	1.000	-1.000	0.066	-0.760	0.228	-0.880	0.194	-0.640	0.315
North Lincoln COL	-0.278	0.170	-0.106	0.863	-0.594	0.893	-0.117	0.490	-0.294	0.577	-0.0167	0.978	0.1000	0.879	-0.0778	0.900
Quigg Newton Homes	-0.167	0.416	-0.467	0.450	-8.084	0.071	-0.133	0.435	-0.333	0.533	0.0333	0.957	-0.0667	0.920	-0.133	0.832
Sun Valley Annex	-0.111	0.604	-0.522	0.419	-10.08	**0.032**	-0.0889	0.619	-0.156	0.781	0.0111	0.986	-0.289	0.679	-0.189	0.774
Pacific Place	-3.08e-16	1.000	-0.800	0.568	-13.78	0.175	-0.200	0.606	-0.600	0.621	-0.600	0.670	-0.400	0.791	-0.800	0.574
T Bean Tower (Elderly & Disabled)	-7.88e-16	1.000	-0.800	0.568	-13.78	0.175	-0.200	0.606	-0.600	0.621	-0.600	0.670	-0.400	0.791	-0.800	0.574
Platte Valley Homes	-0.333	0.282	-0.467	0.617	-7.451	0.271	-0.200	0.439	0.400	0.621	0.400	0.670	-0.400	0.692	-0.133	0.888
Westridge Homes	-0.227	0.280	-0.300	0.636	-5.520	0.229	-0.0182	0.917	-0.191	0.728	0.0364	0.954	-0.127	0.852	0.0182	0.977
Westwood Homes	-0.154	0.490	-1.031	0.126	-6.469	0.185	0.108	0.563	-0.369	0.526	-0.754	0.265	-0.862	0.236	-0.646	0.345
Stapleton Homes	-9.83e-16	1.000	-0.300	0.779	-6.284	0.417	-0.200	0.499	-0.100	0.914	0.400	0.710	-0.400	0.729	0.200	0.854
Thomas Connole (Elderly & Dis.)	-1.000	**0.032**	-0.800	0.568	-13.78	0.175	0.800	**0.040**	-0.600	0.621	0.400	0.776	-0.400	0.791	0.200	0.888
East Village	-0.200	0.456	-0.400	0.621	-7.034	0.230	0.600	**0.008**	-0.600	0.391	-0.400	0.622	0.200	0.819	-0.200	0.808
Combined Devel-Disp Housing S.	-0.355	0.083	-0.284	0.645	-4.886	0.274	-0.103	0.545	-0.342	0.521	0.0129	0.983	-0.271	0.684	-0.0581	0.926
Combined Devel-Disp Housing E.	-0.250	0.239	-0.250	0.696	-2.848	0.538	0.1000	0.572	-0.350	0.527	-0.150	0.815	0.200	0.772	0.0500	0.939
Combined Devel-Disp Housing W.	-0.316	0.139	-0.116	0.857	-1.142	0.806	-0.0421	0.813	-0.337	0.545	-0.0737	0.909	0.232	0.739	-0.116	0.859
Observations	261		261		261		261		261		261		261		261	
F-Test	0.898		0.917		1.491		1.842		0.930		0.891		0.985		0.531	
p value	0.590		0.566		0.0850		**0.0175**		0.550		0.599		0.481		0.952	
Pseudo R^2	0.0696		0.0710		0.111		0.133		0.0719		0.0691		0.0759		0.0424	
Note: P/C = Parent or Caregiver; reference group = Arapaho Cts.																
bold = p<.05																

Exhibit A-1A. Relationships between DHA resident characteristics and DHA developments: Households with 0–1 child (continued)

DHA Development	P/C had too little money for food at time of DHA move-in (1=yes, 0=no)		P/C had difficulty paying all bills at time of DHA move-in (1=yes, 0=no)		Frequency that P/C drank alcohol since becoming a parent		Frequency that P/C smoked marijuana since becoming a parent		P/C ever seen a psychiatrist (1=yes, 0=no)		Number of years during childhood that P/C lived in public housing		Number of years during childhood that P/C lived in a home owned by parents		P/C born in the United States (1=yes; 0=no)		Spanish language interview (1=yes; 0=no)	
	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
Arrowhead Townhouses	-0.756	0.327	-1.378	0.128	0.533	0.649	0.889	0.356	0.356	0.177	-0.689	0.887	-6.889	0.287	0.0889	0.580	1.58e-15	1.000
Columbine Homes	0.133	0.873	-0.267	0.786	0.0333	0.979	0.667	0.524	0.300	0.294	10.37	**0.050**	-20.00	**0.005**	0.200	0.252	1.84e-15	1.000
Curtis Park Home	0.400	0.597	-1.200	0.177	-0.300	0.794	0.200	0.832	0.400	0.122	-0.500	0.916	-9.300	0.144	0.100	0.526	0.100	0.374
FHA Repossessed East	0.800	0.597	-0.600	0.735	5.200	**0.025**	-7.48e-15	1.000	-0.200	0.698	-5.800	0.543	7.000	0.581	0.200	0.526	1.51e-15	1.000
Goldsmith Village	0.467	0.644	-0.267	0.821	-3.467	**0.025**	0.333	0.791	0.467	0.176	-5.800	0.362	-4.667	0.581	-0.133	0.526	1.75e-15	1.000
South Lincoln	-0.720	0.288	-0.960	0.227	-0.200	0.846	0.280	0.741	8.05e-15	1.000	1.120	0.793	-14.96	**0.009**	0.120	0.395	0.0800	0.427
North Lincoln COL	-0.0889	0.893	-0.267	0.730	-0.189	0.851	0.194	0.813	0.0778	0.729	-1.244	0.764	-7.139	0.197	0.0889	0.518	0.0278	0.777
Quigg Newton Homes	0.0333	0.960	-0.133	0.865	-0.333	0.743	-0.300	0.719	0.267	0.242	-0.200	0.962	-9.900	0.078	0.133	0.338	0.0667	0.502
Sun Valley Annex	0.0778	0.911	-0.656	0.423	-0.356	0.738	0.111	0.899	0.0222	0.926	4.700	0.286	-8.611	0.142	0.144	0.321	1.56e-15	1.000
Pacific Place	-0.200	0.895	-0.600	0.735	1.200	0.602	1.000	0.597	-0.200	0.698	-5.800	0.543	-20.00	0.116	0.200	0.526	1.37e-15	1.000
T Bean Tower (Elderly & Disabled)	-0.200	0.895	-0.600	0.735	0.200	0.931	1.000	0.597	0.800	0.122	-5.800	0.543	-8.000	0.528	0.200	0.526	1.51e-15	1.000
Platte Valley Homes	0.133	0.895	-0.267	0.821	1.867	0.224	-5.18e-15	1.000	0.467	0.176	3.200	0.615	-7.000	0.408	0.200	0.342	1.49e-15	1.000
Westridge Homes	0.164	0.811	-0.100	0.901	-0.527	0.613	-0.0455	0.958	0.209	0.371	0.336	0.938	-9.864	0.087	0.109	0.445	0.0909	0.372
Westwood Homes	-0.508	0.485	-0.908	0.287	0.200	0.856	0.769	0.397	0.108	0.664	-2.492	0.586	-6.077	0.319	0.0462	0.761	1.56e-15	1.000
Stapleton Homes	0.300	0.795	-0.600	0.658	1.700	0.334	-6.33e-15	1.000	-0.200	0.612	-0.300	0.967	4.500	0.642	0.200	0.407	1.47e-15	1.000
Thomas Connole (Elderly & Dis.)	-0.200	0.895	0.400	0.821	-0.800	0.728	-6.35e-15	1.000	-0.200	0.698	-5.800	0.543	7.000	0.581	-0.800	**0.012**	1.47e-15	1.000
East Village	0.200	0.819	-0.600	0.558	0.400	0.763	0.600	0.583	0.200	0.502	-2.000	0.716	-10.40	0.157	-0.200	0.273	0.200	0.124
Combined Devel-Disp Housing S.	0.0903	0.892	-0.213	0.785	0.0387	0.970	0.194	0.816	-0.00645	0.977	0.458	0.913	-5.968	0.286	0.135	0.329	1.25e-15	1.000
Combined Devel-Disp Housing E.	-1.55e-15	1.000	-0.250	0.757	-0.350	0.739	1.000	0.247	0.150	0.524	-3.200	0.462	-6.050	0.297	0.100	0.487	0.0500	0.626
Combined Devel-Disp Housing W.	0.274	0.693	-0.547	0.501	0.0421	0.968	0.421	0.627	0.168	0.477	-3.905	0.372	-7.053	0.226	0.200	0.168	0.0526	0.610
Observations	261		261		261		261		261		261		261		261		261	
F-Test	0.713		0.676		1.117		0.573		1.169		1.315		1.436		1.179		0.525	
p value	0.812		0.848		0.333		0.929		0.283		0.170		0.106		0.273		0.954	
Pseudo R^2	0.0561		0.0534		0.0851		0.0456		0.0888		0.0987		0.107		0.0895		0.0419	
Note: P/C = Parent or Caregiver; reference group = Arapaho Cts.																		
bold = p<.05																		

Exhibit A-1A. Relationships between DHA resident characteristics and DHA developments: Households with 0–1 child (continued)

DHA Development	Biological father always lived in household with child(ren) (1=yes; 0=no)		Parent's age at time of DHA move-in		P/C African American (1=yes; 0=no)		Parent have HS diploma at time of DHA move-in (1=yes; 0=no)		Parent have any higher education at time of DHA move-in (1=yes; 0=no)		Kids share same biological dad (1=yes; 0=no)		Parent Depressive Symptomatology Scale at time of interview		Parenting Efficacy Scale at time of interview		Parenting Beliefs Scale at time of interview	
	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
Arrowhead Townhouses	-0.0889	0.657	5.756	0.338	0.289	0.269	0.133	0.611	-0.200	0.267	-0.0444	0.865	-0.0667	0.990	-0.0889	0.962	-1.911	0.332
Columbine Homes	0.133	0.540	6.200	0.342	-0.433	0.127	-0.0333	0.907	-0.200	0.306	0.0667	0.814	-6.233	0.295	0.467	0.819	0.367	0.864
Curtis Park Home	-0.100	0.611	0.900	0.879	0.100	0.697	0.100	0.697	-0.100	0.571	-0.300	0.242	5.100	0.343	-0.300	0.871	-1.100	0.570
FHA Repossessed East	-0.200	0.611	11.20	0.343	-0.600	0.243	-0.200	0.697	-0.200	0.571	0.400	0.435	-8.400	0.435	-4.200	0.257	3.200	0.409
Goldsmith Village	-0.200	0.446	11.87	0.132	0.0667	0.845	-0.200	0.560	0.133	0.571	0.0667	0.845	-3.400	0.635	0.467	0.850	-3.133	0.225
South Lincoln	0.0800	0.649	5.680	0.282	-0.240	0.296	0.360	0.118	-0.120	0.448	0.0800	0.727	1.600	0.739	-1.040	0.530	-0.920	0.595
North Lincoln COL	-0.0611	0.721	4.561	0.375	-0.0722	0.747	0.217	0.334	-0.0889	0.564	0.178	0.426	-1.844	0.694	-1.256	0.436	-0.828	0.623
Quigg Newton Homes	-0.167	0.337	4.300	0.408	-0.267	0.239	0.233	0.304	-0.167	0.285	0.133	0.555	2.033	0.668	-1.667	0.307	-1.400	0.412
Sun Valley Annex	-0.0889	0.624	0.311	**0.954**	-0.156	0.511	0.0778	0.743	-0.144	0.376	-0.0444	0.851	-1.067	0.830	-1.811	0.289	-0.578	0.746
Pacific Place	-0.200	0.611	30.20	0.011	0.400	0.436	-0.200	0.697	-0.200	0.571	0.400	0.435	8.600	0.424	-3.200	0.387	-0.800	0.836
T Bean Tower (Elderly & Disabled)	-0.200	0.611	17.20	0.145	0.400	0.436	0.800	0.121	-0.200	0.571	0.400	0.435	8.600	0.424	1.800	0.627	2.200	0.570
Platte Valley Homes	-0.200	0.446	12.20	0.122	0.400	0.243	-0.200	0.560	0.133	0.571	0.0667	0.845	3.933	0.583	-2.200	0.373	0.533	0.836
Westridge Homes	-0.109	0.540	3.609	0.499	-0.327	0.159	0.0727	0.755	-0.0182	0.909	0.0364	0.875	-1.309	0.788	-1.291	0.441	0.473	0.787
Westwood Homes	-0.0462	0.807	8.123	0.152	-0.138	0.574	-0.123	0.618	0.185	0.277	0.0154	0.950	-0.785	0.879	0.0308	0.986	-0.415	0.823
Stapleton Homes	-0.200	0.506	5.200	0.564	0.400	0.308	0.800	**0.043**	-0.200	0.459	0.400	0.307	-6.900	0.401	1.800	0.524	0.700	0.813
Thomas Connole (Elderly & Dis.)	-0.200	0.611	29.20	**0.014**	-0.600	0.243	-0.200	0.697	-0.200	0.571	0.400	0.435	10.60	0.325	-11.20	**0.003**	-7.800	**0.045**
East Village	-3.54e-15	1.000	15.00	**0.028**	3.03e-15	1.000	6.26e-15	1.000	-4.03e-15	1.000	0.200	0.499	6.400	0.303	-3.600	0.093	-2.600	0.245
Combined Devel-Disp Housing S.	-0.0387	0.823	1.910	0.713	-0.342	0.131	0.123	0.588	-0.135	0.384	0.110	0.627	-1.787	0.706	-1.232	0.449	-0.574	0.736
Combined Devel-Disp Housing E.	-3.49e-15	1.000	7.850	0.146	0.250	0.286	0.100	0.670	0.0500	0.756	0.150	0.522	-2.850	0.562	-2.150	0.204	-1.750	0.322
Combined Devel-Disp Housing W.	0.0105	0.953	9.095	0.094	-0.337	0.153	0.116	0.624	-0.0947	0.559	0.189	0.421	-1.453	0.768	-1.095	0.519	-0.221	0.901
Observations	261		261		261		261		261		261		261		261		261	
F-Test	0.619		1.677		2.800		1.260		1.165		0.787		0.955		1.209		0.865	
p value	0.897		**0.0378**		**0.000108**		0.207		0.286		0.729		0.518		0.247		0.632	
Pseudo R^2	0.0491		0.123		0.189		0.0950		0.0885		0.0615		0.0737		0.0915		0.0672	
Note: P/C = Parent or Caregiver; reference group = Arapaho Cts.																		
bold = p<.05																		

Exhibit A-1B. Relationships between DHA resident characteristics and DHA developments: Households with two children

DHA Development	P/C is single parent (1=yes, 0=no)		P/C employment status at time of DHA move-in (1=employed, 0=not employed)		P/C hourly wage at time of DHA move-in		P/C disability status at time of survey (1=yes; 0=no)		P/C received TANF at time of DHA move-in (1=yes, 0=no)		P/C receiving Food Stamps at time of DHA move-in (1=yes, 0=no)		P/C had checking account at time of DHA move-in (1=yes, 0=no)		P/C had health insurance at time of DHA move-in (1=yes, 0=no)	
	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
Arrowhead Townhouses	0.333	0.383	0.667	0.600	9.167	0.266	3.61e-15	1.000	0.167	0.874	0.167	0.857	0.500	0.685	2.46e-14	1.000
Columbine Homes	0.333	0.298	0.417	0.695	4.542	0.509	0.500	**0.043**	0.417	0.637	0.417	0.590	2.73e-14	1.000	-0.250	0.816
Curtis Park Homes	0.0476	0.858	-0.476	0.591	0.792	0.890	0.143	0.486	-0.476	0.517	0.452	0.483	-0.286	0.739	-0.714	0.425
FHA Repossessed East	0.333	0.491	0.667	0.678	17.17	0.100	4.17e-15	1.000	-0.333	0.803	-0.333	0.776	1.000	0.521	2.38e-14	1.000
Goldsmith Village	0.333	0.491	-0.333	0.836	-7.333	0.481	4.18e-15	1.000	-0.333	0.803	-0.333	0.776	2.82e-14	1.000	2.38e-14	1.000
South Lincoln	0.175	0.500	-0.386	0.655	0.227	0.968	0.0526	0.793	0.140	0.845	0.404	0.522	-0.158	0.851	-0.842	0.335
North Lincoln COL	-0.0370	0.884	0.444	0.600	8.220	0.135	0.0741	0.706	0.0370	0.958	0.333	0.589	0.630	0.443	-0.333	0.697
220	0.333	0.491	-0.333	0.836	-7.333	0.481	4.58e-15	1.000	-0.333	0.803	-0.333	0.776	2.87e-14	1.000	-1.000	0.538
Quigg Newton Homes	0.222	0.395	0.111	0.898	0.146	0.979	0.167	0.407	0.167	0.817	0.333	0.598	0.222	0.792	-0.278	0.751
Sun Valley Annex	0.0833	0.758	0.333	0.710	3.164	0.586	4.70e-15	1.000	0.250	0.737	0.417	0.524	0.333	0.702	-0.333	0.713
Pacific Place	0.333	0.298	-1.833	0.085	5.042	0.464	4.33e-15	1.000	0.167	0.850	0.417	0.590	-2.000	0.053	-2.500	**0.021**
Platte Valley Homes	-3.83e-15	1.000	1.16e-14	1.000	-2.233	0.726	0.500	**0.029**	-1.333	0.104	0.500	0.485	0.167	0.861	-0.500	0.615
Westridge Homes	0.0333	0.904	-0.133	0.884	-3.933	0.507	0.100	0.637	0.267	0.726	0.267	0.689	0.300	0.736	-0.400	0.666
Westwood Homes	0.0333	0.904	0.167	0.856	0.552	0.926	0.100	0.637	0.367	0.630	0.467	0.484	0.200	0.822	-0.1000	0.914
Stapleton Homes	0.333	0.383	-4.333	**0.001**	-0.583	0.943	0.500	0.090	0.667	0.527	0.167	0.857	-4.500	**0.000**	-5.000	**0.000**
East Village	0.333	0.383	0.667	0.600	8.167	0.321	4.62e-15	1.000	-0.333	0.752	-0.333	0.718	0.500	0.685	-0.500	0.697
Combined Devel-Disp Hsing S.	0.0769	0.759	0.0256	0.975	3.107	0.565	0.128	0.507	-0.282	0.684	-0.128	0.833	0.154	0.849	-0.410	0.626
Combined Devel-Disp Hsing E.	0.194	0.440	0.500	0.550	8.579	0.114	0.139	0.473	-2.55e-16	1.000	0.0556	0.927	0.556	0.493	-0.278	0.742
Combined Devel-Disp Hsing W.	0.121	0.631	0.212	0.800	1.736	0.749	0.0909	0.640	-0.0606	0.931	0.242	0.691	0.333	0.682	-0.242	0.775
Observations	244		244		244		244		244		244		244		244	
F-Test	0.699		2.087		2.329		1.193		0.899		0.578		2.352		1.840	
p value	0.818		**0.00616**		**0.00184**		0.265		0.584		0.920		**0.00164**		**0.0200**	
Pseudo R^2	0.0560		0.150		0.165		0.0919		0.0709		0.0467		0.166		0.135	
Note: P/C = Parent or Caregiver; reference group = Arapaho Cts.																
bold = p<.05																

Exhibit A-1B. Relationships between DHA resident characteristics and DHA developments: Households with two children (continued)

DHA Development	P/C had too little money for food at time of DHA move-in (1=yes, 0=no)		P/C had difficulty paying all bills at time of DHA move-in (1=yes, 0=no)		Frequency that P/C drank alcohol since becoming a parent		Frequency that P/C smoked marijuana since becoming a parent		P/C ever seen a psychiatrist (1=yes, 0=no)		Number of years during childhood that P/C lived in public housing		Number of years during childhood that P/C lived in a home owned by parents		P/C born in the United States (1=yes; 0=no)		Spanish language interview (1=yes; 0=no)	
	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
Arrowhead Townhouses	-0.167	0.893	3.167	0.082	-0.500	0.846	-0.500	0.804	0.167	0.710	1.34e-13	1.000	17.83	0.106	7.02e-15	1.000	4.22e-15	1.000
Columbine Homes	-0.667	0.521	2.667	0.080	1.000	0.642	2.500	0.138	0.667	0.077	11.25	0.057	-1.917	0.835	6.93e-15	1.000	4.24e-15	1.000
Curtis Park Homes	-1.024	0.237	2.381	0.061	0.571	0.749	0.429	0.760	0.0238	0.939	6.000	0.222	4.262	0.578	-0.143	0.525	0.0714	0.655
FHA Repossessed East	0.333	0.832	2.667	0.246	-1.000	0.758	5.000	0.050	0.667	0.241	1.27e-13	1.000	10.33	0.458	6.36e-15	1.000	4.46e-15	1.000
Goldsmith Village	-0.667	0.671	2.667	0.246	-7.26e-14	1.000	-1.82e-15	1.000	0.667	0.241	16.00	0.073	-8.667	0.533	6.37e-15	1.000	4.45e-15	1.000
South Lincoln	-0.772	0.361	2.246	0.070	-0.474	0.786	-0.842	0.539	0.0351	0.909	6.579	0.171	-2.193	0.769	6.04e-15	1.000	4.67e-15	1.000
North Lincoln COL	-0.259	0.754	2.815	**0.021**	-0.481	0.778	-0.778	0.562	0.222	0.458	2.630	0.575	5.296	0.470	-0.259	0.229	0.0370	0.808
220	0.333	0.832	3.667	0.111	-1.000	0.758	-1.000	0.694	-0.333	0.557	1.22e-13	1.000	10.33	0.458	5.98e-15	1.000	4.67e-15	1.000
Quigg Newton Homes	-0.556	0.512	1.833	0.140	-0.722	0.680	-0.667	0.628	0.222	0.469	2.833	0.556	4.556	0.544	-0.222	0.314	0.167	0.287
Sun Valley Annex	-0.333	0.704	3.083	**0.017**	-0.667	0.713	-0.667	0.639	-0.167	0.600	6.333	0.204	2.667	0.732	-0.167	0.465	0.0833	0.607
Pacific Place	-2.417	**0.021**	0.917	0.546	0.750	0.727	-0.750	0.656	-0.0833	0.824	6.000	0.309	-1.917	0.835	-0.250	0.355	0.250	0.193
Platte Valley Homes	-0.333	0.729	2.833	**0.045**	-0.833	0.675	0.333	0.831	-4.96e-15	1.000	2.833	0.604	-0.833	0.922	5.69e-15	1.000	4.77e-15	1.000
Westridge Homes	-0.0667	0.941	3.267	**0.013**	-1.000	0.589	-1.100	0.448	0.0667	0.837	3.800	0.455	7.933	0.317	-0.1000	0.667	0.100	0.545
Westwood Homes	-0.567	0.527	2.767	**0.035**	-1.500	0.418	-0.400	0.783	0.0667	0.837	5.800	0.254	4.033	0.611	-0.300	0.198	4.69e-15	1.000
Stapleton Homes	-5.167	**0.000**	-1.833	0.312	0.500	0.846	-0.500	0.804	0.167	0.710	5.500	0.435	-8.667	0.431	5.97e-15	1.000	4.68e-15	1.000
East Village	-0.167	0.893	2.667	0.142	-1.000	0.697	-0.500	0.804	-0.333	0.458	1.21e-13	1.000	3.833	0.727	-0.500	0.122	4.69e-15	1.000
Combined Devel-Disp Hsing S.	-0.436	0.593	2.974	**0.013**	-1.051	0.533	-0.564	0.669	0.0513	0.862	5.077	0.273	3.513	0.626	-0.0769	0.716	0.0256	0.865
Combined Devel-Disp Hsing E.	-0.194	0.812	3.167	**0.008**	-0.528	0.755	-0.778	0.557	0.222	0.452	1.944	0.675	3.361	0.642	-0.139	0.513	0.0556	0.713
Combined Devel-Disp Hsing W.	-0.303	0.712	2.879	**0.017**	-1.061	0.532	-0.394	0.767	-0.0303	0.919	4.394	0.345	0.758	0.917	-0.182	0.394	0.152	0.317
Observations	244		244		244		244		244		244		244		244		244	
F-Test	2.138		1.514		0.447		1.044		1.226		0.952		0.879		0.874		0.744	
p value	**0.00481**		0.0821		0.979		0.411		0.238		0.520		0.609		0.616		0.771	
Pseudo R^2	0.153		0.114		0.0365		0.0814		0.0942		0.0747		0.0694		0.0690		0.0593	
Note: P/C = Parent or Caregiver; reference group = Arapaho Cts.																		
bold = p<.05																		

Exhibit A-1B. Relationships between DHA resident characteristics and DHA developments: Households with two children (continued)

DHA Development	Biological father always lived in household with child(ren) (1=yes; 0=no)		Parent's age at time of DHA move-in		P/C African American (1=yes; 0=no)		Parent have HS diploma at time of DHA move-in (1=yes; 0=no)		Parent have any higher education at time of DHA move-in (1=yes; 0=no)		Kids share same biological dad (1=yes; 0=no)		Parent Depressive Symptomatology Scale at time of interview		Parenting Efficacy Scale at time of interview		Parenting Beliefs Scale at time of interview	
	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
Arrowhead Townhouses	1.15e-14	1.000	-4.833	0.554	-0.500	0.174	1.000	**0.015**	-0.333	0.248	1.000	**0.025**	12.17	0.151	0.333	0.921	-7.833	**0.030**
Columbine Homes	1.14e-14	1.000	-7.583	0.267	-0.500	0.105	0.250	0.465	-0.0833	0.730	0.250	0.502	12.92	0.069	-5.917	**0.037**	-1.333	0.658
Curtis Park Homes	0.286	0.222	-9.619	0.092	-0.214	0.403	0.500	0.080	-0.262	0.193	0.286	0.357	3.881	0.510	-2.952	0.209	-2.619	0.297
FHA Repossessed East	1.10e-14	1.000	-6.333	0.540	5.98e-15	1.000	1.70e-14	1.000	-0.333	0.361	1.000	0.076	-4.333	0.685	-0.667	0.876	-4.333	0.342
Goldsmith Village	1.10e-14	1.000	-11.33	0.273	5.99e-15	1.000	1.70e-14	1.000	-0.333	0.361	1.33e-14	1.000	13.67	0.202	0.333	0.938	-1.333	0.770
South Lincoln	0.158	0.489	-10.07	0.071	-0.526	**0.036**	0.316	0.257	-0.281	0.153	0.316	0.297	2.140	0.710	-2.246	0.328	-1.386	0.572
North Lincoln COL	0.148	0.507	-7.222	0.185	-0.370	0.131	0.111	0.683	-0.185	0.336	0.407	0.170	6.815	0.227	-3.481	0.122	-0.889	0.711
220	1.07e-14	1.000	-3.333	0.747	-1.000	**0.032**	1.000	0.054	-0.333	0.361	1.000	0.076	-0.333	0.975	-5.667	0.184	0.667	0.884
Quigg Newton Homes	1.01e-14	1.000	-8.111	0.147	-0.722	**0.004**	0.167	0.550	-0.278	0.159	0.333	0.273	4.000	0.489	-1.833	0.426	-1.333	0.588
Sun Valley Annex	0.167	0.482	-10.42	0.072	-0.750	**0.004**	0.167	0.564	-0.250	0.221	0.417	0.186	6.583	0.271	-2.167	0.363	-0.500	0.844
Pacific Place	1.14e-14	1.000	-5.583	0.414	-1.000	**0.001**	0.250	0.465	-0.333	0.168	0.250	0.502	-3.083	0.663	-1.167	0.679	-2.583	0.392
Platte Valley Homes	0.167	0.521	-4.833	0.445	3.89e-15	1.000	0.167	0.598	-0.167	0.456	0.167	0.628	2.500	0.703	-1.167	0.655	-2.500	0.371
Westridge Homes	0.100	0.679	-10.33	0.080	-0.800	**0.003**	0.500	0.091	-0.133	0.521	0.400	0.213	9.267	0.129	-4.067	0.095	0.867	0.739
Westwood Homes	0.200	0.408	-7.733	0.190	-0.400	0.132	0.400	0.175	-0.333	0.110	0.200	0.533	3.167	0.604	-2.367	0.330	-1.433	0.581
Stapleton Homes	1.06e-14	1.000	-8.333	0.308	5.07e-15	1.000	1.63e-14	1.000	-0.333	0.248	1.33e-14	1.000	2.667	0.752	-5.667	0.093	-3.833	0.288
East Village	1.06e-14	1.000	4.167	0.610	-0.500	0.174	1.61e-14	1.000	-0.333	0.248	1.000	**0.025**	-1.333	0.875	-3.167	0.347	-0.833	0.817
Combined Devel-Disp Hsing S.	0.205	0.351	-4.333	0.419	-0.795	**0.001**	0.385	0.152	-0.256	0.176	0.385	0.188	3.923	0.480	-3.077	0.165	-1.590	0.501
Combined Devel-Disp Hsing E.	0.167	0.450	-5.076	0.346	-0.111	0.646	0.361	0.180	-0.167	0.380	0.472	0.108	3.306	0.553	-3.528	0.112	-3.111	0.190
Combined Devel-Disp Hsing W.	0.182	0.411	-4.606	0.393	-0.970	**0.000**	0.212	0.432	-0.212	0.266	0.424	0.149	4.333	0.438	-2.061	0.355	-0.667	0.779
Observations	244		243		244		244		244		244		244		244		244	
F-Test	0.522		1.044		7.950		1.481		0.503		1.014		0.980		0.954		1.135	
p value	0.951		0.411		1.31e-16		0.0938		0.960		0.446		0.486		0.517		0.318	
Pseudo R^2	0.0424		0.0817		0.403		0.112		0.0409		0.0792		0.0767		0.0749		0.0878	
Note: P/C = Parent or Caregiver; reference group = Arapaho Cts.																		
bold = p<.05																		

Exhibit A-1C. Relationships between DHA resident characteristics and DHA developments: Households with three or more children

DHA Development	P/C is single parent (1=yes, 0=no)		P/C employment status at time of DHA move-in (1=employed, 0=not employed)		P/C hourly wage at time of DHA move-in		P/C disability status at time of survey (1=yes; 0=no)		P/C received TANF at time of DHA move-in (1=yes, 0=no)		P/C receiving Food Stamps at time of DHA move-in (1=yes, 0=no)		P/C had checking account at time of DHA move-in (1=yes, 0=no)		P/C had health insurance at time of DHA move-in (1=yes, 0=no)	
	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
Arrowhead Townhouses	0.250	0.627	1.000	0.443	18.75	0.077	-3.82e-15	1.000	-0.750	0.631	0.250	0.833	4.70e-15	1.000	0.750	0.523
Columbine Homes	0.250	0.386	0.429	0.558	7.407	0.211	-3.45e-15	1.000	-0.179	0.838	-0.0357	0.957	0.143	0.850	0.464	0.481
Curtis Park Homes	0.0682	0.800	0.455	0.505	7.409	0.180	0.0909	0.604	-1.295	0.113	-0.205	0.741	-0.727	0.303	0.386	0.528
FHA Repossessed East	0.250	0.627	1.000	0.443	22.50	**0.034**	-3.79e-15	1.000	-0.750	0.631	0.250	0.833	1.000	0.459	-0.250	0.831
Goldsmith Village	0.250	0.627	1.000	0.443	20.00	0.059	-3.79e-15	1.000	-0.750	0.631	0.250	0.833	1.000	0.459	0.750	0.523
South Lincoln	5.54e-15	1.000	0.437	0.502	7.734	0.144	0.125	0.456	-0.125	0.873	0.188	0.752	0.188	0.781	0.500	0.394
North Lincoln COL	-0.150	0.562	0.200	0.760	15.88	**0.003**	0.0667	0.693	-1.617	**0.041**	-1.283	**0.032**	4.85e-15	1.000	-0.250	0.672
Quigg Newton Homes	-0.0658	0.795	0.474	0.460	8.752	0.093	0.158	0.339	-0.329	0.668	-0.171	0.769	0.105	0.874	0.539	0.351
Sun Valley Annex	-0.125	0.657	0.625	0.382	12.09	**0.038**	-3.53e-15	1.000	-1.375	0.109	-7.89e-16	1.000	0.625	0.398	0.375	0.560
Pacific Place	0.250	0.530	0.500	0.621	9.500	0.246	-3.58e-15	1.000	-0.750	0.535	-0.250	0.785	0.500	0.632	-0.250	0.783
Platte Valley Homes	-0.250	0.530	-4.500	**0.000**	-1.30e-13	1.000	-3.59e-15	1.000	-0.250	0.836	0.250	0.785	4.49e-15	1.000	-0.250	0.783
Westridge Homes	-0.114	0.672	0.727	0.286	12.40	**0.025**	0.182	0.300	-0.205	0.802	0.0682	0.912	0.182	0.796	0.477	0.436
Westwood Homes	0.107	0.710	-1.000	0.172	4.819	0.416	0.143	0.447	-0.464	0.596	-0.179	0.788	-1.286	0.090	-1.107	0.094
Stapleton Homes	-0.0833	0.812	0.333	0.708	5.383	0.455	0.333	0.147	-0.417	0.696	-0.0833	0.918	0.333	0.718	0.0833	0.917
East Village	0.250	0.627	-2.31e-14	1.000	-4.42e-14	1.000	-3.57e-15	1.000	-0.750	0.631	0.250	0.833	1.000	0.459	0.750	0.523
Combined Devel-Disp Hsing S.	-0.132	0.586	0.647	0.294	12.27	**0.015**	0.0882	0.578	-0.279	0.705	-0.103	0.854	0.676	0.290	0.544	0.327
Combined Devel-Disp Hsing E.	0.00758	0.975	0.576	0.351	10.54	**0.036**	0.121	0.445	-0.356	0.630	-0.235	0.675	0.455	0.477	0.417	0.454
Combined Devel-Disp Hsing W.	-0.00926	0.970	0.630	0.314	11.64	**0.022**	0.0370	0.818	-0.231	0.757	-0.0463	0.935	0.370	0.567	0.528	0.348
Observations	203		203		203		203		203		203		203		203	
F-Test	0.575		2.884		1.479		0.452		1.202		1.169		1.525		1.359	
p value	0.914		**0.000169**		0.101		0.974		0.263		0.291		0.0852		0.157	
Pseudo R^2	0.0533		0.220		0.126		0.0424		0.105		0.103		0.130		0.117	
Note: P/C = Parent or Caregiver; reference group = Arapaho Cts.																
bold = p<.05																

Exhibit A-1C. Relationships between DHA resident characteristics and DHA developments: Households with three or more Children (continued)

DHA Development	P/C had too little money for food at time of DHA move-in (1=yes, 0=no)		P/C had difficulty paying all bills at time of DHA move-in (1=yes, 0=no)		Frequency that P/C drank alcohol since becoming a parent		Frequency that P/C smoked marijuana since becoming a parent		P/C ever seen a psychiatrist (1=yes, 0=no)		Number of years during childhood that P/C lived in public housing		Number of years during childhood that P/C lived in a home owned by parents		P/C born in the United States (1=yes; 0=no)		Spanish language interview (1=yes; 0=no)	
	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
Arrowhead Townhouses	-0.250	0.828	-0.250	0.916	1.92e-14	1.000	-6.57e-15	1.000	-0.250	0.649	-13.50	0.139	8.000	0.549	3.25e-15	1.000	-2.92e-16	1.000
Columbine Homes	0.464	0.471	0.179	0.893	1.286	0.420	-0.429	0.789	0.179	0.563	-6.071	0.235	1.286	0.863	-0.143	0.542	0.143	0.375
Curtis Park Homes	0.477	0.427	-0.795	0.522	0.0909	0.951	-0.364	0.808	0.114	0.692	-5.955	0.211	6.545	0.348	3.52e-15	1.000	-5.00e-16	1.000
FHA Repossessed East	0.750	0.514	0.750	0.752	1.93e-14	1.000	-6.47e-15	1.000	-0.250	0.649	-13.50	0.139	22.00	0.100	3.21e-15	1.000	-3.69e-16	1.000
Goldsmith Village	0.750	0.514	0.750	0.752	1.000	0.725	1.000	0.727	0.750	0.174	-13.50	0.139	4.000	0.764	3.18e-15	1.000	-3.81e-16	1.000
South Lincoln	-0.0625	0.913	-0.562	0.636	-0.250	0.860	-5.91e-15	1.000	0.0625	0.820	-9.375	**0.040**	7.750	0.246	-0.187	0.370	0.187	0.192
North Lincoln COL	-0.583	0.314	-0.383	0.749	0.667	0.641	-0.467	0.746	0.417	0.133	-8.700	0.059	5.867	0.382	-0.133	0.526	-6.40e-16	1.000
Quigg Newton Homes	0.118	0.834	-0.461	0.694	0.263	0.851	0.895	0.525	0.329	0.225	-8.342	0.064	5.684	0.387	-0.263	0.202	0.211	0.137
Sun Valley Annex	0.625	0.321	0.375	0.773	0.625	0.688	0.375	0.811	0.125	0.678	-10.12	**0.043**	7.250	0.321	2.85e-15	1.000	-6.93e-16	1.000
Pacific Place	0.250	0.779	0.250	0.892	2.500	0.257	3.000	0.177	0.250	0.557	-6.000	0.395	8.500	0.411	2.86e-15	1.000	-7.06e-16	1.000
Platte Valley Homes	0.250	0.779	-0.250	0.892	2.03e-14	1.000	-6.14e-15	1.000	-0.250	0.557	-13.50	0.057	4.000	0.699	2.82e-15	1.000	-7.14e-16	1.000
Westridge Homes	0.295	0.622	0.386	0.756	-0.545	0.713	-0.727	0.626	-0.0682	0.812	-8.682	0.069	12.73	0.069	-0.273	0.212	0.0909	0.544
Westwood Homes	-1.393	**0.032**	-1.393	0.296	1.857	0.244	1.286	0.423	0.179	0.563	-7.786	0.128	8.143	0.277	-0.143	0.542	-6.44e-16	1.000
Stapleton Homes	0.0833	0.915	-2.917	0.074	2.333	0.230	-2.667	0.173	0.417	0.268	-7.167	0.250	16.67	0.068	2.92e-15	1.000	-9.54e-16	1.000
East Village	-0.250	0.828	0.750	0.752	2.000	0.482	-6.07e-15	1.000	-0.250	0.649	12.50	0.170	22.00	0.100	2.82e-15	1.000	-6.52e-16	1.000
Combined Devel-Disp Hsing S.	0.0735	0.892	-0.515	0.647	-0.382	0.776	-0.941	0.487	0.103	0.692	-10.76	**0.013**	10.18	0.108	-0.206	0.298	0.0294	0.828
Combined Devel-Disp Hsing E.	0.0530	0.922	-0.371	0.742	-0.0909	0.946	0.455	0.737	0.205	0.432	-11.50	**0.008**	10.58	0.095	-0.152	0.444	0.0606	0.655
Combined Devel-Disp Hsing W.	0.157	0.775	0.269	0.814	0.963	0.480	0.630	0.646	0.0463	0.861	-7.093	0.105	5.407	0.398	-0.185	0.356	0.0741	0.590
Observations	203		203		203		203		203		203		203		203		203	
F-Test	1.534		0.721		0.852		1.086		0.990		1.279		0.879		0.530		0.823	
p value	0.0822		0.787		0.637		0.369		0.473		0.206		0.604		0.941		0.671	
Pseudo R^2	0.131		0.0659		0.0769		0.0960		0.0883		0.111		0.0792		0.0493		0.0745	
Note: P/C = Parent or Caregiver; reference group = Arapaho Cts.																		
bold = $p<.05$																		

ExhibitA-1C. Relationships between DHA resident characteristics and DHA developments: Households with three or more children (continued)

DHA Development	Biological father always lived in household with child(ren) (1=yes; 0=no)		Parent's age at time of DHA move-in		P/C African American (1=yes; 0=no)		Parent have HS diploma at time of DHA move-in (1=yes; 0=no)		Parent have any higher education at time of DHA move-in (1=yes; 0=no)		Kids share same biological dad (1=yes; 0=no)		Parent Depressive Symptomatology Scale at time of interview		Parenting Efficacy Scale at time of interview		Parenting Beliefs Scale at time of interview	
	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
Arrowhead Townhouses	-0.250	0.613	3.250	0.729	-1.28e-14	1.000	-2.63e-15	1.000	-5.40e-15	1.000	-6.77e-15	1.000	-3.250	0.763	3.500	0.337	0.750	0.865
Columbine Homes	-0.107	0.699	12.25	**0.021**	-0.571	**0.031**	0.571	0.061	-5.08e-15	1.000	0.143	0.625	8.321	0.170	-1.643	0.422	-1.679	0.498
Curtis Park Homes	-0.0682	0.792	2.795	0.568	-9.76e-15	1.000	0.455	0.110	-5.63e-15	1.000	0.273	0.317	7.659	0.175	0.500	0.793	-2.795	0.227
FHA Repossessed East	-0.250	0.613	4.250	0.650	-1.16e-14	1.000	-2.46e-15	1.000	-5.38e-15	1.000	-6.64e-15	1.000	13.75	0.204	-4.500	0.218	-9.250	**0.037**
Goldsmith Village	0.750	0.130	7.250	0.439	-1.15e-14	1.000	-2.54e-15	1.000	-5.34e-15	1.000	1.000	0.056	20.75	0.056	-5.500	0.132	-2.250	0.611
South Lincoln	-0.188	0.448	6.687	0.154	-0.500	**0.034**	0.375	0.168	0.125	0.417	0.375	0.151	2.687	0.619	0.688	0.706	-1.438	0.515
North Lincoln COL	0.150	0.547	4.250	0.368	-0.467	**0.050**	0.200	0.464	0.0667	0.667	0.400	0.129	-1.383	0.799	1.033	0.573	-1.983	0.373
Quigg Newton Homes	-0.145	0.552	6.566	0.155	-0.895	**0.000**	0.316	0.238	0.0526	0.728	0.316	0.219	2.803	0.598	0.974	0.587	-1.197	0.582
Sun Valley Annex	0.250	0.356	8.125	0.114	-0.375	0.146	0.375	0.208	-5.19e-15	1.000	0.125	0.662	2.625	0.657	0.250	0.900	-0.250	0.918
Pacific Place	0.250	0.514	13.25	0.069	-1.000	**0.007**	-1.50e-15	1.000	-5.19e-15	1.000	-6.01e-15	1.000	3.250	0.698	1.46e-14	1.000	0.250	0.942
Platte Valley Homes	-0.250	0.514	3.750	0.605	-9.39e-15	1.000	0.500	0.235	-5.19e-15	1.000	-6.04e-15	1.000	2.250	0.788	0.500	0.859	-4.750	0.166
Westridge Homes	-0.0682	0.792	9.068	0.065	-0.545	**0.027**	0.273	0.336	0.182	0.258	0.273	0.317	-0.886	0.875	0.318	0.867	-2.068	0.371
Westwood Homes	-0.107	0.699	1.393	0.791	-0.857	**0.001**	0.143	0.639	-5.13e-15	1.000	0.429	0.144	-0.250	0.967	1.786	0.383	-3.679	0.139
Stapleton Homes	0.417	0.218	13.58	**0.035**	-1.02e-14	1.000	0.333	0.369	-4.91e-15	1.000	-6.34e-15	1.000	8.417	0.255	-0.167	0.947	-2.250	0.456
East Village	-0.250	0.613	11.25	0.230	-1.39e-14	1.000	1.000	0.066	-5.22e-15	1.000	-6.05e-15	1.000	-3.250	0.763	2.500	0.493	0.750	0.865
Combined Devel-Disp Hsing S.	0.162	0.489	9.515	**0.033**	-0.647	**0.004**	0.412	0.110	0.0294	0.840	0.529*	0.033	1.956	0.702	0.206	0.905	-0.779	0.709
Combined Devel-Disp Hsing E.	-0.00758	0.974	7.098	0.111	-0.303	0.174	0.394	0.126	0.152	0.299	0.303	0.221	-0.0682	0.989	0.773	0.654	-1.311	0.531
Combined Devel-Disp Hsing W.	0.120	0.611	8.139	0.071	-0.963	**0.000**	0.370	0.155	0.148	0.315	0.259	0.300	0.194	0.970	0.352	0.840	-2.028	0.339
Observations	203		203		203		203		203		203		203		203		203	
F-Test	1.349		1.183		5.652		0.705		0.627		1.101		1.111		0.715		0.740	
p value	0.162		0.279		1.47e-10		0.803		0.876		0.354		0.344		0.793		0.767	
Pseudo R^2	0.117		0.104		0.356		0.0645		0.0578		0.0972		0.0981		0.0654		0.0675	
Note: P/C = Parent or Caregiver; reference group = Arapaho Cts.																		
bold = p<.05																		

Results of these tests using DHA development dummies are presented in Exhibit A-1(A-C), those using census tract dummies in Exhibit A-2(A-C). Exhibit A-1 shows that there were few statistically significant differences in individual characteristics across the various DHA developments: Of 1,482 coefficients across all family size strata, only 72 (5 percent) were so.[143] A similar aggregate portrait emerges from Exhibit A-2: Of 3,640 coefficients across all family size strata, only 202 (5.5 percent) were significant.[144] Examination of individual characteristics reveals, however, that African Americans who have two or more children were not proportionally distributed across all DHA developments or census tracts where such developments were located.[145] We cannot be sure whether any systematic actions by the DHA or African-American applicants to DHA produced this result, but the outcome was clearly inconsistent with quasi-random assignment across developments or neighborhoods. The second notable revelation was that DHA residents with disabilities (most of whom had two or fewer children) were also allocated nonrandomly to a relatively few developments, producing a distinct profile for their census tract characteristics. This is not surprising, inasmuch as certain DHA developments are designed especially for elderly and disabled residents, and other, scattered-site developments are rendered off-limits to the disabled because of expectations of tenant contributions to dwelling and grounds maintenance. *Conditioning on ethnic and disability status*, however, we think this evidence offers a compelling case that DHA allocations were quasi-random across developments and neighborhoods, because only 3 percent of the remaining coefficients proved statistically significant in both Exhibits A-1and A-2 and there was no pattern to these coefficients. This percentage could have been generated by chance even if true random assignment had been undertaken.

[143] The percentages across the 0–1 child, 2 children, and 3+ children strata were 3 percent, 6 percent, and 6 percent, respectively.
[144] The percentages across the 0–1 child, 2 children, and 3+ children strata were 4 percent, 6 percent, and 6 percent, respectively.
[145] Seventeen of the 37 DHA site coefficients were significantly different from zero for the African-American characteristic combining both family size strata; the corresponding figure for the 97 tract coefficients was 44.

Exhibit A-2A. Relationships between DHA resident characteristics and census tracts: Households with 0–1 child

	P/C is single parent (1=yes, 0=no)		P/C employment status at time of DHA move-in (1=employed, 0=not employed)		P/C hourly wage at time of DHA move-in		P/C disability status at time of survey (1=yes; 0=no)		P/C received TANF at time of DHA move-in (1=yes, 0=no)		P/C receiving Food Stamps at time of DHA move-in (1=yes, 0=no)		P/C had checking account at time of DHA move-in (1=yes, 0=no)		P/C had health insurance at time of DHA move-in (1=yes, 0=no)	
Census Tract	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
2.0100	-2.46e-14	1.000	-1.000	0.604	-17.00	0.190	-1.000	**0.042**	-1.000	0.547	-1.000	0.605	9.19e-14	1.000	-1.000	0.605
2.0200	-0.267	0.524	-0.733	0.602	-12.11	0.201	-0.933	**0.009**	-0.867	0.474	-0.600	0.671	0.333	0.826	-0.333	0.813
3.0100	-1.000	0.082	-1.000	0.604	-17.00	0.190	-5.22e-14	1.000	-7.97e-15	1.000	-3.06e-14	1.000	1.000	0.630	-1.84e-14	1.000
3.0200	-0.667	0.155	-0.333	0.832	-10.67	0.314	-1.000	**0.013**	-1.000	0.460	-0.667	0.672	0.333	0.844	-0.333	0.833
5.0200	-0.500	0.314	8.11e-15	1.000	2.350	0.834	-1.000	**0.019**	-1.000	0.486	-0.500	0.765	1.000	0.579	-1.85e-14	1.000
7.0100	-2.46e-14	1.000	-0.333	0.832	-2.000	0.850	-1.000	**0.013**	-0.667	0.623	-0.333	0.833	1.000	0.556	-1.79e-14	1.000
7.0200	-0.190	0.646	-0.476	0.733	-8.343	0.374	-0.810	**0.023**	-0.571	0.634	-0.333	0.811	0.238	0.874	-0.190	0.892
8.0000	-0.0645	0.875	-0.613	0.658	-11.32	0.225	-0.935	**0.008**	-0.581	0.626	-0.419	0.762	0.0323	0.983	-0.355	0.798
9.0200	-2.45e-14	1.000	6.88e-15	1.000	5.000	0.700	-1.000	**0.042**	-8.65e-15	1.000	-3.04e-14	1.000	1.000	0.630	-1.000	0.605
9.0300	-1.000	0.082	6.67e-15	1.000	2.000	0.877	-1.000	**0.042**	-1.000	0.547	-1.000	0.605	1.000	0.630	-1.90e-14	1.000
9.0400	-2.45e-14	1.000	6.62e-15	1.000	1.500	0.908	-5.37e-14	1.000	-1.000	0.547	-3.03e-14	1.000	1.000	0.630	-1.90e-14	1.000
10.0000	-0.500	0.254	-0.500	0.734	-7.917	0.424	-1.000	**0.008**	-0.667	0.599	-0.667	0.651	0.500	0.753	-0.333	0.821
11.0100	-0.0625	0.881	-0.625	0.656	-10.90	0.249	-0.938	**0.009**	-0.688	0.570	-0.250	0.859	0.375	0.804	-0.375	0.790
14.0100	-2.47e-14	1.000	-1.000	0.604	-17	0.190	-1.000	**0.042**	-1.000	0.547	-1.000	0.605	9.18e-14	1.000	-1.000	0.605
15.0000	-0.333	0.476	-0.667	0.672	-12.00	0.257	-1.000	**0.013**	-0.333	0.806	-3.14e-14	1.000	9.19e-14	1.000	-1.88e-14	1.000
16.0000	-0.0667	0.873	-0.333	0.813	-5.205	0.582	-0.800	**0.026**	-0.333	0.783	-0.267	0.850	0.400	0.792	-0.200	0.887
18.0000	-2.44e-14	1.000	-1.000	0.549	-17.00	0.131	-0.500	0.238	-0.500	0.728	-0.500	0.765	9.19e-14	1.000	-1.85e-14	1.000
19.0000	-0.305	0.455	-0.695	0.613	-5.769	0.533	-0.881	**0.012**	-0.983	0.406	-0.712	0.605	0.102	0.945	-0.508	0.712
21.0000	-2.45e-14	1.000	5.87e-15	1.000	2.000	0.877	-1.000	**0.042**	-9.41e-15	1.000	-3.01e-14	1.000	1.000	0.630	-1.98e-14	1.000
23.0000	-2.44e-14	1.000	-0.500	0.764	-9.500	0.398	-0.500	0.238	-9.48e-15	1.000	-0.500	0.765	9.24e-14	1.000	-1.98e-14	1.000
24.0300	-0.167	0.689	-1.000	0.475	-8.504	0.367	-0.722	**0.043**	-1.111	0.357	-1.000	0.476	-0.111	0.941	-0.778	0.580
31.0200	-1.000	0.082	-1.000	0.604	-17.00	0.190	-5.51e-14	1.000	-1.000	0.547	-3.00e-14	1.000	9.26e-14	1.000	-2.01e-14	1.000
35.0000	-2.43e-14	1.000	5.30e-15	1.000	-1.000	0.938	-1.000	**0.042**	-9.87e-15	1.000	-2.98e-14	1.000	9.27e-14	1.000	-2.00e-14	1.000
36.0200	-2.43e-14	1.000	-0.500	0.764	-7.750	0.490	-1.000	**0.019**	-1.000	0.486	-0.500	0.765	0.500	0.781	-2.02e-14	1.000
37.0200	-2.43e-14	1.000	-1.000	0.604	-17.00	0.190	-5.52e-14	1.000	-1.00e-14	1.000	-3.00e-14	1.000	9.27e-14	1.000	-2.02e-14	1.000
37.0300	-0.500	0.314	-0.500	0.764	-8.325	0.458	-0.500	0.238	-1.000	0.486	-1.000	0.550	1.000	0.579	-2.02e-14	1.000
40.0300	-2.44e-14	1.000	4.81e-15	1.000	7.000	0.589	-1.000	**0.042**	-1.000	0.547	-3.01e-14	1.000	1.000	0.630	-2.03e-14	1.000
41.0100	-2.44e-14	1.000	4.92e-15	1.000	0.250	0.985	-1.000	**0.042**	-1.000	0.547	-3.01e-14	1.000	9.26e-14	1.000	-2.03e-14	1.000
41.0200	-2.43e-14	1.000	-1.000	0.604	-17.00	0.190	-1.000	**0.042**	-1.03e-14	1.000	-3.02e-14	1.000	1.000	0.630	-2.03e-14	1.000
41.0300	-0.333	0.476	-0.333	0.832	-1.250	0.906	-0.667	0.096	-1.000	0.460	-1.000	0.526	0.667	0.694	-1.95e-14	1.000
41.0400	-0.500	0.314	4.70e-15	1.000	1.450	0.897	-1.000	**0.019**	-1.000	0.486	-0.500	0.765	1.000	0.579	-2.05e-14	1.000
43.0100	-0.500	0.314	-1.000	0.549	-17.00	0.131	-5.60e-14	1.000	-1.000	0.486	-0.500	0.765	0.500	0.781	-0.500	0.765
44.0400	-2.48e-14	1.000	-0.333	0.832	-4.763	0.653	-0.667	0.096	-1.000	0.460	-1.000	0.526	0.667	0.694	-0.667	0.673
45.0100	-0.333	0.476	-0.333	0.832	-3.000	0.777	-1.000	**0.013**	-1.000	0.460	-0.667	0.672	0.333	0.844	-0.667	0.673
45.0200	-0.200	0.633	-1.200	0.394	-10.66	0.261	-0.733	**0.041**	-0.733	0.545	-1.000	0.478	-0.400	0.792	-0.867	0.540
46.0100	-1.000	0.082	8.40e-15	1.000	3.000	0.817	-1.000	**0.042**	-1.000	0.547	-3.05e-14	1.000	9.19e-14	1.000	-1.83e-14	1.000
46.0200	-1.000	0.082	8.34e-15	1.000	1.000	0.938	-1.000	**0.042**	-1.000	0.547	-1.000	0.605	9.18e-14	1.000	-1.000	0.605
50.0100	-1.000	0.082	8.66e-15	1.000	4.000	0.758	-5.18e-14	1.000	-1.000	0.547	-3.06e-14	1.000	1.000	0.630	-1.82e-14	1.000
51.0200	-1.000	0.045	-0.500	0.764	-7.775	0.489	-1.000	**0.019**	-1.000	0.486	-0.500	0.765	9.18e-14	1.000	-1.82e-14	1.000
54.0000	-2.46e-14	**1.000**	-1.000	0.604	-17	0.190	-1.000	**0.042**	-1.000	0.547	-1.000	0.605	9.18e-14	1.000	-1.000	0.605
55.0300	-0.333	0.435	-0.556	0.699	-9.111	0.346	-0.889	**0.015**	-0.889	0.472	-0.444	0.757	0.333	0.830	-0.111	0.939
68.0900	-2.49e-14	1.000	-0.333	0.832	-3.467	0.743	-1.000	**0.013**	-0.667	0.623	-0.333	0.833	1.000	0.556	-0.667	0.673
83.0300	-1.000	0.082	4.36e-15	1.000	17.00	0.190	-1.000	**0.042**	-1.000	0.547	-3.05e-14	1.000	1.000	0.630	-2.06e-14	1.000
Observations	261		261		261		261		261		261		261		261	
F-Test	1.524		0.242		1.352		1.709		0.306		0.260		0.287		0.216	
p value	**0.0276**		1.000		0.0853		**0.00711**		1.000		1.000		1.000		1.000	
Pseudo R^2	0.232		0.0458		0.211		0.253		0.0572		0.0489		0.0538		0.0411	
Note: P/C = Parent or Caregiver; reference group is Tract 1.0200																
bold = $p<.05$																

Exhibit A-2A. Relationships between DHA resident characteristics and census tracts: Households with 0–1 child (continued)

	P/C had too little money for food at time of DHA move-in (1=yes, 0=no)		P/C had difficulty paying all bills at time of DHA move-in (1=yes, 0=no)		Frequency that P/C drank alcohol since becoming a parent		Frequency that P/C smoked marijuana since becoming a parent		P/C ever seen a psychiatrist (1=yes, 0=no)		Number of years during childhood that P/C lived in public housing		Number of years during childhood that P/C lived in a home owned by parents		P/C born in the United States (1=yes; 0=no)		Spanish language interview (1=yes; 0=no)	
Census Tract	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
2.0100	3.54e-14	1.000	9.63e-14	1.000	4.03e-14	1.000	7.87e-14	1.000	2.98e-14	1.000	2.31e-13	1.000	1.17e-12	1.000	-2.37e-14	1.000	-1.36e-15	1.000
2.0200	0.333	0.825	0.467	0.789	0.133	0.950	-0.200	0.911	0.467	0.342	5.333	0.565	7.533	0.536	-0.133	0.660	0.133	0.525
3.0100	1.000	0.628	9.63e-14	1.000	4.06e-14	1.000	7.87e-14	1.000	1.000	0.138	12.00	0.345	1.17e-12	1.000	-2.37e-14	1.000	-1.36e-15	1.000
3.0200	0.667	0.692	0.667	0.732	1.667	0.484	7.88e-14	1.000	3.08e-14	1.000	2.02e-13	1.000	9.000	0.509	-2.35e-14	1.000	-1.22e-15	1.000
5.0200	0.500	0.780	1.000	0.628	-4.000	0.114	0.500	0.813	2.99e-14	1.000	2.33e-13	1.000	25.00	0.085	-2.37e-14	1.000	-1.36e-15	1.000
7.0100	0.333	0.843	0.667	0.732	1.333	0.575	0.333	0.867	0.333	0.544	1.98e-13	1.000	22.00	0.107	-2.35e-14	1.000	-1.22e-15	1.000
7.0200	0.333	0.823	0.524	0.762	0.238	0.910	-0.0952	0.957	0.429	0.379	6.429	0.484	10.62	0.379	-0.0952	0.751	0.0952	0.647
8.0000	0.290	0.845	0.0645	0.970	0.548	0.793	0.161	0.927	0.258	0.593	8.065	0.377	12.42	0.301	-0.0645	0.829	-1.62e-15	1.000
9.0200	3.43e-14	1.000	9.63e-14	1.000	4.20e-14	1.000	7.88e-14	1.000	1.000	0.138	2.41e-13	1.000	25.00	0.135	-2.38e-14	1.000	1.000	**0.001**
9.0300	1.000	0.628	1.000	0.675	8.000	**0.006**	4.000	0.103	1.000	0.138	2.41e-13	1.000	22.00	0.188	-2.38e-14	1.000	-1.35e-15	1.000
9.0400	1.000	0.628	9.62e-14	1.000	2.000	0.493	7.88e-14	1.000	3.03e-14	1.000	2.41e-13	1.000	18.00	0.281	-2.39e-14	1.000	-1.34e-15	1.000
10.0000	0.333	0.832	0.333	0.855	0.833	0.708	0.667	0.721	0.500	0.331	16.17	0.096	1.12e-12	1.000	-2.31e-14	1.000	-1.18e-15	1.000
11.0100	0.250	0.868	0.438	0.801	0.750	0.724	-0.312	0.861	0.375	0.444	3.813	0.680	10.19	0.402	-2.36e-14	1.000	-1.43e-15	1.000
14.0100	1.000	0.628	9.65e-14	1.000	3.94e-14	1.000	7.81e-14	1.000	2.99e-14	1.000	2.28e-13	1.000	1.17e-12	1.000	-2.36e-14	1.000	-1.31e-15	1.000
15.0000	0.333	0.843	0.333	0.864	2.000	0.401	7.86e-14	1.000	0.333	0.544	12.67	0.222	25.33	0.064	-2.36e-14	1.000	-1.25e-15	1.000
16.0000	0.467	0.757	-0.200	0.909	0.600	0.778	0.133	0.940	0.467	0.342	5.467	0.555	13.80	0.258	-0.133	0.660	0.0667	0.751
18.0000	0.500	0.780	1.000	0.628	0.500	0.843	0.500	0.813	0.500	0.391	2.28e-13	1.000	7.000	0.628	-2.36e-14	1.000	-1.34e-15	1.000
19.0000	-0.186	0.899	0.0508	0.976	0.678	0.744	0.203	0.907	0.237	0.621	6.169	0.496	10.20	0.391	-0.102	0.731	0.0508	0.804
21.0000	3.63e-14	1.000	9.65e-14	1.000	4.32e-14	1.000	7.66e-14	1.000	1.000	0.138	14.00	0.271	17.00	0.309	-2.37e-14	1.000	-1.27e-15	1.000
23.0000	3.64e-14	1.000	9.65e-14	1.000	3.000	0.235	5.000	**0.019**	0.500	0.391	2.43e-13	1.000	13.50	0.350	-2.37e-14	1.000	-1.26e-15	1.000
24.0300	-0.111	0.941	-0.333	0.847	1.500	0.479	0.667	0.708	0.556	0.256	5.111	0.579	12.06	0.320	-0.167	0.580	0.0556	0.790
31.0200	3.62e-14	1.000	1.000	0.675	4.38e-14	1.000	7.63e-14	1.000	3.11e-14	1.000	2.48e-13	1.000	27.00	0.107	-1.000	**0.017**	-1.25e-15	1.000
35.0000	3.62e-14	1.000	9.65e-14	1.000	4.38e-14	1.000	7.63e-14	1.000	3.11e-14	1.000	2.48e-13	1.000	27.00	0.107	-2.37e-14	1.000	-1.24e-15	1.000
36.0200	3.62e-14	1.000	9.64e-14	1.000	0.500	0.843	0.500	0.813	0.500	0.391	9.000	0.413	13.50	0.350	-2.38e-14	1.000	-1.23e-15	1.000
37.0200	3.62e-14	1.000	1.000	0.675	4.43e-14	1.000	7.63e-14	1.000	3.11e-14	1.000	15.00	0.238	1.19e-12	1.000	-2.37e-14	1.000	-1.25e-15	1.000
37.0300	3.62e-14	1.000	9.65e-14	1.000	4.45e-14	1.000	7.64e-14	1.000	3.12e-14	1.000	2.50e-13	1.000	8.500	0.556	-2.37e-14	1.000	-1.23e-15	1.000
40.0300	3.61e-14	1.000	9.64e-14	1.000	4.47e-14	1.000	7.63e-14	1.000	3.12e-14	1.000	2.51e-13	1.000	27.00	0.107	-1.000	**0.017**	-1.23e-15	1.000
41.0100	1.000	0.628	1.000	0.675	1.000	0.731	2.000	0.414	3.12e-14	1.000	2.51e-13	1.000	10.00	0.549	-2.38e-14	1.000	-1.23e-15	1.000
41.0200	3.61e-14	1.000	1.000	0.675	4.46e-14	1.000	7.64e-14	1.000	3.13e-14	1.000	2.51e-13	1.000	1.20e-12	1.000	-2.38e-14	1.000	-1.23e-15	1.000
41.0300	0.667	0.692	0.333	0.864	2.000	0.401	7.74e-14	1.000	0.667	0.225	5.000	0.630	18.00	0.187	-0.333	0.325	0.333	0.156
41.0400	0.500	0.780	9.64e-14	1.000	1.000	0.692	7.63e-14	1.000	3.13e-14	1.000	9.500	0.388	15.00	0.300	-2.38e-14	1.000	-1.22e-15	1.000
43.0100	3.61e-14	1.000	0.500	0.809	-3.500	0.166	3.000	0.158	3.13e-14	1.000	2.52e-13	1.000	21.00	0.147	-0.500	0.165	-1.22e-15	1.000
44.0400	0.333	0.843	0.333	0.864	0.333	0.889	7.87e-14	1.000	0.667	0.225	2.14e-13	1.000	15.00	0.271	-2.36e-14	1.000	-1.27e-15	1.000
45.0100	0.333	0.843	-2.333	0.232	1.667	0.484	0.667	0.739	0.667	0.225	3.333	0.748	7.000	0.607	-2.36e-14	1.000	-1.31e-15	1.000
45.0200	-0.267	0.859	-0.267	0.878	1.000	0.638	0.667	0.709	0.267	0.587	4.467	0.630	12.07	0.322	-0.133	0.660	-1.24e-15	1.000
46.0100	3.55e-14	1.000	1.000	0.675	4.00e-14	1.000	7.86e-14	1.000	1.000	0.138	2.30e-13	1.000	27.00	0.107	-2.36e-14	1.000	-1.35e-15	1.000
46.0200	1.000	0.628	9.64e-14	1.000	2.000	0.493	7.86e-14	1.000	2.99e-14	1.000	2.31e-13	1.000	21.00	0.209	-2.36e-14	1.000	-1.34e-15	1.000
50.0100	1.000	0.628	1.000	0.675	3.97e-14	1.000	7.85e-14	1.000	2.99e-14	1.000	2.29e-13	1.000	16.00	0.338	-2.36e-14	1.000	-1.34e-15	1.000
51.0200	3.59e-14	1.000	9.65e-14	1.000	3.96e-14	1.000	7.85e-14	1.000	2.99e-14	1.000	2.30e-13	1.000	5.500	0.703	-2.36e-14	1.000	-1.33e-15	1.000
54.0000	3.60e-14	1.000	9.66e-14	1.000	2.000	0.493	1.000	0.683	2.99e-14	1.000	2.29e-13	1.000	1.17e-12	1.000	-2.36e-14	1.000	-1.34e-15	1.000
55.0300	0.333	0.828	0.556	0.755	1.444	0.506	0.444	0.807	0.222	0.657	7.444	0.432	14.00	0.261	-2.37e-14	1.000	-1.31e-15	1.000
68.0900	0.667	0.692	0.333	0.864	-2.667	0.263	0.333	0.867	0.667	0.225	2.18e-13	1.000	15.33	0.261	-0.333	0.325	-8.30e-16	1.000
83.0300	3.60e-14	1.000	1.000	0.675	1.000	0.731	1.000	0.683	3.15e-14	1.000	2.56e-13	1.000	27.00	0.107	-2.38e-14	1.000	-1.21e-15	1.000
Observations	261		261		261		261		261		261		261		261		261	
F-Test	0.259		0.383		1.299		0.777		0.972		0.773		0.981		0.865		0.905	
p value	1.000		1.000		0.117		0.837		0.526		0.843		0.511		0.709		0.643	
Pseudo R^2	0.0488		0.0706		0.205		0.133		0.162		0.133		0.163		0.146		0.152	
Note: P/C = Parent or Caregiver; reference group is Tract 1.0200																		
bold = p<.05																		

Exhibit A-2A. Relationships between DHA resident characteristics and census tracts: Households with 0–1 child (continued)

	Biological father always lived in household with child(ren) (1=yes; 0=no)		Parent's age at time of DHA move-in		P/C African American (1=yes; 0=no)		Parent have HS diploma at time of DHA move-in (1=yes; 0=no)		Parent have any higher education at time of DHA move-in (1=yes; 0=no)		Kids share same biological dad (1=yes; 0=no)		Parent Depressive Symptomatology Scale at time of interview		Parenting Efficacy Scale at time of interview		Parenting Beliefs Scale at time of interview	
Census Tract	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
2.0100	3.92e-14	1.000	19.00	0.195	3.94e-14	1.000	-1.000	0.134	2.20e-14	1.000	-3.11e-14	1.000	1.51e-13	1.000	1.000	0.832	7.000	0.161
2.0200	0.0667	0.849	5.867	0.583	0.200	0.677	-0.533	0.273	0.0667	0.842	-0.267	0.580	11.87	0.245	-0.667	0.846	3.400	0.351
3.0100	1.000	**0.038**	24.00	0.102	3.92e-14	1.000	-1.000	0.134	2.20e-14	1.000	-1.000	0.130	31.00	**0.027**	-5.000	0.288	7.000	0.161
3.0200	0.333	0.396	14.33	0.231	3.87e-14	1.000	-1.000	0.067	2.20e-14	1.000	-3.12e-14	1.000	5.000	0.661	1.333	0.728	3.667	0.368
5.0200	3.92e-14	1.000	3.500	0.783	0.500	0.380	-0.500	0.386	2.19e-14	1.000	-3.09e-14	1.000	5.000	0.679	-2.000	0.623	4.500	0.298
7.0100	3.93e-14	1.000	7.333	0.540	1.000	0.063	-0.667	0.221	0.333	0.372	-3.12e-14	1.000	15.00	0.189	-1.667	0.664	1.667	0.682
7.0200	0.0952	0.784	0.619	0.953	0.286	0.548	-0.714	0.139	0.190	0.565	-0.381	0.425	8.571	0.396	-0.238	0.944	4.429	0.220
8.0000	0.0323	0.926	-2.194	0.835	0.387	0.413	-0.742	0.122	0.0323	0.922	-0.419	0.376	9.516	0.343	-0.581	0.864	2.548	0.477
9.0200	3.90e-14	1.000	-3.000	0.838	3.86e-14	1.000	-1.000	0.134	2.19e-14	1.000	-3.08e-14	1.000	5.000	0.720	-2.000	0.671	2.000	0.688
9.0300	3.90e-14	1.000	-7.000	0.633	3.86e-14	1.000	-1.000	0.134	2.19e-14	1.000	-1.000	0.130	18.00	0.198	-2.000	0.671	-1.000	0.841
9.0400	3.90e-14	1.000	5.03e-13	1.000	3.86e-14	1.000	-1.000	0.134	2.19e-14	1.000	-1.000	0.130	1.57e-13	1.000	3.000	0.524	7.000	0.161
10.0000	0.333	0.364	3.000	0.789	0.167	0.740	-0.833	0.102	2.19e-14	1.000	-0.333	0.508	4.167	0.696	1.667	0.643	4.167	0.274
11.0100	3.94e-14	1.000	-1.750	0.870	0.438	0.362	-0.563	0.247	2.21e-14	1.000	-0.188	0.696	12.19	0.231	0.437	0.898	1.375	0.705
14.0100	3.90e-14	1.000	16.00	0.275	4.01e-14	1.000	-9.49e-14	1.000	2.19e-14	1.000	-3.14e-14	1.000	5.000	0.720	3.000	0.524	4.000	0.423
15.0000	3.92e-14	1.000	0.667	0.956	0.667	0.215	-0.333	0.540	2.21e-14	1.000	-0.333	0.536	17.33	0.129	0.333	0.931	5.333	0.191
16.0000	0.133	0.704	-2.600	0.808	0.667	0.166	-0.733	0.132	0.133	0.689	-0.600	0.214	13.80	0.176	1.000	0.771	3.067	0.400
18.0000	3.87e-14	1.000	25.00	**0.050**	4.05e-14	1.000	-0.500	0.386	2.18e-14	1.000	-3.13e-14	1.000	5.500	0.649	-2.500	0.539	2.500	0.563
19.0000	0.220	0.520	0.576	0.956	0.458	0.329	-0.508	0.285	0.102	0.755	-0.288	0.540	10.02	0.314	-0.0169	0.996	3.068	0.388
21.0000	3.86e-14	1.000	-7.000	0.633	1.000	0.129	-1.000	0.134	2.18e-14	1.000	-3.15e-14	1.000	1.000	0.943	3.000	0.524	1.000	0.841
23.0000	3.86e-14	1.000	-2.500	0.844	1.000	0.080	-1.000	0.084	2.18e-14	1.000	-0.500	0.382	9.500	0.432	0.500	0.902	1.500	0.728
24.0300	0.111	0.750	6.833	0.521	0.833	0.082	-0.722	0.136	0.111	0.738	-0.333	0.487	13.28	0.191	-0.111	0.974	2.333	0.520
31.0200	3.84e-14	1.000	26.00	0.077	4.22e-14	1.000	-1.000	0.134	2.18e-14	1.000	-3.15e-14	1.000	21.00	0.133	-10.00	**0.034**	-4.000	0.423
35.0000	1.000	**0.038**	-3.000	0.838	1.000	0.129	-1.000	0.134	2.18e-14	1.000	-1.000	0.130	-1.000	0.943	3.000	0.524	7.000	0.161
36.0200	3.85e-14	1.000	27.00	**0.034**	1.000	0.080	-0.500	0.386	0.500	0.207	-3.16e-14	1.000	2.500	0.836	3.000	0.462	-3.000	0.487
37.0200	1.000*	0.038	-6.000	0.682	1.000	0.129	-9.88e-14	1.000	2.18e-14	1.000	-3.15e-14	1.000	-1.000	0.943	3.000	0.524	5.000	0.316
37.0300	3.85e-14	1.000	13.00	0.306	0.500	0.380	-9.90e-14	1.000	2.18e-14	1.000	-3.16e-14	1.000	4.500	0.709	-1.000	0.806	5.000	0.247
40.0300	3.85e-14	1.000	3.000	0.838	1.000	0.129	-1.000	0.134	2.19e-14	1.000	-1.000	0.130	5.000	0.720	-2.000	0.671	3.000	0.547
41.0100	3.85e-14	1.000	-6.000	0.682	1.000	0.129	-1.000	0.134	2.18e-14	1.000	-1.000	0.130	21.00	0.133	2.000	0.671	7.000	0.161
41.0200	3.85e-14	1.000	-9.000	0.539	1.000	0.129	-1.000	0.134	2.18e-14	1.000	-3.16e-14	1.000	30.00	**0.032**	-10.00	**0.034**	3.04e-13	1.000
41.0300	0.333	0.396	2.667	0.823	0.333	0.535	-1.000	0.067	0.333	0.372	-3.26e-14	1.000	3.333	0.770	-0.333	0.931	1.333	0.743
41.0400	3.85e-14	1.000	4.500	0.723	1.000	0.080	-0.500	0.386	0.500	0.207	-0.500	0.382	1.87e-13	1.000	2.500	0.539	3.05e-13	1.000
43.0100	0.500	0.230	2.000	0.875	1.000	0.080	-0.500	0.386	2.18e-14	1.000	-3.16e-14	1.000	11.00	0.363	-3.500	0.391	2.000	0.643
44.0400	3.91e-14	1.000	6.333	0.596	1.000	0.063	-1.000	0.067	0.667	0.075	-3.14e-14	1.000	7.667	0.501	-4.000	0.298	5.333	0.191
45.0100	0.667	0.090	-5.000	0.676	3.97e-14	1.000	-0.333	0.540	0.333	0.372	-0.333	0.536	6.667	0.558	2.000	0.603	4.333	0.288
45.0200	0.200	0.569	3.733	0.727	0.400	0.405	-0.933	0.056	0.333	0.318	-0.400	0.407	8.800	0.388	0.733	0.831	3.533	0.332
46.0100	3.91e-14	1.000	-8.000	0.585	3.94e-14	1.000	-1.000	0.134	2.20e-14	1.000	-3.12e-14	1.000	10.00	0.473	2.000	0.671	5.000	0.316
46.0200	1.000	**0.038**	7.000	0.633	3.95e-14	1.000	-9.52e-14	1.000	2.20e-14	1.000	-3.12e-14	1.000	7.000	0.616	-4.000	0.395	4.000	0.423
50.0100	3.90e-14	1.000	-1.000	0.946	1.000	0.129	-1.000	0.134	1.000	**0.029**	-3.13e-14	1.000	8.000	0.566	1.000	0.832	2.90e-13	1.000
51.0200	0.500	0.230	-3.500	0.783	1.000	0.080	-0.500	0.386	2.20e-14	1.000	-3.13e-14	1.000	4.500	0.709	3.000	0.462	7.000	0.106
54.0000	3.90e-14	1.000	27.00	0.066	1.000	0.129	-1.000	0.134	2.20e-14	1.000	-3.13e-14	1.000	19.00	0.174	-2.000	0.671	3.000	0.547
55.0300	0.111	0.756	-0.111	0.992	0.111	0.821	-0.667	0.180	0.111	0.744	-0.222	0.651	11.89	0.253	1.111	0.751	3.222	0.386
68.0900	4.00e-14	1.000	8.667	0.469	0.667	0.215	-1.000	0.067	0.333	0.372	-0.333	0.536	7.000	0.539	1.667	0.664	0.667	0.870
83.0300	1.000	**0.038**	12.00	0.413	4.23e-14	1.000	-1.000	0.134	2.18e-14	1.000	-3.17e-14	1.000	4.000	0.774	-7.000	0.138	2.000	0.688
Observations	261		261		261		261		261		261		261		261		261	
F-Test	1.513		1.829		1.938		1.093		1.055		0.944		0.928		1.290		0.964	
p value	**0.0299**		**0.00277**		**0.00113**		0.333		0.390		0.576		0.603		0.123		0.540	
Pseudo R^2	0.231		0.266		0.277		0.178		0.173		0.158		0.155		0.204		0.160	
Note: P/C = Parent or Caregiver; reference group is Tract 1.0200																		
bold = p<.05																		

Exhibit A-2B. Relationships between DHA resident characteristics and census tracts: Households with two children

	P/C is single parent (1=yes, 0=no)		P/C employment status at time of DHA move-in (1=employed, 0=not employed)		P/C hourly wage at time of DHA move-in		P/C disability status at time of survey (1=yes; 0=no)		P/C received TANF at time of DHA move-in (1=yes, 0=no)		P/C receiving Food Stamps at time of DHA move-in (1=yes, 0=no)		P/C had checking account at time of DHA move-in (1=yes, 0=no)		P/C had health insurance at time of DHA move-in (1=yes, 0=no)	
Census Tract	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
2.0200	-0.167	0.601	-0.583	0.604	-12.13	0.086	0.0833	0.722	0.583	0.536	0.167	0.825	-0.417	0.700	-0.417	0.714
3.0100	3.29e-15	1.000	-0.667	0.620	-12.00	0.154	3.44e-15	1.000	-1.59e-15	1.000	-0.167	0.854	0.167	0.897	-0.333	0.806
4.0100	3.00e-15	1.000	-3.72e-14	1.000	0.900	0.936	3.01e-15	1.000	-8.42e-16	1.000	-0.500	0.680	0.500	0.773	-1	0.584
4.0200	2.96e-15	1.000	-3.71e-14	1.000	0.500	0.965	1.000	**0.008**	1.000	0.509	0.500	0.680	0.500	0.773	2.87e-15	1.000
5.0200	2.89e-15	1.000	-0.500	0.734	-7.750	0.400	3.39e-15	1.000	-1.27e-15	1.000	-2.82e-14	1.000	-0.500	0.724	-0.500	0.737
7.0100	-0.500	0.231	-0.500	0.734	-9.500	0.303	0.500	0.104	-8.29e-16	1.000	-2.83e-14	1.000	-0.500	0.724	-0.500	0.737
7.0200	-0.267	0.396	-0.733	0.508	-13.97	**0.045**	0.133	0.564	0.533	0.566	0.167	0.823	-0.300	0.778	-0.267	0.812
8.0000	-0.250	0.419	-0.400	0.714	-8.889	0.194	0.100	0.660	0.600	0.513	0.200	0.785	-0.100	0.924	-0.250	0.821
9.0200	-0.500	0.231	-0.500	0.734	-18.50	**0.046**	3.40e-15	1.000	0.500	0.686	0.500	0.613	-0.500	0.724	3.14e-15	1.000
9.0300	-0.500	0.167	-0.500	0.695	-10.37	0.194	3.38e-15	1.000	0.500	0.640	-2.82e-14	1.000	0.250	0.838	-0.250	0.846
9.0500	-1.000	0.051	-3.64e-14	1.000	-1.250	0.912	3.41e-15	1.000	-1.48e-15	1.000	0.500	0.680	-0.500	0.773	-1.000	0.584
10.0000	3.04e-15	1.000	-0.250	0.845	-6.625	0.406	0.500	0.061	0.750	0.483	0.250	0.770	-0.500	0.683	-0.250	0.846
11.0100	3.71e-15	1.000	-0.429	0.717	-8.190	0.268	0.286	0.246	0.286	0.773	0.0714	0.928	0.0714	0.950	-0.143	0.905
11.0200	-0.500	0.231	-0.500	0.734	-9.425	0.306	3.37e-15	1.000	-1.16e-15	1.000	0.500	0.613	0.500	0.724	2.93e-15	1.000
13.0100	-1.000	0.051	-1.000	0.579	-18.50	0.102	3.13e-15	1.000	-6.77e-16	1.000	0.500	0.680	-0.500	0.773	2.98e-15	1.000
13.0200	-1.000	0.051	-1.000	0.579	-18.50	0.102	3.07e-15	1.000	1.000	0.509	0.500	0.680	-0.500	0.773	2.91e-15	1.000
14.0200	-0.250	0.489	-0.250	0.845	-4.398	0.581	3.12e-15	1.000	0.250	0.815	-0.250	0.770	0.250	0.838	-0.250	0.846
14.0300	-1.000	0.051	-3.61e-14	1.000	8.500	0.451	3.10e-15	1.000	-6.14e-16	1.000	-0.500	0.680	0.500	0.773	-1.000	0.584
15.0000	2.81e-15	1.000	-5.000	**0.001**	-11.75	0.203	0.500	0.104	1.000	0.418	-2.82e-14	1.000	-5.000	**0.001**	-5.000	**0.001**
16.0000	-0.278	0.372	-1.056	0.337	-10.96	0.111	0.111	0.627	-2.09e-15	1.000	0.222	0.763	-0.722	0.494	-0.556	0.617
18.0000	3.47e-15	1.000	-0.667	0.620	-12.50	0.138	3.38e-15	1.000	0.333	0.767	-0.167	0.854	-0.167	0.897	-0.333	0.806
19.0000	-0.277	0.359	-0.574	0.589	-6.530	0.326	0.0638	0.773	0.383	0.668	0.160	0.823	-0.223	0.827	-0.532	0.621
21.0000	2.93e-15	1.000	-1.000	0.497	-18.50	**0.046**	3.35e-15	1.000	0.500	0.686	-2.81e-14	1.000	-0.500	0.724	-0.500	0.737
23.0000	2.90e-15	1.000	-3.71e-14	1.000	-5.075	0.524	3.16e-15	1.000	0.500	0.640	0.250	0.770	0.250	0.838	-0.250	0.846
24.0300	-0.111	0.733	-0.333	0.772	-7.989	0.268	0.333	0.165	-0.667	0.490	0.0556	0.943	-0.167	0.880	-0.333	0.775
31.0100	2.96e-15	1.000	-3.70e-14	1.000	6.500	0.564	3.11e-15	1.000	1.000	0.509	0.500	0.680	0.500	0.773	2.91e-15	1.000
35.0000	-0.143	0.669	-0.286	0.809	-2.757	0.709	3.56e-15	1.000	0.286	0.773	0.0714	0.928	0.0714	0.950	-0.286	0.811
36.0100	2.96e-15	1.000	-0.500	0.734	-7.000	0.447	3.10e-15	1.000	0.500	0.686	0.500	0.613	-0.500	0.724	-0.500	0.737
36.0200	2.97e-15	1.000	-0.500	0.734	-8.000	0.385	0.500	0.104	0.500	0.686	-2.83e-14	1.000	0.500	0.724	-0.500	0.737
36.0300	4.07e-15	1.000	-3.57e-14	1.000	0.333	0.968	3.30e-15	1.000	-2.52e-15	1.000	-3.167	**0.001**	-0.500	0.699	-0.333	0.806
37.0300	2.96e-15	1.000	-3.72e-14	1.000	1.100	0.922	3.07e-15	1.000	-9.69e-16	1.000	-0.500	0.680	0.500	0.773	2.89e-15	1.000
41.0100	3.94e-15	1.000	-3.57e-14	1.000	-3.390	0.687	0.333	0.235	0.333	0.767	0.167	0.854	-0.167	0.897	-0.333	0.806
41.0200	2.91e-15	1.000	-3.68e-14	1.000	6.000	0.595	3.27e-15	1.000	-1.07e-15	1.000	-0.500	0.680	0.500	0.773	2.94e-15	1.000
41.0300	4.14e-15	1.000	-3.56e-14	1.000	2.833	0.736	3.26e-15	1.000	0.333	0.767	0.167	0.854	0.167	0.897	2.60e-15	1.000
41.0400	2.95e-15	1.000	-3.69e-14	1.000	1.500	0.894	3.21e-15	1.000	-1.04e-15	1.000	0.500	0.680	0.500	0.773	2.93e-15	1.000
42.0100	2.94e-15	1.000	-3.71e-14	1.000	0.500	0.965	3.14e-15	1.000	-1.03e-15	1.000	0.500	0.680	0.500	0.773	2.87e-15	1.000
42.0200	-1.000	0.051	-3.70e-14	1.000	-0.480	0.966	3.10e-15	1.000	-9.44e-16	1.000	0.500	0.680	-0.500	0.773	-1	0.584
43.0100	-1.000	0.051	-3.72e-14	1.000	-1.250	0.912	1.000	**0.008**	1.000	0.509	-0.500	0.680	-0.500	0.773	2.88e-15	1.000
43.0400	-0.500	0.231	-0.500	0.734	-8.250	0.370	0.500	0.104	0.500	0.686	0.500	0.613	0.500	0.724	2.85e-15	1.000
44.0300	-0.500	0.231	-3.71e-14	1.000	2.375	0.796	3.08e-15	1.000	-9.93e-16	1.000	-0.500	0.613	-0.500	0.724	-1.000	0.502
44.0400	2.96e-15	1.000	-3.72e-14	1.000	-0.500	0.965	1.000	**0.008**	1.000	0.509	0.500	0.680	0.500	0.773	2.91e-15	1.000
45.0100	3.38e-15	1.000	-0.143	0.904	-3.214	0.663	3.68e-15	1.000	0.286	0.773	-0.0714	0.928	-0.357	0.753	-0.143	0.905
45.0200	-0.308	0.332	-0.462	0.680	-10.67	0.128	0.154	0.509	0.538	0.566	0.192	0.798	-0.346	0.748	-0.0769	0.946
46.0200	2.97e-15	1.000	-1.000	0.579	-18.50	0.102	3.15e-15	1.000	1.000	0.509	0.500	0.680	-0.500	0.773	3.06e-15	1.000
47.0000	2.94e-15	1.000	-3.62e-14	1.000	-18.50	0.102	1.000	**0.008**	-7.03e-16	1.000	-0.500	0.680	-0.500	0.773	2.88e-15	1.000
48.0200	2.97e-15	1.000	-1.000	0.579	-18.50	0.102	1.000	**0.008**	-7.14e-16	1.000	0.500	0.680	0.500	0.773	3.24e-15	1.000
50.0100	-0.500	0.231	-0.500	0.734	-7.500	0.415	3.31e-15	1.000	0.500	0.686	-2.85e-14	1.000	-0.500	0.724	-1.000	0.502
54.0000	-0.250	0.448	-2.750	**0.019**	-9.937	0.173	3.24e-15	1.000	-0.750	0.443	-1.250	0.111	-2.500	**0.026**	-2.500	**0.035**
55.0300	-0.200	0.567	-0.200	0.871	-4.400	0.568	3.22e-15	1.000	0.200	0.846	0.1000	0.904	0.1000	0.933	-0.200	0.873
68.0900	2.91e-15	1.000	-1.000	0.579	-18.50	0.102	3.29e-15	1.000	-1.19e-15	1.000	-0.500	0.680	-0.500	0.773	2.87e-15	1.000
69.0100	2.96e-15	1.000	-3.59e-14	1.000	9.500	0.400	3.14e-15	1.000	-6.83e-16	1.000	0.500	0.680	-0.500	0.773	3.21e-15	1.000
83.0300	2.93e-15	1.000	-1.000	0.579	-18.50	0.102	3.13e-15	1.000	-1.07e-15	1.000	0.500	0.680	0.500	0.773	3.17e-15	1.000
85.3400	2.92e-15	1.000	-3.61e-14	1.000	1.500	0.894	3.20e-15	1.000	-7.22e-16	1.000	-0.500	0.680	0.500	0.773	3.21e-15	1.000
Observations	244		244		244		244		244		244		244		244	
F-Test	0.932		0.861		1.267		1.555		0.396		1.068		1.022		0.763	
p value	0.610		0.735		0.127		0.0168		1.000		0.365		0.445		0.876	
Pseudo R^2	0.206		0.194		0.261		0.302		0.0994		0.230		0.222		0.175	
Note: P/C = Parent or Caregiver; reference group is Tract 1.0200																
bold = p<.05																

Exhibit A-2B. Relationships between DHA resident characteristics and census tracts: Households with two children (continued)

	P/C had too little money for food at time of DHA move-in (1=yes, 0=no)		P/C had difficulty paying all bills at time of DHA move-in (1=yes, 0=no)		Frequency that P/C drank alcohol since becoming a parent		Frequency that P/C smoked marijuana since becoming a parent		P/C ever seen a psychiatrist (1=yes, 0=no)		Number of years during childhood that P/C lived in public housing		Number of years during childhood that P/C lived in a home owned by parents		P/C born in the United States (1=yes; 0=no)		Spanish language interview (1=yes; 0=no)	
Census Tract	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
2.0200	0.0833	0.939	-1.833	0.242	-1.250	0.536	-0.333	0.844	0.500	0.182	3.417	0.562	-0.333	0.971	0.333	0.234	-0.417	**0.029**
3.0100	0.667	0.610	0.500	0.789	-0.833	0.730	0.500	0.805	0.667	0.137	6.333	0.369	-2.500	0.822	0.167	0.618	-0.167	0.462
4.0100	1.000	0.568	0.500	0.842	-1.500	0.643	-1.500	0.581	1.000	0.096	-2.52e-13	1.000	-9.500	0.525	0.500	0.265	-0.500	0.101
4.0200	1.000	0.568	-0.500	0.842	-10.50	**0.001**	0.500	0.854	1.000	0.096	12.00	0.205	12.50	0.403	0.500	0.265	-0.500	0.101
5.0200	-4.02e-14	1.000	-0.500	0.807	1.05e-13	1.000	-1.500	0.499	-2.33e-14	1.000	-2.66e-13	1.000	-9.500	0.436	0.500	0.173	-0.500	**0.045**
7.0100	-4.11e-14	1.000	0.500	0.807	1.500	0.570	-0.500	0.822	0.500	0.308	-2.52e-13	1.000	10.000	0.412	-1.06e-14	1.000	2.22e-14	1.000
7.0200	0.600	0.578	0.0333	0.983	-1.433	0.471	-1.567	0.349	0.400	0.278	7.800	0.181	3.367	0.714	0.433	0.117	-0.433	**0.021**
8.0000	0.450	0.672	-0.200	0.895	-2.350	0.231	-1.500	0.363	0.300	0.409	5.050	0.378	3.600	0.691	0.300	0.270	-0.400	**0.031**
9.0200	-4.04e-14	1.000	0.500	0.807	-5.500	**0.038**	-1.000	0.652	0.500	0.308	10.000	0.196	4.000	0.743	0.500	0.173	-0.500	**0.045**
9.0300	0.250	0.840	-0.250	0.888	-3.750	0.102	-0.500	0.795	-2.35e-14	1.000	-2.66e-13	1.000	10.50	0.321	-9.60e-15	1.000	-0.250	0.245
9.0500	-4.02e-14	1.000	-0.500	0.842	0.500	0.877	-1.500	0.581	1.000	0.096	-2.70e-13	1.000	-9.500	0.525	0.500	0.265	-0.500	0.101
10.0000	-4.13e-14	1.000	-0.500	0.778	0.500	0.827	2.000	0.299	1.000	**0.019**	11.25	0.094	-2.750	0.795	0.500	0.116	-0.500	**0.021**
11.0100	0.286	0.803	-0.214	0.896	-0.929	0.661	-2.643	0.139	0.571	0.146	-2.93e-13	1.000	8.786	0.369	0.214	0.466	-0.214	0.282
11.0200	0.500	0.727	-1.49e-15	1.000	-1.500	0.570	-1.500	0.499	-2.36e-14	1.000	-2.64e-13	1.000	9.500	0.436	-9.66e-15	1.000	2.32e-14	1.000
13.0100	-4.06e-14	1.000	-0.500	0.842	-0.500	0.877	-0.500	0.854	-2.39e-14	1.000	-2.52e-13	1.000	14.50	0.332	0.500	0.265	-0.500	0.101
13.0200	-4.07e-14	1.000	0.500	0.842	-1.500	0.643	-1.500	0.581	1.000	0.096	19.00	**0.046**	-9.500	0.525	0.500	0.265	-0.500	0.101
14.0200	0.250	0.840	0.250	0.888	-0.250	0.913	0.250	0.897	0.250	0.556	15.50	**0.021**	-9.500	0.369	0.500	0.116	-0.500	**0.021**
14.0300	-4.06e-14	1.000	0.500	0.842	-0.500	0.877	-0.500	0.854	-2.38e-14	1.000	-2.52e-13	1.000	9.500	0.525	0.500	0.265	-0.500	0.101
15.0000	-4.500	**0.002**	-5.000	**0.015**	1.05e-13	1.000	-1.000	0.652	0.500	0.308	5.500	0.476	-9.500	0.436	0.500	0.173	-0.500	**0.045**
16.0000	-0.167	0.876	-1.167	0.445	-0.111	0.955	-0.222	0.893	0.333	0.361	5.222	0.365	2.000	0.826	0.389	0.155	-0.444	**0.017**
18.0000	0.333	0.799	-3.500	0.062	-1.167	0.629	-1.500	0.459	0.667	0.137	5.333	0.450	-9.500	0.394	0.500	0.136	-0.500	**0.028**
19.0000	0.191	0.853	-0.372	0.801	-0.968	0.612	-1.266	0.430	0.468	0.186	3.830	0.492	2.351	0.789	0.351	0.185	-0.479	**0.008**
21.0000	0.500	0.727	-4.500	**0.029**	-0.500	0.850	-1.500	0.499	-2.35e-14	1.000	7.500	0.332	-9.500	0.436	0.500	0.173	-0.500	**0.045**
23.0000	0.250	0.840	-0.250	0.888	-0.500	0.827	-0.500	0.795	0.250	0.556	-2.57e-13	1.000	9.000	0.394	0.500	0.116	-0.500	**0.021**
24.0300	0.444	0.691	-0.278	0.862	-1.278	0.536	-0.389	0.823	0.333	0.384	1.889	0.754	4.389	0.645	0.389	0.175	-0.500	**0.011**
31.0100	1.000	0.568	0.500	0.842	-1.500	0.643	-1.500	0.581	1.000	0.096	-2.55e-13	1.000	15.50	0.300	0.500	0.265	-0.500	0.101
35.0000	0.429	0.709	0.214	0.896	-2.071	0.329	-2.214	0.214	0.429	0.276	3.143	0.612	5.214	0.594	0.0714	0.808	-0.357	0.074
36.0100	1.000	0.485	-1.46e-15	1.000	1.000	0.705	-1.000	0.652	1.000	**0.042**	-2.56e-13	1.000	4.000	0.743	0.500	0.173	-0.500	**0.045**
36.0200	-4.06e-14	1.000	-0.500	0.807	2.000	0.449	2.000	0.368	1.000	**0.042**	-2.62e-13	1.000	2.000	0.870	0.500	0.173	-0.500	**0.045**
36.0300	-4.11e-14	1.000	-0.500	0.789	-1.167	0.629	-1.167	0.565	0.333	0.456	11.33	0.109	-9.500	0.394	0.500	0.136	-0.500	**0.028**
37.0300	-4.11e-14	1.000	0.500	0.842	2.500	0.440	-1.500	0.581	-2.31e-14	1.000	-2.53e-13	1.000	-9.500	0.525	0.500	0.265	-0.500	0.101
41.0100	0.333	0.799	0.167	0.929	-1.500	0.534	-1.500	0.459	0.667	0.137	4.667	0.508	3.833	0.731	0.500	0.136	-0.500	**0.028**
41.0200	1.000	0.568	-0.500	0.842	-1.500	0.643	4.500	0.099	1.000	0.096	-2.62e-13	1.000	9.500	0.525	0.500	0.265	-0.500	0.101
41.0300	1.000	0.444	0.167	0.929	-1.500	0.534	-1.500	0.459	0.667	0.137	-2.88e-13	1.000	1.167	0.917	0.167	0.618	-0.500	**0.028**
41.0400	1.000	0.568	0.500	0.842	-1.500	0.643	-1.500	0.581	1.000	0.096	-2.58e-13	1.000	4.500	0.763	0.500	0.265	-0.500	0.101
42.0100	1.000	0.568	-0.500	0.842	-10.50	**0.001**	-1.500	0.581	1.000	0.096	-2.56e-13	1.000	7.500	0.616	0.500	0.265	-0.500	0.101
42.0200	-4.09e-14	1.000	-0.500	0.842	-1.500	0.643	-1.500	0.581	-2.31e-14	1.000	-2.55e-13	1.000	-9.500	0.525	-0.500	0.265	0.500	0.101
43.0100	-4.10e-14	1.000	0.500	0.842	-1.500	0.643	-1.500	0.581	1.000	0.096	-2.54e-13	1.000	-9.500	0.525	0.500	0.265	-0.500	0.101
43.0400	0.500	0.727	-1.48e-15	1.000	0.500	0.850	-5.500	**0.014**	1.000	**0.042**	-2.54e-13	1.000	9.500	0.436	0.500	0.173	-0.500	**0.045**
44.0300	0.500	0.727	-1.33e-15	1.000	0.500	0.850	-1.000	0.652	-2.32e-14	1.000	-2.54e-13	1.000	-9.500	0.436	0.500	0.173	-0.500	**0.045**
44.0400	1.000	0.568	0.500	0.842	-1.500	0.643	4.500	0.099	-2.31e-14	1.000	-2.53e-13	1.000	17.50	0.242	0.500	0.265	-0.500	0.101
45.0100	0.429	0.709	0.0714	0.965	-0.929	0.661	-1.214	0.495	0.143	0.716	-2.90e-13	1.000	2.071	0.832	0.500	0.090	-0.500	**0.013**
45.0200	0.308	0.777	-0.192	0.902	-1.500	0.455	-0.962	0.569	0.385	0.302	5.385	0.359	5.654	0.542	0.269	0.333	-0.500	**0.009**
46.0200	-4.05e-14	1.000	-0.500	0.842	-1.500	0.643	-1.500	0.581	1.000	0.096	19.00*	0.046	-9.500	0.525	0.500	0.265	-0.500	0.101
47.0000	-4.07e-14	1.000	0.500	0.842	-10.50	**0.001**	0.500	0.854	-2.38e-14	1.000	-2.51e-13	1.000	-9.500	0.525	0.500	0.265	-0.500	0.101
48.0200	1.000	0.568	0.500	0.842	2.500	0.440	-0.500	0.854	-2.39e-14	1.000	-2.53e-13	1.000	6.500	0.663	0.500	0.265	-0.500	0.101
50.0100	0.500	0.727	-1.05e-15	1.000	-1.000	0.705	-1.000	0.652	-2.38e-14	1.000	-2.68e-13	1.000	-9.500	0.436	0.500	0.173	-0.500	**0.045**
54.0000	-1.875	0.099	-2.375	0.143	1.05e-13	1.000	-1.000	0.569	0.500	0.197	7.000	0.252	3.500	0.717	0.375	0.196	-0.375	0.057
55.0300	0.800	0.504	0.1000	0.953	-1.300	0.556	-1.300	0.484	0.400	0.329	3.600	0.577	0.300	0.977	0.300	0.328	-0.500	**0.017**
68.0900	-4.07e-14	1.000	-0.500	0.842	-0.500	0.877	-0.500	0.854	1.000	0.096	16.00	0.092	-9.500	0.525	0.500	0.265	-0.500	0.101
69.0100	-4.06e-14	1.000	0.500	0.842	-1.500	0.643	-1.500	0.581	-2.39e-14	1.000	-2.52e-13	1.000	3.500	0.815	0.500	0.265	-0.500	0.101
83.0300	1.000	0.568	-0.500	0.842	-0.500	0.877	-0.500	0.854	1.000	0.096	-2.56e-13	1.000	3.500	0.815	0.500	0.265	-0.500	0.101
85.3400	-4.05e-14	1.000	0.500	0.842	0.500	0.877	-0.500	0.854	-2.39e-14	1.000	11.00	0.245	-9.500	0.525	0.500	0.265	-0.500	0.101
Observations	244		244		244		244		244		244		244		244		244	
F-Test	0.923		0.908		1.389		0.952		1.127		0.977		0.847		0.649		1.016	
p value	0.625		0.653		0.0571		0.572		0.277		0.525		0.758		0.967		0.456	
Pseudo R^2	0.205		0.202		0.279		0.210		0.239		0.214		0.191		0.153		0.221	
Note: P/C = Parent or Caregiver; reference group is Tract 1.0200																		
bold = p<.05																		

Exhibit A-2B. Relationships between DHA resident characteristics and census tracts: Households with two children (continued)

	Biological father always lived in household with child(ren) (1=yes; 0=no)		Parent's age at time of DHA move-in		P/C African American (1=yes; 0=no)		Parent have HS diploma at time of DHA move-in (1=yes; 0=no)		Parent have any higher education at time of DHA move-in (1=yes; 0=no)		Kids share same biological dad (1=yes; 0=no)		Parent Depressive Symptomatology Scale at time of interview		Parenting Efficacy Scale at time of interview		Parenting Beliefs Scale at time of interview	
Census Tract	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
2.0200	1.27e-14	1.000	-5.417	0.433	0.250	0.427	0.167	0.631	-1.93e-14	1.000	-0.333	0.373	7.750	0.271	-0.750	0.789	-1.750	0.561
3.0100	1.30e-14	1.000	-2.167	0.793	3.63e-15	1.000	0.333	0.421	0.333	0.230	0.167	0.709	10.33	0.220	1.667	0.619	1.000	0.781
4.0100	1.42e-14	1.000	-11.50	0.300	3.48e-15	1.000	3.52e-15	1.000	-1.97e-14	1.000	-0.500	0.404	5.000	0.658	-12.00	**0.008**	-6.000	0.214
4.0200	1.42e-14	1.000	0.500	0.964	1.000	**0.049**	**1.000**	0.073	-1.97e-14	1.000	-0.500	0.404	3.000	0.790	-3.000	0.505	-1.000	0.836
5.0200	1.34e-14	1.000	-6.000	0.507	4.86e-15	1.000	1.97e-15	1.000	-1.94e-14	1.000	0.500	0.307	-3.000	0.745	0.500	0.892	-0.500	0.899
7.0100	1.43e-14	1.000	4.000	0.658	3.55e-15	1.000	3.54e-15	1.000	-1.97e-14	1.000	-0.500	0.307	14.50	0.117	0.500	0.892	-0.500	0.899
7.0200	0.133	0.616	-4.167	0.541	0.133	0.667	0.400	0.242	0.133	0.560	0.0333	0.928	11.27	0.105	-1.800	0.515	0.933	0.753
8.0000	0.100	0.703	-8.650	0.198	0.250	0.413	0.250	0.458	0.1000	0.657	-0.200	0.582	6.150	0.368	-0.600	0.825	-1.050	0.719
9.0200	0.500	0.158	-10.50	0.246	4.95e-15	1.000	1.52e-15	1.000	-1.94e-14	1.000	-1.09e-15	1.000	4.500	0.625	9.63e-14	1.000	-1.500	0.703
9.0300	0.250	0.414	-1.000	0.898	4.77e-15	1.000	0.500	0.204	0.250	0.343	-1.29e-15	1.000	-3.750	0.638	1.000	0.753	0.250	0.942
9.0500	1.000	**0.022**	3.500	0.752	4.46e-15	1.000	1.61e-15	1.000	1.000	**0.008**	-0.500	0.404	27.00	**0.017**	-1.000	0.824	-4.000	0.407
10.0000	1.45e-14	1.000	-4.750	0.544	0.500	0.162	0.250	0.525	0.250	0.343	-0.250	0.555	14.25	0.075	-4.250	0.182	-1.000	0.769
11.0100	1.27e-14	1.000	-4.357	0.548	0.143	0.665	0.143	0.695	0.143	0.558	0.0714	0.856	1.429	0.847	0.857	0.771	1.143	0.717
11.0200	0.500	0.158	3.500	0.699	5.09e-15	1.000	0.500	0.271	-1.94e-14	1.000	-1.28e-15	1.000	12.50	0.176	1.500	0.683	-4.500	0.254
13.0100	1.43e-14	1.000	11.50	0.300	6.17e-15	1.000	1.000	0.073	-1.98e-14	1.000	-0.500	0.404	8.000	0.478	1.000	0.824	-2.000	0.678
13.0200	1.44e-14	1.000	-15.50	0.163	6.10e-15	1.000	1.000	0.073	-1.98e-14	1.000	-0.500	0.404	7.000	0.535	1.000	0.824	-1.000	0.836
14.0200	0.500	0.103	5.750	0.463	0.250	0.484	0.750	0.057	-1.98e-14	1.000	-1.46e-15	1.000	1.250	0.875	0.750	0.813	-4.250	0.214
14.0300	1.000	**0.022**	-2.500	0.821	1.000	**0.049**	1.000	0.073	-1.98e-14	1.000	-0.500	0.404	1.000	0.929	2.000	0.656	-3.000	0.534
15.0000	1.30e-14	1.000	-5.500	0.543	1.000	**0.016**	1.23e-15	1.000	-1.92e-14	1.000	-0.500	0.307	4.000	0.664	-4.000	0.276	-3.500	0.375
16.0000	0.222	0.399	-5.611	0.405	0.833	**0.007**	0.389	0.251	0.111	0.624	-0.278	0.447	4.167	0.544	-0.611	0.823	-1.778	0.545
18.0000	1.30e-14	1.000	-3.500	0.672	2.69e-15	1.000	5.80e-16	1.000	0.333	0.230	-0.167	0.709	2.333	0.781	-1.667	0.619	-0.333	0.926
19.0000	0.149	0.559	-5.585	0.393	0.553	0.064	0.213	0.516	0.0851	0.698	-0.138	0.695	5.915	0.374	-1.489	0.574	-0.851	0.765
21.0000	1.35e-14	1.000	3.000	0.740	4.92e-15	1.000	0.500	0.271	-1.94e-14	1.000	-0.500	0.307	4.500	0.625	-2.500	0.496	3.000	0.446
23.0000	1.39e-14	1.000	-2.000	0.798	1.000	**0.006**	0.750	0.057	-1.96e-14	1.000	0.500	0.239	8.250	0.302	-0.250	0.937	-5.750	0.093
24.0300	1.23e-14	1.000	-0.389	0.956	0.778	**0.017**	0.222	0.531	0.111	0.640	-0.0556	0.885	5.889	0.414	0.222	0.938	-3.333	0.280
31.0100	1.41e-14	1.000	-2.500	0.821	1.000	**0.049**	3.21e-15	1.000	1.000	**0.008**	-0.500	0.404	-3.000	0.790	2.000	0.656	1.000	0.836
35.0000	0.143	0.614	-4.000	0.588	0.714	**0.032**	0.143	0.695	0.143	0.558	0.0714	0.856	4.143	0.575	-3.286	0.265	-5.286	0.095
36.0100	0.500	0.158	2.500	0.782	1.000	**0.016**	0.500	0.271	0.500	0.101	-0.500	0.307	7.500	0.416	-6.000	0.103	-3.500	0.375
36.0200	1.37e-14	1.000	-3.500	0.699	1.000	**0.016**	0.500	0.271	0.500	0.101	-0.500	0.307	14.00	0.130	-5.000	0.174	-3.000	0.446
36.0300	1.27e-14	1.000	-2.500	0.762	0.667	0.077	1.000*	0.017	-1.94e-14	1.000	-0.167	0.709	3.000	0.721	-0.667	0.842	-3.000	0.404
37.0300	1.42e-14	1.000	12.50	0.260	1.000	**0.049**	3.30e-15	1.000	-1.97e-14	1.000	0.500	0.404	14.00	0.215	-2.000	0.656	-2.000	0.678
41.0100	1.26e-14	1.000	-4.833	0.558	1.000	**0.008**	0.333	0.421	0.333	0.230	0.167	0.709	3.333	0.692	-2.667	0.426	-1.667	0.643
41.0200	1.37e-14	1.000	-3.500	0.752	1.000	**0.049**	2.52e-15	1.000	-1.95e-14	1.000	0.500	0.404	-3.000	0.790	1.000	0.824	-4.000	0.407
41.0300	0.333	0.302	-1.500	0.856	1.000	**0.008**	0.667	0.109	-1.94e-14	1.000	-0.167	0.709	-1.667	0.843	-0.667	0.842	-1.000	0.781
41.0400	1.39e-14	1.000	1.500	0.892	1.000	**0.049**	2.87e-15	1.000	1.000	**0.008**	0.500	0.404	25.00	**0.028**	-3.000	0.505	-4.000	0.407
42.0100	1.40e-14	1.000	1.500	0.892	1.000	**0.049**	3.13e-15	1.000	-1.96e-14	1.000	0.500	0.404	8.000	0.478	2.000	0.656	-1.000	0.836
42.0200	1.000	**0.022**	0.500	0.964	3.37e-15	1.000	3.23e-15	1.000	-1.96e-14	1.000	0.500	0.404	-5.000	0.658	2.000	0.656	-12.00	**0.014**
43.0100	1.41e-14	1.000	-9.500	0.391	1.000	**0.049**	3.31e-15	1.000	-1.96e-14	1.000	-0.500	0.404	11.00	0.330	-8.000	0.076	-5.000	0.301
43.0400	0.500	0.158	-10.00	0.269	1.000	**0.016**	3.36e-15	1.000	-1.97e-14	1.000	-0.500	0.307	4.500	0.625	-2.000	0.586	3.000	0.446
44.0300	1.41e-14	1.000	-0.500	0.956	1.000	**0.016**	0.500	0.271	-1.96e-14	1.000	-1.17e-15	1.000	-2.000	0.828	2.000	0.586	2.000	0.612
44.0400	1.42e-14	1.000	4.500	0.685	1.000	**0.049**	3.43e-15	1.000	-1.97e-14	1.000	-0.500	0.404	-4.000	0.723	-3.000	0.505	1.15e-13	1.000
45.0100	0.143	0.614	1.214	0.867	3.94e-15	1.000	0.143	0.695	0.286	0.242	0.0714	0.856	2.429	0.742	-1.000	0.734	0.571	0.856
45.0200	0.154	0.566	-5.577	0.417	0.538	0.086	0.308	0.372	-1.92e-14	1.000	-0.192	0.605	4.923	0.482	-1.308	0.639	-0.923	0.758
46.0200	1.42e-14	1.000	2.500	0.821	5.87e-15	1.000	3.50e-15	1.000	-1.97e-14	1.000	0.500	0.404	13.00	0.250	-6.000	0.183	-5.000	0.301
47.0000	1.43e-14	1.000	7.500	0.498	6.03e-15	1.000	3.65e-15	1.000	-1.98e-14	1.000	-0.500	0.404	4.000	0.723	9.45e-14	1.000	2.000	0.678
48.0200	1.000	**0.022**	12.50	0.260	5.90e-15	1.000	1.000	0.073	-1.98e-14	1.000	-0.500	0.404	5.000	0.658	2.000	0.656	1.11e-13	1.000
50.0100	0.500	0.158	-1.500	0.868	1.000	**0.016**	0.500	0.271	-1.95e-14	1.000	-1.06e-15	1.000	-3.500	0.704	1.500	0.683	1.000	0.800
54.0000	0.250	0.371	-1.750	0.807	5.70e-15	1.000	0.375	0.296	-1.96e-14	1.000	-0.125	0.747	5.375	0.461	-0.250	0.931	-0.750	0.810
55.0300	0.400	0.177	3.700	0.625	0.200	0.562	0.200	0.598	-1.93e-14	1.000	-0.100	0.807	12.40	0.109	-2.400	0.435	-2.000	0.544
68.0900	1.37e-14	1.000	-8.500	0.443	1.000	**0.049**	2.57e-15	1.000	-1.95e-14	1.000	-0.500	0.404	15.00	0.185	2.000	0.656	-1.000	0.836
69.0100	1.43e-14	1.000	-7.500	0.498	1.000	**0.049**	3.64e-15	1.000	1.000	**0.008**	0.500	0.404	-1.000	0.929	-8.000	0.076	3.000	0.534
83.0300	1.000	**0.022**	-5.500	0.620	1.000	**0.049**	3.14e-15	1.000	-1.97e-14	1.000	-0.500	0.404	-3.000	0.790	1.000	0.824	3.000	0.534
85.3400	1.43e-14	1.000	-13.50	0.224	5.95e-15	1.000	1.000	0.073	-1.97e-14	1.000	0.500	0.404	-5.000	0.658	-6.000	0.183	1.000	0.836
Observations	244		243		244		244		244		244		244		244		244	
F-Test	1.178		0.915		3.164		1.044		1.173		0.964		1.045		1.033		1.066	
p value	0.213		0.641		4.14e-09		0.406		0.219		0.549		0.404		0.426		0.369	
Pseudo R^2	0.247		0.204		0.469		0.226		0.247		0.212		0.226		0.224		0.229	
Note: P/C = Parent or Caregiver; reference group is Tract 1.0200																		
bold = p<.05																		

Exhibit A-2C. Relationships between DHA resident characteristics and census tracts: Households with three or more children

	P/C is single parent (1=yes, 0=no)		P/C employment status at time of DHA move-in (1=employed, 0=not employed)		P/C hourly wage at time of DHA move-in		P/C disability status at time of survey (1=yes; 0=no)		P/C received TANF at time of DHA move-in (1=yes, 0=no)		P/C receiving Food Stamps at time of DHA move-in (1=yes, 0=no)		P/C had checking account at time of DHA move-in (1=yes, 0=no)		P/C had health insurance at time of DHA move-in (1=yes, 0=no)	
Census Tract	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
3.0100	0.389	0.268	0.556	0.571	8.686	0.205	-0.167	0.460	0.111	0.922	0.444	0.612	-0.167	0.864	0.278	0.744
5.0200	-0.611	0.206	0.556	0.681	6.401	0.497	-0.167	0.592	0.611	0.696	0.444	0.713	-0.167	0.901	0.278	0.813
6.0000	0.389	0.421	-0.444	0.742	-7.849	0.406	-0.167	0.592	0.611	0.696	0.444	0.713	-0.167	0.901	0.278	0.813
7.0200	0.0812	0.635	0.325	0.498	5.418	0.106	-0.0128	0.907	0.150	0.787	0.291	0.497	0.141	0.766	0.0470	0.910
8.0000	-0.0111	0.946	0.222	0.629	4.327	0.179	-0.167	0.117	-1.122	**0.036**	0.178	0.665	0.433	0.341	-0.122	0.759
9.0200	0.389	0.421	0.556	0.681	11.34	0.230	-0.167	0.592	-0.389	0.804	0.444	0.713	-0.167	0.901	0.278	0.813
9.0300	-0.111	0.751	0.0556	0.955	2.401	0.726	-0.167	0.460	-0.389	0.732	-0.556	0.526	0.333	0.731	-0.722	0.396
9.0400	0.139	0.593	0.306	0.674	5.526	0.277	-0.167	0.320	-0.389	0.644	-0.306	0.638	0.583	0.418	0.278	0.659
9.0500	0.389	0.268	0.556	0.571	15.15	**0.028**	0.333	0.141	0.611	0.591	0.444	0.612	0.333	0.731	-0.722	0.396
10.0000	0.264	0.187	0.0556	0.921	0.601	0.877	-0.167	0.196	0.111	0.864	0.0694	0.889	0.0833	0.880	0.0278	0.954
11.0100	0.189	0.427	-0.0444	0.947	0.351	0.940	-0.167	0.277	0.211	0.784	0.244	0.681	-0.167	0.800	0.278	0.630
11.0200	0.389	0.268	0.0556	0.955	1.651	0.809	-0.167	0.460	0.611	0.591	0.444	0.612	-0.167	0.864	0.278	0.744
13.0100	0.389	0.421	0.556	0.681	14.15	0.135	0.833	**0.008**	0.611	0.696	0.444	0.713	0.833	0.533	0.278	0.813
14.0200	0.103	0.622	0.413	0.481	9.794	**0.018**	-0.0238	0.860	0.183	0.788	0.159	0.762	0.405	0.485	0.135	0.791
14.0300	-0.611	0.206	-0.444	0.742	-7.849	0.406	-0.167	0.592	0.611	0.696	0.444	0.713	-0.167	0.901	0.278	0.813
15.0000	-0.111	0.669	-0.194	0.789	-3.811	0.453	0.333	**0.048**	-0.139	0.869	-0.0556	0.932	0.0833	0.908	-0.472	0.454
16.0000	0.158	0.356	-0.0598	0.900	-1.580	0.636	-0.0897	0.416	-0.697	0.210	0.0598	0.889	-0.782	0.100	-0.261	0.530
19.0000	0.124	0.365	-0.150	0.695	2.824	0.292	-0.0784	0.375	-0.0948	0.831	-0.232	0.498	-0.0784	0.836	-0.310	0.351
21.0000	0.389	0.421	0.556	0.681	16.15	0.088	-0.167	0.592	0.611	0.696	-0.556	0.645	0.833	0.533	0.278	0.813
23.0000	0.389	0.268	0.556	0.571	10.15	0.139	-0.167	0.460	-0.389	0.732	-0.0556	0.949	0.833	0.391	-0.222	0.794
24.0300	0.189	0.427	-2.044	**0.002**	-4.099	0.377	-0.167	0.277	-0.189	0.806	0.244	0.681	0.0333	0.960	-0.122	0.832
35.0000	0.189	0.427	0.356	0.593	4.001	0.389	0.0333	0.828	0.211	0.784	0.244	0.681	0.0333	0.960	0.0778	0.893
36.0100	0.389	0.421	0.556	0.681	18.15	0.056	-0.167	0.592	-0.389	0.804	0.444	0.713	-0.167	0.901	0.278	0.813
36.0200	0.0253	0.888	-0.0808	0.872	-0.548	0.876	0.0152	0.896	0.0657	0.910	0.0808	0.857	0.379	0.447	0.00505	0.991
41.0100	0.389	0.136	0.306	0.674	2.929	0.564	-0.167	0.320	0.111	0.895	-0.0556	0.932	0.0833	0.908	-0.222	0.724
41.0300	-0.111	0.751	0.556	0.571	17.15	**0.013**	-0.167	0.460	-0.389	0.732	-0.556	0.526	0.833	0.391	0.278	0.744
41.0400	0.389	0.268	0.556	0.571	12.90	0.061	-0.167	0.460	-0.389	0.732	-0.0556	0.949	0.833	0.391	-0.222	0.794
42.0200	0.389	0.421	-0.444	0.742	-7.849	0.406	-0.167	0.592	0.611	0.696	0.444	0.713	-0.167	0.901	0.278	0.813
43.0400	0.389	0.421	-0.444	0.742	-7.849	0.406	-0.167	0.592	0.611	0.696	0.444	0.713	0.833	0.533	0.278	0.813
44.0300	0.389	0.421	-0.444	0.742	-7.849	0.406	-0.167	0.592	0.611	0.696	-0.556	0.645	-0.167	0.901	-0.722	0.538
44.0400	0.389	0.421	-0.444	0.742	-7.849	0.406	-0.167	0.592	-0.389	0.804	-0.556	0.645	0.833	0.533	0.278	0.813
45.0100	-0.278	0.344	-0.444	0.588	-7.849	0.171	-0.167	0.378	-0.389	0.682	0.111	0.879	-0.167	0.837	-0.0556	0.938
45.0200	0.0556	0.772	-1.111	**0.040**	-1.768	0.637	-0.0556	0.653	-0.167	0.789	-0.111	0.817	-1.056	**0.048**	-1.278	**0.007**
46.0200	0.389	0.421	-0.444	0.742	-7.849	0.406	-0.167	0.592	0.611	0.696	0.444	0.713	-0.167	0.901	0.278	0.813
47.0000	0.389	0.421	-0.444	0.742	-7.849	0.406	-0.167	0.592	0.611	0.696	-0.556	0.645	0.833	0.533	0.278	0.813
48.0200	0.389	0.421	0.556	0.681	10.25	0.278	-0.167	0.592	0.611	0.696	0.444	0.713	0.833	0.533	0.278	0.813
50.0100	-0.611	0.206	-0.444	0.742	-7.849	0.406	-0.167	0.592	-0.389	0.804	0.444	0.713	0.833	0.533	0.278	0.813
2.0000	-0.611	0.206	0.556	0.681	15.15	0.109	-0.167	0.592	-0.389	0.804	-0.556	0.645	0.833	0.533	-0.722	0.538
54.0000	0.0556	0.772	0.333	0.535	4.568	0.224	-0.0556	0.653	-0.167	0.789	7.63e-16	1.000	0.611	0.251	0.0556	0.905
55.0300	0.389	0.421	0.556	0.681	15.15	0.109	-0.167	0.592	0.611	0.696	0.444	0.713	0.833	0.533	0.278	0.813
68.0900	0.389	0.421	0.556	0.681	12.15	0.199	-0.167	0.592	-0.389	0.804	0.444	0.713	0.833	0.533	0.278	0.813
83.1100	-0.111	0.751	0.0556	0.955	1.151	0.866	-0.167	0.460	0.111	0.922	-0.0556	0.949	0.333	0.731	-0.722	0.396
83.1200	0.389	0.421	0.556	0.681	8.151	0.388	-0.167	0.592	-0.389	0.804	-0.556	0.645	-0.167	0.901	0.278	0.813
119.0200	0.389	0.421	0.556	0.681	16.15	0.088	-0.167	0.592	-0.389	0.804	-0.556	0.645	0.833	0.533	0.278	0.813
Observations	203		203		203		203		203		203		203		203	
F-Test	0.647		0.628		1.476		0.697		0.332		0.202		0.549		0.424	
p value	0.954		0.964		**0.0433**		0.919		1.000		1.000		0.989		0.999	
Pseudo R^2	0.153		0.149		0.291		0.163		0.0847		0.0532		0.133		0.106	
Note: P/C = Parent or Caregiver; reference group is Tract 2.0200																
bold = p<.05																

Exhibit A-2C. Relationships between DHA resident characteristics and census tracts: Households with three or more children (continued)

	P/C had too little money for food at time of DHA move-in (1=yes, 0=no)		P/C had difficulty paying all bills at time of DHA move-in (1=yes, 0=no)		Frequency that P/C drank alcohol since becoming a parent		Frequency that P/C smoked marijuana since becoming a parent		P/C ever seen a psychiatrist (1=yes, 0=no)		Number of years during childhood that P/C lived in public housing		Number of years during childhood that P/C lived in a home owned by parents		P/C born in the United States (1=yes; 0=no)		Spanish language interview (1=yes; 0=no)	
Census Tract	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
3.0100	0.722	0.384	1.111	0.461	0.889	0.641	-0.833	0.661	-1.77e-15	1.000	1.056	0.865	0.333	0.969	-0.222	0.400	0.278	0.145
5.0200	-0.278	0.808	0.111	0.957	-0.111	0.966	-0.833	0.751	-0.500	0.331	21.56	**0.012**	-12.67	0.292	0.278	0.445	-0.222	0.396
6.0000	-0.278	0.808	1.111	0.593	-0.111	0.966	-0.833	0.751	-0.500	0.331	-5.444	0.524	12.33	0.304	-0.722	**0.048**	-0.222	0.396
7.0200	0.261	0.520	0.803	0.276	-0.419	0.653	-1.372	0.141	-0.269	0.140	-0.291	0.923	2.333	0.583	0.0470	0.715	-0.145	0.119
8.0000	0.389	0.318	0.511	0.470	0.222	0.804	-0.633	0.478	-0.100	0.567	-2.911	0.317	-1.733	0.671	0.144	0.244	-0.222	**0.013**
9.0200	0.722	0.528	1.111	0.593	1.889	0.473	-0.833	0.751	-0.500	0.331	-5.444	0.524	14.33	0.233	-0.722	**0.048**	-0.222	0.396
9.0300	0.222	0.789	0.611	0.685	0.389	0.838	-0.833	0.661	-1.85e-15	1.000	1.056	0.865	8.333	0.339	0.278	0.293	-0.222	0.243
9.0400	-0.278	0.652	0.111	0.921	2.639	0.064	0.417	0.768	-0.500	0.072	1.056	0.818	-5.917	0.360	0.278	0.157	-0.222	0.116
9.0500	0.222	0.789	0.611	0.685	-0.111	0.954	-0.833	0.661	-0.500	0.181	5.556	0.370	-7.667	0.379	0.278	0.293	-0.222	0.243
10.0000	0.472	0.319	0.611	0.477	1.139	0.296	-1.208	0.266	-1.79e-15	1.000	1.056	0.765	-7.167	0.150	0.153	0.310	-0.0972	0.370
11.0100	0.522	0.354	0.311	0.761	0.489	0.706	0.167	0.897	-0.100	0.692	-5.444	0.196	-3.467	0.557	0.278	0.122	-0.222	0.086
11.0200	-0.278	0.738	0.611	0.685	2.889	0.131	2.667	0.162	-1.59e-15	1.000	2.056	0.740	-12.67	0.147	0.278	0.293	-0.222	0.243
13.0100	0.722	0.528	1.111	0.593	1.889	0.473	-9.833	**0.000**	0.500	0.331	-5.444	0.524	14.33	0.233	0.278	0.445	-0.222	0.396
14.0200	-0.135	0.785	0.111	0.902	0.0317	0.978	-0.833	0.464	-0.0714	0.748	-5.444	0.143	3.048	0.558	-0.151	0.339	-0.222	0.052
14.0300	-0.278	0.808	1.111	0.593	-0.111	0.966	-0.833	0.751	0.500	0.331	15.56	0.070	-12.67	0.292	0.278	0.445	-0.222	0.396
15.0000	-0.0278	0.964	-4.139	**0.000**	1.639	0.248	-2.833	**0.046**	0.250	0.366	4.056	0.378	6.333	0.327	0.278	0.157	-0.222	0.116
16.0000	0.261	0.520	-0.274	0.710	-0.188	0.840	-1.218	0.191	-0.269	0.140	2.940	0.332	-2.359	0.579	0.278	**0.032**	-0.222	**0.018**
19.0000	-0.278	0.392	-0.0654	0.912	0.0948	0.899	-1.010	0.176	-1.50e-15	1.000	-0.121	0.960	-1.196	0.725	0.131	0.206	-0.134	0.073
21.0000	0.722	0.528	0.111	0.957	-0.111	0.966	-0.833	0.751	0.500	0.331	-5.444	0.524	-12.67	0.292	-0.722	**0.048**	-0.222	0.396
23.0000	0.222	0.789	0.611	0.685	-0.111	0.954	-0.833	0.661	-0.500	0.181	-5.444	0.380	14.33	0.101	-0.222	0.400	-0.222	0.243
24.0300	0.122	0.828	0.311	0.761	0.689	0.595	-0.633	0.623	-0.300	0.236	3.156	0.453	-1.067	0.857	0.278	0.122	-0.222	0.086
35.0000	0.122	0.828	0.711	0.487	0.289	0.823	0.567	0.660	0.1000	0.692	-3.044	0.469	-3.467	0.557	0.278	0.122	-0.222	0.086
36.0100	-0.278	0.808	1.111	0.593	-0.111	0.966	-0.833	0.751	0.500	0.331	-5.444	0.524	6.333	0.597	0.278	0.445	-0.222	0.396
36.0200	-0.00505	0.991	0.657	0.397	-0.202	0.837	-1.015	0.299	-0.136	0.476	-2.263	0.477	1.061	0.812	0.0960	0.479	-0.131	0.179
41.0100	0.222	0.718	0.611	0.585	-2.111	0.137	0.167	0.906	-1.59e-15	1.000	-5.444	0.237	-5.917	0.360	0.278	0.157	-0.222	0.116
41.0300	-0.278	0.738	0.111	0.941	-0.111	0.954	-0.833	0.661	-1.63e-15	1.000	-5.444	0.380	14.33	0.101	-0.222	0.400	-0.222	0.243
41.0400	0.222	0.789	0.611	0.685	0.389	0.838	-0.333	0.861	-0.500	0.181	-5.444	0.380	0.833	0.924	0.278	0.293	-0.222	0.243
42.0200	-0.278	0.808	0.111	0.957	-0.111	0.966	-0.833	0.751	-0.500	0.331	-5.444	0.524	14.33	0.233	0.278	0.445	-0.222	0.396
43.0400	-0.278	0.808	0.111	0.957	-0.111	0.966	-0.833	0.751	0.500	0.331	-5.444	0.524	-12.67	0.292	0.278	0.445	-0.222	0.396
44.0300	-0.278	0.808	-8.889	**0.000**	0.889	0.735	2.167	0.409	-0.500	0.331	-5.444	0.524	6.333	0.597	0.278	0.445	-0.222	0.396
44.0400	-0.278	0.808	0.111	0.957	-0.111	0.966	-0.833	0.751	-0.500	0.331	-5.444	0.524	14.33	0.233	0.278	0.445	-0.222	0.396
45.0100	-0.278	0.689	-2.889	**0.023**	-3.111	0.053	-3.833	**0.017**	-0.167	0.593	-5.444	0.294	5.333	0.464	-0.389	0.079	0.444	**0.006**
45.0200	-1.056	**0.021**	-1.667	**0.045**	1.889	0.072	0.389	0.709	-0.167	0.414	-1.000	0.768	1.778	0.709	0.167	0.249	-0.222	**0.034**
46.0200	0.722	0.528	1.111	0.593	-0.111	0.966	-0.833	0.751	-0.500	0.331	-5.444	0.524	-12.67	0.292	0.278	0.445	-0.222	0.396
47.0000	-0.278	0.808	0.111	0.957	-9.111	**0.001**	-0.833	0.751	-0.500	0.331	18.56	**0.031**	-12.67	0.292	0.278	0.445	-0.222	0.396
48.0200	-0.278	0.808	0.111	0.957	0.889	0.735	-0.833	0.751	-0.500	0.331	6.556	0.443	-12.67	0.292	0.278	0.445	-0.222	0.396
50.0100	0.722	0.528	1.111	0.593	1.889	0.473	-9.833	**0.000**	-0.500	0.331	-5.444	0.524	14.33	0.233	0.278	0.445	-0.222	0.396
2.0000	0.722	0.528	0.111	0.957	-0.111	0.966	-0.833	0.751	-0.500	0.331	-5.444	0.524	14.33	0.233	-0.722	**0.048**	-0.222	0.396
54.0000	0.0556	0.903	0.556	0.501	-0.444	0.671	-1.056	0.312	-0.0556	0.785	0.222	0.948	7.667	0.109	0.278	0.056	-0.222	**0.034**
55.0300	-0.278	0.808	0.111	0.957	-0.111	0.966	-0.833	0.751	-0.500	0.331	-5.444	0.524	14.33	0.233	0.278	0.445	-0.222	0.396
68.0900	0.722	0.528	1.111	0.593	0.889	0.735	0.167	0.949	0.500	0.331	-5.444	0.524	-3.667	0.760	0.278	0.445	-0.222	0.396
83.1100	0.222	0.789	0.111	0.941	0.389	0.838	-0.333	0.861	0.500	0.181	-5.444	0.380	13.33	0.127	-0.222	0.400	0.278	0.145
83.1200	0.722	0.528	1.111	0.593	0.889	0.735	0.167	0.949	0.500	0.331	-5.444	0.524	14.33	0.233	0.278	0.445	-0.222	0.396
119.0200	-0.278	0.808	0.111	0.957	1.889	0.473	0.167	0.949	-0.500	0.331	-5.444	0.524	14.33	0.233	0.278	0.445	-0.222	0.396
Observations	203		203		203		203		203		203		203		203		203	
F-Test	0.511		1.359		0.876		1.061		0.855		0.920		1.153		1.323		0.989	
p value	0.995		0.0887		0.690		0.386		0.723		0.617		0.261		0.109		0.500	
Pseudo R^2	0.124		0.275		0.196		0.228		0.192		0.204		0.243		0.269		0.216	
Note: P/C = Parent or Caregiver; reference group is Tract 2.0200																		
bold = p<.05																		

Exhibit A-2C. Relationships between DHA resident characteristics and census tracts: Households with three or more children (continued)

	Biological father always lived in household with child(ren) (1=yes; 0=no)		Parent's age at time of DHA move-in		P/C African American (1=yes; 0=no)		Parent have HS diploma at time of DHA move-in (1=yes; 0=no)		Parent have any higher education at time of DHA move-in (1=yes; 0=no)		Kids share same biological dad (1=yes; 0=no)		Parent Depressive Symptomatology Scale at time of interview		Parenting Efficacy Scale at time of interview		Parenting Beliefs Scale at time of interview	
Census Tract	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
3.0100	0.833	**0.012**	0.833	0.895	-0.111	0.719	0.167	0.657	-0.0556	0.760	-0.389	0.258	-2.222	0.758	1.333	0.578	1.444	0.622
5.0200	-0.167	0.713	7.333	0.399	-0.111	0.794	-0.333	0.520	-0.0556	0.824	-0.389	0.411	-3.222	0.746	3.333	0.313	-0.0556	0.989
6.0000	-0.167	0.713	1.333	0.878	-0.111	0.794	-0.333	0.520	-0.0556	0.824	-0.389	0.411	18.78	0.060	-7.667	**0.021**	-1.056	0.794
7.0200	0.0641	0.689	2.872	0.351	0.274	0.072	-0.0256	0.889	0.0983	0.268	-0.0812	0.628	-3.607	0.306	0.0256	0.982	0.406	0.776
8.0000	0.233	0.131	2.200	0.457	0.489	**0.001**	4.61e-16	1.000	-0.0556	0.514	-0.122	0.448	1.844	0.586	-0.333	0.767	0.678	0.622
9.0200	-0.167	0.713	7.333	0.399	-0.111	0.794	0.667	0.199	-0.0556	0.824	-0.389	0.411	-8.222	0.408	-0.667	0.840	2.944	0.466
9.0300	0.333	0.311	5.833	0.355	-0.111	0.719	0.167	0.657	-0.0556	0.760	-0.389	0.258	-2.222	0.758	2.333	0.330	-4.056	0.167
9.0400	0.333	0.172	-2.167	0.643	-0.111	0.628	0.167	0.549	0.444	**0.001**	-0.139	0.585	-5.222	0.329	0.0833	0.963	2.194	0.313
9.0500	-0.167	0.612	9.333	0.140	-0.111	0.719	-0.333	0.375	-0.0556	0.760	-0.389	0.258	-2.222	0.758	1.333	0.578	-0.0556	0.985
10.0000	0.0833	0.656	6.083	0.092	0.264	0.136	0.167	0.436	-0.0556	0.591	-0.264	0.178	4.778	0.246	-1.667	0.223	0.319	0.848
11.0100	0.0333	0.881	-0.667	0.876	-0.111	0.596	0.0667	0.793	-0.0556	0.652	-0.189	0.417	-0.622	0.899	2.133	0.190	2.544	0.201
11.0200	-0.167	0.612	1.833	0.771	-0.111	0.719	0.167	0.657	0.444	**0.015**	0.111	0.746	17.28	**0.018**	0.333	0.889	1.944	0.507
13.0100	-0.167	0.713	1.333	0.878	-0.111	0.794	-0.333	0.520	-0.0556	0.824	0.611	0.197	13.78	0.167	-4.667	0.159	2.944	0.466
14.0200	0.262	0.183	4.905	0.194	0.175	0.345	0.0952	0.671	-0.0556	0.609	0.468	**0.023**	-3.937	0.361	1.190	0.406	1.087	0.534
14.0300	0.833	0.067	7.333	0.399	-0.111	0.794	-0.333	0.520	-0.0556	0.824	0.611	0.197	1.778	0.858	-0.667	0.840	-0.0556	0.989
15.0000	0.333	0.172	4.583	0.328	0.889	**0.000**	0.167	0.549	-0.0556	0.680	-0.139	0.585	9.028	0.093	-0.667	0.707	-0.0556	0.980
16.0000	0.0641	0.689	-3.205	0.299	0.889	**0.000**	0.0513	0.780	-0.0556	0.531	-0.158	0.346	0.932	0.791	0.872	0.456	0.0214	0.988
19.0000	0.0392	0.760	-0.225	0.927	0.418	**0.001**	-0.0392	0.789	0.0327	0.645	-0.00654	0.961	-0.399	0.888	0.627	0.503	0.621	0.588
21.0000	-0.167	0.713	11.33	0.193	-0.111	0.794	-0.333	0.520	-0.0556	0.824	-0.389	0.411	10.78	0.279	-2.667	0.419	-1.056	0.794
23.0000	-0.167	0.612	-0.167	0.979	-0.111	0.719	-0.333	0.375	0.444	**0.015**	-0.389	0.258	-6.222	0.389	1.833	0.444	1.444	0.622
24.0300	-0.167	0.454	-2.067	0.629	0.889	**0.000**	0.0667	0.793	-0.0556	0.652	-0.389	0.096	-0.222	0.964	0.933	0.566	0.544	0.784
35.0000	0.0333	0.881	-2.667	0.533	0.489	**0.021**	-0.133	0.601	0.144	0.242	-0.389	0.096	3.778	0.440	0.733	0.652	3.144	0.115
36.0100	-0.167	0.713	6.333	0.466	0.889	**0.038**	0.667	0.199	-0.0556	0.824	0.611	0.197	-4.222	0.671	-2.667	0.419	1.944	0.630
36.0200	0.0152	0.928	3.788	0.243	0.434	**0.007**	0.0303	0.875	-0.0556	0.551	-0.0253	0.886	0.141	0.970	0.333	0.786	2.308	0.126
41.0100	0.0833	0.732	5.333	0.255	0.889	**0.000**	0.167	0.549	-0.0556	0.680	0.111	0.662	-6.222	0.245	1.083	0.542	2.194	0.313
41.0300	0.333	0.311	8.333	0.187	0.889	**0.005**	0.167	0.657	0.444	**0.015**	0.111	0.746	-9.722	0.179	3.333	0.165	-7.556	**0.011**
41.0400	-0.167	0.612	-1.167	0.853	0.889	**0.005**	0.167	0.657	-0.0556	0.760	-0.389	0.258	4.278	0.553	-0.667	0.781	-5.056	0.085
42.0200	0.833	0.067	-2.667	0.759	0.889	**0.038**	0.667	0.199	-0.0556	0.824	-0.389	0.411	-3.222	0.746	3.333	0.313	-5.056	0.211
43.0400	-0.167	0.713	9.333	0.284	0.889	**0.038**	0.667	0.199	-0.0556	0.824	-0.389	0.411	3.778	0.704	3.333	0.313	4.944	0.221
44.0300	-0.167	0.713	1.333	0.878	0.889	**0.038**	-0.333	0.520	-0.0556	0.824	-0.389	0.411	-7.222	0.468	-2.667	0.419	0.944	0.815
44.0400	-0.167	0.713	7.333	0.399	0.889	**0.038**	-0.333	0.520	0.944	**0.000**	0.611	0.197	-7.222	0.468	1.333	0.686	-5.056	0.211
45.0100	0.500	0.070	5.000	0.344	-0.111	0.668	-0.333	0.289	0.278	0.069	0.278	0.334	-5.222	0.387	2.667	0.184	-0.0556	0.982
45.0200	0.167	0.354	-4.667	0.178	0.111	0.512	4.64e-16	1.000	-0.0556	0.576	0.0556	0.767	-2.556	0.518	0.444	0.735	-0.389	0.808
46.0200	0.833	0.067	-1.667	0.848	-0.111	0.794	-0.333	0.520	-0.0556	0.824	-0.389	0.411	0.778	0.938	-9.667	**0.004**	0.944	0.815
47.0000	-0.167	0.713	-0.667	0.939	-0.111	0.794	0.667	0.199	-0.0556	0.824	0.611	0.197	-7.222	0.468	1.333	0.686	-1.056	0.794
48.0200	0.833	0.067	2.333	0.788	0.889	**0.038**	-0.333	0.520	-0.0556	0.824	-0.389	0.411	-10.22	0.304	2.333	0.480	2.944	0.466
50.0100	-0.167	0.713	2.333	0.788	0.889	**0.038**	-0.333	0.520	-0.0556	0.824	-0.389	0.411	-4.222	0.671	1.333	0.686	-5.056	0.211
2.0000	0.833	0.067	8.333	0.338	0.889	**0.038**	0.667	0.199	-0.0556	0.824	0.611	0.197	-11.22	0.260	3.333	0.313	-5.056	0.211
54.0000	-0.0556	0.757	4.667	0.178	-4.56e-15	1.000	0.111	0.589	-0.0556	0.576	-0.167	0.375	3.222	0.415	-0.444	0.735	3.389	**0.036**
55.0300	0.833	0.067	11.33	0.193	-0.111	0.794	-0.333	0.520	0.944	**0.000**	0.611	0.197	-11.22	0.260	3.333	0.313	4.944	0.221
68.0900	0.833	0.067	1.333	0.878	0.889	**0.038**	-0.333	0.520	-0.0556	0.824	0.611	0.197	18.78	0.060	-5.667	0.087	-0.0556	0.989
83.1100	0.333	0.311	-18.17	**0.004**	0.389	0.210	0.167	0.657	-0.0556	0.760	-0.389	0.258	-7.222	0.317	-0.167	0.944	-0.0556	0.985
83.1200	0.833	0.067	2.333	0.788	0.889	**0.038**	-0.333	0.520	0.944	**0.000**	-0.389	0.411	-8.222	0.408	-2.667	0.419	1.944	0.630
119.0200	0.833	0.067	2.333	0.788	-0.111	0.794	-0.333	0.520	-0.0556	0.824	-0.389	0.411	7.778	0.434	3.333	0.313	1.944	0.630
Observations	203		203		203		203		203		203		203		203		203	
F-Test	1.179		0.988		3.075		0.562		2.076		1.168		1.035		1.021		0.954	
p value	0.231		0.502		**0.000000153**		0.986		**0.000555**		0.242		0.425		0.448		0.559	
Pseudo R^2	0.247		0.216		0.461		0.135		0.366		0.245		0.224		0.221		0.210	
Note: P/C = Parent or Caregiver; reference group is Tract 2.0200																		
bold = p<.05																		

Relationships Between Individual Characteristics and Neighborhood Characteristics

Even if (as we have found) there were nonrandom assignments to DHA developments or neighborhoods on the basis of ethnic or disability status, it would not necessarily follow that there would be a strong relationship between these statuses and a wide variety of neighborhood *characteristics.* Thus, our third investigative strategy involves the use of continuously measured neighborhood characteristics instead of dummy variables to probe their potential systematic co-variation with characteristics of individual DHA families. Specifically, we employed the same individual characteristics as above and 12 characteristics of census tracts' population and housing (percentages of female-headed households, poor families and individuals, unemployed adults, those with only elementary school education, those with college degrees, employees in professional or technical occupations, non-Latino African-American population, Latino population, foreign-born population, housing vacancy rate, homes built prior to 1940, homes that are owner-occupied) conventionally used in neighborhood effect studies. We employed multivariate regression (again stratified by family size) to estimate the statistical associations between 27 individual and 12 neighborhood characteristics. As before, a quasi-random assignment would be reflected in coefficients approximating zero and an insignificant *F*-test for the regression as a whole.

Results are shown in Exhibit A-3A-C. Overall, of the 36 regressions, 26 exhibited insignificant *F*-tests. More convincingly, of the 972 regression estimates, 900 (92 percent) yielded coefficients that were statistically insignificant. Across the three family-size strata, the percentages of insignificant coefficients were 91, 93, and 92, respectively, suggesting that generally the outcomes corresponded to quasi-random assignment. Further examination is required, however, to ascertain whether there was any systematic sorting by a particular household characteristic as revealed by that characteristic garnering the bulk of the statistically significant coefficients.

Exhibit A-3A. Relationships between DHA resident and neighborhood characteristics: Households with 0–1 child

	Percent female headed households in neighborhood		Percent of neighborhood residents with less than 9th grade education		Percent of neighborhood residents with Bachelor's degree or higher		Percent foreign born in neighborhood		Percent of professional/executive workers in neighborhood		Neighborhood poverty rate		Percent Black residents in neighborhood		Percent Hispanic residents in neighborhood		Neighborhood unemployment		Neighborhood vacancy rate		Neighborhood homeownership rate		Percent homes built before 1940 in neighborhood	
	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
P/C had checking account at time of DHA move-in (1=yes, 0=no)	-1.465	0.367	-1.447	**0.039**	1.633	0.096	0.290	0.715	1.363	0.099	-2.595	0.099	1.302	0.303	0.000	0.869	-0.356	0.523	-0.521	0.196	2.156	0.248	1.834	0.244
P/C had health insurance at time of DHA move-in (1=yes, 0=no)	-2.293	0.403	-1.505	0.201	1.431	0.387	-2.150	0.111	1.679	0.229	-1.979	0.455	-0.042	0.984	0.000	0.934	0.389	0.679	0.770	0.258	4.141	0.189	3.237	0.224
P/C had too little money for food at time of DHA move-in (1=yes, 0=no)	-1.123	0.506	-0.100	0.891	-0.203	0.842	-0.313	0.705	-0.209	0.808	-1.573	0.335	0.968	0.461	0.000	0.249	-0.789	0.173	0.081	0.846	2.511	0.196	-1.870	0.254
P/C had difficulty paying all bills at time of DHA move-in (1=yes, 0=no)	-0.728	0.473	-0.091	0.835	0.353	0.564	0.814	0.102	0.152	0.768	-0.768	0.434	-1.109	0.160	0.000	0.968	-0.435	0.211	-0.700	**0.006**	0.186	0.873	-1.085	0.270
Frequency that P/C drank alcohol since becoming a parent	-0.683	0.351	-0.014	0.966	-0.461	0.297	0.170	0.635	-0.296	0.426	-0.840	0.236	0.008	0.989	0.000	0.326	-0.228	0.363	-0.137	0.449	1.692	**0.045**	0.890	0.211
Frequency that P/C smoked marijuana since becoming a parent	0.158	0.865	-0.613	0.124	0.763	0.173	-0.073	0.872	0.484	0.304	-0.252	0.779	0.368	0.609	0.000	0.069	-0.128	0.688	-0.181	0.431	-0.380	0.721	-1.548	0.086
Frequency that parent did other drugs since becoming a parent	1.390	0.176	0.545	0.216	-0.851	0.169	-0.186	0.711	-0.486	0.351	1.427	0.150	1.066	0.181	0.000	0.219	0.601	0.088	0.214	0.401	-1.113	0.345	0.902	0.364
P/C ever seen a psychiatrist (1=yes, 0=no)	-3.241	0.260	0.545	0.658	0.425	0.806	0.412	0.770	-0.459	0.753	-2.065	0.458	-0.866	0.698	0.000	0.342	-0.680	0.490	0.903	0.206	2.915	0.378	3.054	0.274
Number of years during childhood that P/C lived in public housing	0.304	0.059	0.116	0.092	-0.088	0.365	-0.058	0.463	-0.095	0.245	0.333	**0.032**	0.156	0.210	0.000	0.502	0.098	0.074	0.040	0.313	-0.309	0.094	0.024	0.879
Number of years during childhood that P/C lived in a home owned by parents	-0.036	0.770	0.065	0.215	-0.010	0.887	0.046	0.440	-0.053	0.391	0.050	0.669	0.001	0.991	0.000	0.999	-0.011	0.801	0.020	0.511	-0.068	0.626	-0.040	0.736
Biological father always lived in household with child(ren) (1=yes; 0=no)	-3.851	0.315	0.127	0.938	0.066	0.977	1.258	0.503	0.166	0.932	0.115	0.975	-2.046	0.492	0.000	0.854	0.952	0.469	0.041	0.966	0.554	0.900	1.565	0.673
Kids share same biological dad (1=yes; 0=no)	-0.337	0.839	-1.542	**0.031**	0.189	0.850	-0.858	0.290	0.878	0.296	-1.552	0.332	-0.251	0.845	0.000	0.861	-0.764	0.178	-0.323	0.431	1.293	0.496	-1.865	0.245
Parent Depressive Symptomatology Scale at time of interview	0.070	0.623	-0.025	0.677	-0.101	0.237	0.014	0.836	-0.045	0.530	0.012	0.929	0.089	0.420	0.000	0.746	0.064	0.187	0.006	0.859	0.043	0.793	0.161	0.242
Parenting Efficacy Scale at time of interview	-0.537	0.155	0.040	0.806	-0.105	0.645	0.010	0.957	-0.140	0.465	-0.381	0.296	-0.386	0.189	0.000	0.600	-0.082	0.524	0.002	0.979	0.975	**0.025**	0.236	0.519
Parenting Beliefs Scale at time of interview	-0.121	0.741	-0.031	0.842	-0.017	0.940	0.115	0.523	-0.042	0.820	0.061	0.863	-0.217	0.445	0.000	0.228	0.069	0.583	0.033	0.714	-0.303	0.472	-0.010	0.977
P/C is single parent (1=yes, 0=no)	1.645	0.604	3.279	**0.017**	-3.279	0.088	2.256	0.148	-4.004	**0.014**	4.985	0.105	-0.074	0.976	0.000	0.192	0.626	0.565	0.528	0.503	-7.325	**0.046**	-1.908	0.535
P/C employment status at time of DHA move-in (1=employed, 0=not employed)	6.530	0.075	2.469	0.117	-2.348	0.288	0.846	0.637	-2.339	0.209	6.466	0.069	-0.457	0.872	0.000	0.570	0.838	0.505	-0.200	0.826	-9.081	**0.032**	-2.762	0.437
P/C hourly wage at time of DHA move-in	-0.640	**0.005**	-0.277	**0.004**	0.180	0.185	-0.087	0.429	0.231	**0.044**	-0.588	**0.007**	0.067	0.702	0.000	0.800	-0.034	0.661	0.027	0.624	0.756	**0.004**	0.260	0.232
P/C disability status at time of survey (1=yes; 0=no)	-0.738	0.839	-1.978	0.205	4.828	**0.028**	-0.305	0.864	3.996	**0.031**	-0.549	0.876	2.138	0.449	0.000	0.132	-1.295	0.299	0.890	0.324	-3.872	0.354	4.809	0.173
P/C received TANF at time of DHA move-in (1=yes, 0=no)	0.321	0.888	2.610	**0.008**	-2.631	0.056	0.345	0.757	-2.701	**0.020**	3.058	0.165	-1.242	0.482	0.000	0.984	0.786	0.313	1.472	**0.010**	-1.748	0.503	0.661	0.764
P/C receiving Food Stamps at time of DHA move-in (1=yes, 0=no)	-1.343	0.432	-1.643	**0.026**	1.742	0.092	-0.036	0.965	1.658	0.057	-2.322	0.160	0.544	0.682	0.000	0.843	-0.408	0.486	-0.522	0.218	1.774	0.366	0.207	0.900
P/C born in the United States (1=yes; 0=no)	-0.990	0.845	3.038	0.163	-7.767	**0.011**	3.465	0.163	-6.404	**0.013**	-2.208	0.652	1.415	0.719	0.000	0.521	-2.072	0.233	-1.096	0.383	7.094	0.223	-0.893	0.856
Spanish language interview (1=yes; 0=no)	1.612	0.826	-0.352	0.911	-6.399	0.150	-0.433	0.904	-3.553	0.341	-2.183	0.758	10.140	0.077	0.000	0.514	0.473	0.851	0.133	0.942	9.686	0.252	6.997	0.326
Parent's age at time of DHA move-in	-0.222	0.064	-0.087	0.091	0.185	**0.011**	0.054	0.362	0.145	**0.018**	-0.299	**0.010**	0.022	0.813	0.000	0.613	-0.078	0.058	-0.037	0.210	0.180	0.193	0.166	0.154
P/C African American (1=yes; 0=no)	4.347	0.108	-0.870	0.453	1.633	0.316	-0.391	0.767	1.860	0.175	2.512	0.336	10.800	**0.000**	0.000	0.801	0.304	0.742	1.243	0.064	-5.315	0.087	3.701	0.158
Parent have HS diploma at time of DHA move-in (1=yes; 0=no)	0.321	0.904	-0.158	0.890	-0.189	0.907	0.690	0.599	0.267	0.844	0.676	0.794	-2.481	0.233	0.000	0.252	1.331	0.148	-0.403	0.544	-1.262	0.681	3.502	0.178
Parent have any higher education at time of DHA move-in (1=yes; 0=no)	-5.315	0.199	0.444	0.802	-1.570	0.529	6.147	**0.003**	-2.270	0.280	-3.063	0.443	-1.675	0.602	0.000	0.519	-1.019	0.472	-2.783	**0.007**	2.273	0.632	-6.210	0.122
Constant	67.950	**0.000**	20.090	**0.000**	17.810	**0.013**	8.444	0.147	27.540	**0.000**	51.180	**0.000**	18.670	**0.044**	0.000	0.448	16.960	**0.000**	7.765	**0.009**	20.080	0.142	18.850	0.102
F test	1.331		2.359		1.995		1.048		2.275		1.697		1.800		0.684		1.422		1.812		1.376		0.974	
p value (bold <.05)	0.134		**0.000**		**0.003**		0.405		**0.001**		**0.021**		**0.011**		0.881		0.088		**0.011**		0.109		0.506	
R^2	0.132		0.212		0.185		0.107		0.206		0.162		0.170		0.072		0.139		0.171		0.136		0.100	
Note: P/C = Parent or Caregiver; all neighborhood characteristics measured at time of first DHA move-in; N=265																								

Exhibit A-3B. Relationships between DHA resident and neighborhood characteristics: Households with two children

	Percent female headed households in neighborhood		Percent of neighborhood residents with less than 9th grade education		Percent of neighborhood residents with Bachelor's degree or higher		Percent foreign born in neighborhood		Percent of professional/executive workers in neighborhood		Neighborhood poverty rate		Percent Black residents in neighborhood		Percent Hispanic residents in neighborhood		Neighborhood unemployment		Neighborhood vacancy rate		Neighborhood homeownership rate		Percent homes built before 1940 in neighborhood	
	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
P/C had checking account at time of DHA move-in (1=yes, 0=no)	0.189	0.942	-2.028	0.086	2.391	0.127	-1.524	0.277	2.629	0.056	-1.215	0.630	-1.597	0.471	0.000	0.143	-1.026	0.226	-0.943	0.186	-1.098	0.714	0.092	0.973
P/C had health insurance at time of DHA move-in (1=yes, 0=no)	-5.529	0.050	-0.545	0.667	0.864	0.608	0.235	0.876	0.011	0.994	-4.222	0.121	-1.752	0.462	0.000	0.187	-1.004	0.270	0.648	0.399	4.517	0.162	-2.046	0.487
P/C had too little money for food at time of DHA move-in (1=yes, 0=no)	2.078	0.407	-0.296	0.794	1.806	0.230	1.160	0.390	1.506	0.252	2.530	0.297	2.321	0.276	0.000	0.509	0.997	0.220	-0.099	0.885	-4.907	0.089	0.952	0.717
P/C had difficulty paying all bills at time of DHA move-in (1=yes, 0=no)	-0.393	0.620	0.037	0.917	-0.449	0.344	0.083	0.845	-0.338	0.416	-0.579	0.449	0.219	0.745	0.000	0.313	-0.138	0.590	-0.446	**0.040**	0.830	0.361	-1.787	**0.032**
Frequency that P/C drank alcohol since becoming a parent	-0.391	0.470	0.147	0.547	-0.238	0.463	0.612	**0.036**	-0.213	0.454	0.000	1.000	0.183	0.690	0.000	0.772	0.115	0.512	0.007	0.961	-0.313	0.614	0.241	0.672
Frequency that P/C smoked marijuana since becoming a parent	0.115	0.869	0.080	0.799	-0.693	0.098	-0.305	0.417	-0.499	0.173	-0.054	0.936	-0.079	0.894	0.000	0.709	0.031	0.892	0.292	0.127	0.594	0.459	0.493	0.501
Frequency that parent did other drugs since becoming a parent	-0.095	0.921	-0.363	0.402	0.767	0.182	-0.826	0.110	0.743	0.140	-0.625	0.499	0.061	0.941	0.000	0.727	-0.455	0.144	-0.045	0.863	0.719	0.513	-0.594	0.554
P/C ever seen a psychiatrist (1=yes, 0=no)	-1.837	0.490	-0.802	0.504	0.546	0.732	-0.651	0.649	0.891	0.523	-2.149	0.403	1.862	0.410	0.000	0.109	-0.091	0.916	-0.347	0.633	4.827	0.115	0.650	0.816
Number of years during childhood that P/C lived in public housing	-0.065	0.700	0.102	0.185	-0.223	**0.030**	-0.007	0.943	-0.175	0.050	0.138	0.402	-0.224	0.121	0.000	0.865	0.047	0.389	0.059	0.205	-0.204	0.295	-0.299	0.095
Number of years during childhood that P/C lived in a home owned by parents	0.056	0.608	0.117	**0.017**	-0.191	**0.004**	0.028	0.635	-0.179	**0.002**	0.164	0.119	-0.012	0.895	0.000	0.152	0.053	0.135	0.053	0.074	-0.161	0.197	-0.087	0.446
Biological father always lived in household with child(ren) (1=yes; 0=no)	-5.611	0.109	-1.872	0.236	1.228	0.558	-2.060	0.273	1.176	0.521	-3.886	0.250	-1.142	0.700	0.000	**0.011**	-0.615	0.587	0.726	0.447	6.819	0.090	-4.365	0.234
Kids share same biological dad (1=yes; 0=no)	0.812	0.747	-0.054	0.962	0.827	0.584	0.743	0.583	0.732	0.579	0.000	1.000	2.941	0.169	0.000	0.280	-0.204	0.803	0.444	0.519	-1.280	0.658	2.286	0.387
Parent Depressive Symptomatology Scale at time of interview	0.073	0.598	0.094	0.132	-0.103	0.215	0.113	0.131	-0.074	0.312	0.083	0.536	-0.273	**0.021**	0.000	0.655	0.056	0.215	-0.033	0.389	-0.134	0.398	0.074	0.611
Parenting Efficacy Scale at time of interview	-0.218	0.549	-0.085	0.605	-0.012	0.956	-0.046	0.814	0.045	0.812	-0.434	0.219	-0.002	0.995	0.000	0.311	-0.145	0.220	-0.040	0.686	0.335	0.423	0.154	0.688
Parenting Beliefs Scale at time of interview	-0.381	0.260	-0.075	0.622	-0.045	0.824	0.237	0.193	-0.050	0.778	-0.142	0.664	-0.465	0.106	0.000	0.288	0.068	0.535	-0.002	0.987	-0.023	0.953	-0.146	0.681
P/C is single parent (1=yes, 0=no)	-0.119	0.969	0.298	0.832	-0.137	0.941	0.171	0.919	-0.413	0.800	-1.812	0.547	2.667	0.314	0.000	0.223	-1.061	0.294	-0.459	0.590	2.897	0.418	-1.666	0.610
P/C employment status at time of DHA move-in (1=employed, 0=not employed)	3.100	0.407	2.102	0.214	-3.590	0.110	-0.260	0.897	-2.740	0.163	1.779	0.622	2.003	0.528	0.000	0.882	0.265	0.827	0.375	0.714	1.578	0.713	1.961	0.617
P/C hourly wage at time of DHA move-in	-0.142	0.529	-0.208	**0.042**	0.310	**0.022**	-0.074	0.543	0.261	**0.028**	-0.185	0.394	0.077	0.689	0.000	0.703	-0.029	0.693	-0.051	0.408	0.094	0.716	-0.076	0.748
P/C disability status at time of survey (1=yes; 0=no)	1.511	0.697	-0.201	0.909	2.662	0.254	-1.059	0.612	0.640	0.753	1.628	0.665	2.611	0.429	0.000	0.496	-1.205	0.339	1.048	0.324	-7.744	0.083	-3.599	0.378
P/C received TANF at time of DHA move-in (1=yes, 0=no)	0.789	0.524	1.080	0.054	-1.157	0.119	0.035	0.958	-1.053	0.106	1.711	0.153	-0.346	0.742	0.000	0.272	0.793	**0.049**	0.250	0.459	-0.258	0.856	0.185	0.887
P/C receiving Food Stamps at time of DHA move-in (1=yes, 0=no)	1.317	0.312	0.299	0.611	-0.632	0.418	0.422	0.546	-0.562	0.411	1.618	0.199	-0.606	0.584	0.000	0.989	0.622	0.141	0.248	0.485	-1.562	0.296	2.041	0.136
P/C born in the United States (1=yes; 0=no)	0.564	0.904	-0.940	0.658	2.557	0.364	0.695	0.783	1.572	0.523	-0.462	0.919	6.171	0.122	0.000	0.519	-0.657	0.666	0.833	0.516	-3.571	0.508	3.292	0.504
Spanish language interview (1=yes; 0=no)	-5.352	0.430	0.030	0.992	3.595	0.376	-0.298	0.935	2.795	0.432	-3.032	0.643	4.686	0.416	0.000	0.942	-0.383	0.862	2.195	0.236	1.611	0.836	16.520	**0.021**
Parent's age at time of DHA move-in	-0.410	**0.004**	-0.111	0.082	0.082	0.334	0.091	0.229	0.049	0.508	-0.406	**0.003**	-0.039	0.742	0.000	0.446	-0.096	**0.037**	-0.053	0.171	0.403	**0.013**	-0.057	0.701
P/C African American (1=yes; 0=no)	3.588	0.177	-1.879	0.118	2.408	0.131	-1.240	0.385	2.693	0.054	2.783	0.278	14.490	**0.000**	0.000	0.611	1.997	**0.021**	2.166	**0.003**	-0.767	0.801	10.820	**0.000**
Parent have HS diploma at time of DHA move-in (1=yes; 0=no)	-1.866	0.501	0.524	0.675	-0.723	0.663	2.317	0.121	-1.942	0.182	-1.383	0.605	3.846	0.103	0.000	0.190	-0.718	0.424	-0.361	0.633	2.141	0.501	0.343	0.906
Parent have any higher education at time of DHA move-in (1=yes; 0=no)	1.676	0.686	2.753	0.142	-2.151	0.386	6.148	**0.006**	-3.587	0.100	0.096	0.981	3.614	0.304	0.000	0.371	-1.023	0.446	-1.943	0.087	-2.279	0.632	-2.183	0.615
Constant	69.240	0.000	26.490	**0.000**	7.737	0.274	8.193	0.197	18.440	**0.003**	58.680	**0.000**	10.360	0.301	0.000	0.633	17.450	**0.000**	8.223	**0.011**	23.270	0.086	22.400	0.071
F test	1.124		1.438		1.482		1.219		1.721		1.285		3.511		0.933		1.480		1.392		1.135		1.434	
p value (bold <.05)	0.313		0.082		0.066		0.218		**0.018**		0.166		**0.000**		0.564		0.066		0.102		0.301		0.083	
R^2	0.118		0.146		0.150		0.127		0.170		0.133		0.295		0.100		0.150		0.142		0.119		0.146	
Note: P/C = Parent or Caregiver; all neighborhood characteristics measured at time of first DHA move-in; N=255																								

Exhibit A-3C. Relationships between DHA resident and neighborhood characteristics: Households with three or more children

	Percent female headed households in neighborhood		Percent of neighborhood residents with less than 9th grade education		Percent of neighborhood residents with Bachelor's degree or higher		Percent foreign born in neighborhood		Percent of professional/executive workers in neighborhood		Neighborhood poverty rate		Percent Black residents in neighborhood		Percent Hispanic residents in neighborhood		Neighborhood unemployment		Neighborhood vacancy rate		Neighborhood homeownership rate		Percent homes built before 1940 in neighborhood	
	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value	Coeff.	P value
P/C had checking account at time of DHA move-in (1=yes, 0=no)	-1.465	0.367	-1.447	**0.039**	1.633	0.096	0.290	0.715	1.363	0.099	-2.595	0.099	1.302	0.303	0.000	0.869	-0.356	0.523	-0.521	0.196	2.156	0.248	1.834	0.244
P/C had health insurance at time of DHA move-in (1=yes, 0=no)	-2.293	0.403	-1.505	0.201	1.431	0.387	-2.150	0.111	1.679	0.229	-1.979	0.455	-0.042	0.984	0.000	0.934	0.389	0.679	0.770	0.258	4.141	0.189	3.237	0.224
P/C had too little money for food at time of DHA move-in (1=yes, 0=no)	-1.123	0.506	-0.100	0.891	-0.203	0.842	-0.313	0.705	-0.209	0.808	-1.573	0.335	0.968	0.461	0.000	0.249	-0.789	0.173	0.081	0.846	2.511	0.196	-1.870	0.254
P/C had difficulty paying all bills at time of DHA move-in (1=yes, 0=no)	-0.728	0.473	-0.091	0.835	0.353	0.564	0.814	0.102	0.152	0.768	-0.768	0.434	-1.109	0.160	0.000	0.968	-0.435	0.211	-0.700	**0.006**	0.186	0.873	-1.085	0.270
Frequency that P/C drank alcohol since becoming a parent	-0.683	0.351	-0.014	0.966	-0.461	0.297	0.170	0.635	-0.296	0.426	-0.840	0.236	0.008	0.989	0.000	0.326	-0.228	0.363	-0.137	0.449	1.692	**0.045**	0.890	0.211
Frequency that P/C smoked marijuana since becoming a parent	0.158	0.865	-0.613	0.124	0.763	0.173	-0.073	0.872	0.484	0.304	-0.252	0.779	0.368	0.609	0.000	0.069	-0.128	0.688	-0.181	0.431	-0.380	0.721	-1.548	0.086
Frequency that parent did other drugs since becoming a parent	1.390	0.176	0.545	0.216	-0.851	0.169	-0.186	0.711	-0.486	0.351	1.427	0.150	1.066	0.181	0.000	0.219	0.601	0.088	0.214	0.401	-1.113	0.345	0.902	0.364
P/C ever seen a psychiatrist (1=yes, 0=no)	-3.241	0.260	0.545	0.658	0.425	0.806	0.412	0.770	-0.459	0.753	-2.065	0.458	-0.866	0.698	0.000	0.342	-0.680	0.490	0.903	0.206	2.915	0.378	3.054	0.274
Number of years during childhood that P/C lived in public housing	0.304	0.059	0.116	0.092	-0.088	0.365	-0.058	0.463	-0.095	0.245	0.333	**0.032**	0.156	0.210	0.000	0.502	0.098	0.074	0.040	0.313	-0.309	0.094	0.024	0.879
Number of years during childhood that P/C lived in a home owned by parents	-0.036	0.770	0.065	0.215	-0.010	0.887	0.046	0.440	-0.053	0.391	0.050	0.669	0.001	0.991	0.000	0.999	-0.011	0.801	0.020	0.511	-0.068	0.626	-0.040	0.736
Biological father always lived in household with child(ren) (1=yes; 0=no)	-3.851	0.315	0.127	0.938	0.066	0.977	1.258	0.503	0.166	0.932	0.115	0.975	-2.046	0.492	0.000	0.854	0.952	0.469	0.041	0.966	0.554	0.900	1.565	0.673
Kids share same biological dad (1=yes; 0=no)	-0.337	0.839	-1.542	**0.031**	0.189	0.850	-0.858	0.290	0.878	0.296	-1.552	0.332	-0.251	0.845	0.000	0.861	-0.764	0.178	-0.323	0.431	1.293	0.496	-1.865	0.245
Parent Depressive Symptomatology Scale at time of interview	0.070	0.623	-0.025	0.677	-0.101	0.237	0.014	0.836	-0.045	0.530	0.012	0.929	0.089	0.420	0.000	0.746	0.064	0.187	0.006	0.859	0.043	0.793	0.161	0.242
Parenting Efficacy Scale at time of interview	-0.537	0.155	0.040	0.806	-0.105	0.645	0.010	0.957	-0.140	0.465	-0.381	0.296	-0.386	0.189	0.000	0.600	-0.082	0.524	0.002	0.979	0.975	**0.025**	0.236	0.519
Parenting Beliefs Scale at time of interview	-0.121	0.741	-0.031	0.842	-0.017	0.940	0.115	0.523	-0.042	0.820	0.061	0.863	-0.217	0.445	0.000	0.228	0.069	0.583	0.033	0.714	-0.303	0.472	-0.010	0.977
P/C is single parent (1=yes, 0=no)	1.645	0.604	3.279	**0.017**	-3.279	0.088	2.256	0.148	-4.004	**0.014**	4.985	0.105	-0.074	0.976	0.000	0.192	0.626	0.565	0.528	0.503	-7.325	**0.046**	-1.908	0.535
P/C employment status at time of DHA move-in (1=employed, 0=not employed)	6.530	0.075	2.469	0.117	-2.348	0.288	0.846	0.637	-2.339	0.209	6.466	0.069	-0.457	0.872	0.000	0.570	0.838	0.505	-0.200	0.826	-9.081	**0.032**	-2.762	0.437
P/C hourly wage at time of DHA move-in	-0.640	**0.005**	-0.277	**0.004**	0.180	0.185	-0.087	0.429	0.231	**0.044**	-0.588	**0.007**	0.067	0.702	0.000	0.800	-0.034	0.661	0.027	0.624	0.756	**0.004**	0.260	0.232
P/C disability status at time of survey (1=yes; 0=no)	-0.738	0.839	-1.978	0.205	4.828	**0.028**	-0.305	0.864	3.996	**0.031**	-0.549	0.876	2.138	0.449	0.000	0.132	-1.295	0.299	0.890	0.324	-3.872	0.354	4.809	0.173
P/C received TANF at time of DHA move-in (1=yes, 0=no)	0.321	0.888	2.610	**0.008**	-2.631	0.056	0.345	0.757	-2.701	**0.020**	3.058	0.165	-1.242	0.482	0.000	0.984	0.786	0.313	1.472	**0.010**	-1.748	0.503	0.661	0.764
P/C receiving Food Stamps at time of DHA move-in (1=yes, 0=no)	-1.343	0.432	-1.643	**0.026**	1.742	0.092	-0.036	0.965	1.658	0.057	-2.322	0.160	0.544	0.682	0.000	0.843	-0.408	0.486	-0.522	0.218	1.774	0.366	0.207	0.900
P/C born in the United States (1=yes; 0=no)	-0.990	0.845	3.038	0.163	-7.767	**0.011**	3.465	0.163	-6.404	**0.013**	-2.208	0.652	1.415	0.719	0.000	0.521	-2.072	0.233	-1.096	0.383	7.094	0.223	-0.893	0.856
Spanish language interview (1=yes; 0=no)	1.612	0.826	-0.352	0.911	-6.399	0.150	-0.433	0.904	-3.553	0.341	-2.183	0.758	10.140	0.077	0.000	0.514	0.473	0.851	0.133	0.942	9.686	0.252	6.997	0.326
Parent's age at time of DHA move-in	-0.222	0.064	-0.087	0.091	0.185	**0.011**	0.054	0.362	0.145	**0.018**	-0.299	**0.010**	0.022	0.813	0.000	0.613	-0.078	0.058	-0.037	0.210	0.180	0.193	0.166	0.154
P/C African American (1=yes; 0=no)	4.347	0.108	-0.870	0.453	1.633	0.316	-0.391	0.767	1.860	0.175	2.512	0.336	10.800	**0.000**	0.000	0.801	0.304	0.742	1.243	0.064	-5.315	0.087	3.701	0.158
Parent have HS diploma at time of DHA move-in (1=yes; 0=no)	0.321	0.904	-0.158	0.890	-0.189	0.907	0.690	0.599	0.267	0.844	0.676	0.794	-2.481	0.233	0.000	0.252	1.331	0.148	-0.403	0.544	-1.262	0.681	3.502	0.178
Parent have any higher education at time of DHA move-in (1=yes; 0=no)	-5.315	0.199	0.444	0.802	-1.570	0.529	6.147	**0.003**	-2.270	0.280	-3.063	0.443	-1.675	0.602	0.000	0.519	-1.019	0.472	-2.783	**0.007**	2.273	0.632	-6.210	0.122
Constant	67.950	**0.000**	20.090	**0.000**	17.810	**0.013**	8.444	0.147	27.540	**0.000**	51.180	**0.000**	18.670	**0.044**	0.000	0.448	16.960	**0.000**	7.765	**0.009**	20.080	0.142	18.850	0.102
F test	1.331		2.359		1.995		1.048		2.275		1.697		1.800		0.684		1.422		1.812		1.376		0.974	
p value (bold <.05)	0.134		**0.000**		**0.003**		0.405		**0.001**		**0.021**		**0.011**		0.881		0.088		**0.011**		0.109		0.506	
R^2	0.132		0.212		0.185		0.107		0.206		0.162		0.170		0.072		0.139		0.171		0.136		0.100	
Note: P/C = Parent or Caregiver; all neighborhood characteristics measured at time of first DHA move-in; N=265																								

Only two individual characteristics had a frequency of statistically significant coefficients that were greater than average: African-American DHA tenant (15 percent) and household wages (14 percent). It is noteworthy that although disability status generated a nonrandom assignment to particular developments because of DHA rules (as shown in Exhibit A-1) this apparently did not produce a strong association with particular neighborhood characteristics, because the locations where the disabled were assigned evinced considerable variation.

Of course, geographic selection bias arises to the extent that individual household characteristics that are *not* observed (or controlled statistically) are correlated with both neighborhood characteristics and child outcomes. In this regard, it is revealing to separate the individual characteristics listed in Exhibit A-3 into the first 15 (which were not observable to DHA officials, because they were gleaned from our household survey) and the last 12 (which likely were). Ninety-five percent of the former set's coefficients were not statistically significant, whereas only 88 percent of the later set's were. This is consistent with the notion that, although DHA's assignment process may not have produced a completely random assignment across neighborhood characteristics based on household characteristics that DHA staff could observe, it nevertheless likely produced such based on household characteristics that they could *not* observe.

We therefore conclude that this third piece of evidence suggests the DHA allocation process produced a quasi-random assignment across geography, with the possible exception of two individual characteristics observable by the DHA—African-American ethnicity and household wages—that are easily controlled in our analyses. Even more importantly, we conclude that the DHA allocation process produced a quasi-random assignment across geography in terms of individual characteristics *not* observable by DHA (but observable to us from our survey). This gives us some confidence that any additional household characteristics we do not observe in our study are similarly quasi-randomly allocated across neighborhood characteristics.

Relationships Between Typically Unobserved Individual Characteristics and Neighborhood Characteristics Using Monte Carlo Simulation

Recall that the key issue at hand is whether DHA's assignment of public housing tenants to neighborhoods effectively removes the correlation between *unobservable* (that is, cannot be controlled statistically) parental characteristics that might affect both characteristics of location chosen and individual outcomes being investigated. We investigated this by examining the degree to which a variety of characteristics of parents or caregivers in our sample that typically are not observed in neighborhood effect studies were correlated with multiple characteristics of their neighborhoods at the time of initial assignment by DHA. The intuition guiding our analysis is as follows. An actual random assignment of DHA applicants to DHA dwellings will likely produce by chance a few non-zero pairwise correlations between DHA household characteristics and neighborhood characteristics. A Monte Carlo simulation repeating such random assignments will generate bootstrapped standard errors and distributions of such correlations for each pair. This provides the benchmark against which we will compare the *actual* pairwise correlations between DHA household characteristics and neighborhood characteristics. If the pattern of the actual correlations does not differ significantly from that produced by the simulation, we will fail to reject the null hypothesis that the DHA assignment process yielded a quasi-random geographic assignment of households according to their unobserved characteristics.

In particular, we implemented this strategy as follows. We considered here the unobserved (by DHA and typically in other studies) characteristics of parents (listed in Exhibit A-4) and the characteristics of census tracts considered above. For each of the three aforementioned family sizes of DHA tenants we calculated the Pearsonian correlation between each pairwise combination of parental characteristics and neighborhood characteristics observed when the DHA first assigned our sample households to their DHA units.

As a comparative benchmark for these correlations we conducted Monte Carlo simulations in which each sample household was, indeed, randomly assigned to one of the DHA units (for the appropriate family size) with its associated bundle of neighborhood characteristics that we observed whenever the initial assignment of household in our study actually occurred.[146] In each iteration after all households were randomly assigned, we calculated correlations for all pairwise combinations of parental characteristics and neighborhood characteristics. We used 10,000 repetitions of these simulations to produce distributions for all pairwise combinations of parental characteristics and neighborhood characteristics and associated bootstrapped standard errors. This allowed us to estimate (1) for each correlation a 95 percent confidence interval and (2) across all pairwise correlations how many significantly different from zero would be expected by chance when produced by a random assignment process.

The results are reported in Exhibit A-4. The parental characteristics are listed in the rows and the three family-size strata in the columns. The cells show for how many of the possible neighborhood characteristics the initial DHA assignment produced an actual correlation with the given parental characteristic that was significantly different from zero at the 5 percent level (two-tailed test); the actual correlation coefficient and the neighborhood characteristic involved are reported in these cases. The exhibit shows that for families that have no or one child and families with who have children, only 8 (5 percent of possible correlations) were statistically different from zero; the corresponding figure for families that have three or more children was 12 (8 percent of possible correlations). Our simulations showed that in more than 98 percent and 95 percent of the cases, respectively, a *larger* number of statistically significant correlations were produced by a *random assignment.* This strongly indicated that the relatively rare non-zero correlations we observed from initial DHA allocations of tenants to neighborhoods (shown in Exhibit A-4) were consistent with those that would have been generated by a pure process of random assignment. These results suggest that the

[146] The programming and execution of these simulations was conducted by Dr. Albert Anderson of PDQ Inc., whose contribution we gratefully acknowledge.

DHA natural experiment likely removes the correlation between parental characteristics (which we do not observe and cannot control in our Denver study) that may potentially affect both initial DHA neighborhood characteristics and subsequent individual outcomes.

Exhibit A-4. Simulation results: Number of statistically significant correlations between typically unobserved household characteristics and neighborhood characteristics

Household Characteristic	Families with 0–1 Child	Families with Two Children	Families with Three or More Children
Ever not enough food for family while reside in this location	0	1 (% black = 0.14)	0
Ever unable to pay all bills while residing in this location	2 (% foreign-born = 0.13; % vacant = −0.16)	2 (% elem. school ed. = −0.17; % vacant = −0.14)	1 (% vacant = −0.12)
Frequency of alcohol use since becoming a parent	2 (% unemployed = −0.16; % owner =0.13)	0	1 (% black = −0.09)
Frequency of marijuana use since becoming a parent	1 (% black = 0.17)	0	0
Frequency of drug use since becoming a parent	1 (% black = 0.13)	0	0
Ever seen psychologist, psychiatrist, or counselor	0	0	0
Did your parents ever live in public housing when you were growing up?	1 (% female heads = 0.22)	0	1 (% foreign born = −0.18)
Did your parents ever own their home when you were growing up?	0	3 (% elem. school = 0.26; % college = −0.26; % own = 0.20)	0
Born in the United States	1 (% college = −0.16;)	0	0
Primary language is Spanish	0	0	0
Father of child always lived in the home while child was growing up	0	0	5 (% female heads = −0.11; % elementary school = −0.10; % poor = −0.10; % own = 0.09; % pre-1940 homes = −0.12)
Parental depression (Center for Epidemiologic Studies Depression) scale	0	1 (% Latino = 0.13)	2 (% elem. school = 0.13; % Latino = 0.13)
Parental self-efficacy scale	0	0	0
Parental beliefs and practices scale	0	1 (% Latino = −0.21)	2 (% college = −0.09; % black = −0.12)

Source: Authors' calculations based on Monte Carlo simulations of *Denver Child Study* survey data; statistically significant household–neighborhood characteristic correlations shown parenthetically.

Conclusion

Natural experiments involving residential placements under the auspices of some public program offer potentially powerful vehicles for measuring neighborhood effects, because they can rupture the association between unobserved characteristics of the individuals being studied and characteristics of their neighborhood. In this appendix, we have investigated the extent to which a natural experiment involving public housing in Denver offers such potential.

Our analysis of the DHA's dwelling allocation procedures revealed considerable room for tenant self-selection or DHA staff selection to enter. Nevertheless, we found that the initial occupancy mimicked a quasi-random assignment process to DHA dwellings or neighborhoods, with the exception of ethnicity and disability status. Only African-American ethnicity (and to a lesser degree, household wages) exhibited above-average frequencies of associations with neighborhood conditions, however. This suggests that, *conditioned on ethnicity and wages,* the DHA allocation process produced a quasi-random initial assignment across neighborhood characteristics. The empirical implication is that models estimating neighborhood effects using the current data must control for ethnicity and wages to avoid geographic selection bias. We, in fact, do so in all analyses conducted in this report.

Even more importantly, two sorts of analyses indicate that the DHA allocation process produced a quasi-random assignment across neighborhood conditions in terms of individual characteristics *not* observable by DHA (but observable to us from our survey). This gives us some confidence that any additional household characteristics we do not observe in our study are similarly quasi-randomly allocated across neighborhood characteristics.

APPENDIX B. CHILD IMPACTS SURVEY

For optimum accuracy, please print in capital letters and avoid contact with the edge of the box. A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Shade Circles Like This--> ●
Not Like This-->

CHILD IMPACTS SURVEY

ID NUMBER: ☐☐☐☐☐☐

DATE OF INTERVIEW: ☐☐ / ☐☐ / 2 0 ☐☐

INTERVIEWER:
First Name ☐☐☐☐☐☐☐☐☐☐☐☐ MI ☐
Last Name ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

RECORD START TIME: ☐☐ : ☐☐
Hour **Minutes**

RECORD END TIME: ☐☐ : ☐☐
Hour **Minutes**

TIME OF DAY: ○ A.M. ○ P.M.

TOTAL NUMBER OF CALLS: ☐☐

CURRENT STATUS:
○ Current DHA Resident - Conventional Housing
○ Current DHA Resident - Dispersed Housing
○ Former DHA Resident - Conventional Housing
○ Former DHA Resident - Dispersed Housing

Sponsored by the National Institute for Child Health and Human Development

DENVER CHILD IMPACTS SURVEY

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Hello, my name is _____________. I'm an interviewer working on a research project conducted by professors from Wayne State University in Detroit. We are conducting a study sponsored by the National Institute of Child Health and Human Development to evaluate the impact of DHA housing programs on children. We recently sent you a letter that describes the study and the importance of your participation. It indicates that your participation in this study is completely voluntary, that all of your answers will be held in strict confidence, and that there are no known risks or benefits to your participation.

MOBILITY-NEIGHBORHOOD HISTORY MODULE

I would like to begin by asking you some questions about your experiences in the various places where you've lived ***since you've been a parent.***

N1. When did you and your family FIRST move into a Denver Housing Authority (DHA) dwelling?

☐☐ / ☐☐ ***[check against our records from DHA, which show:*** ☐☐ / ☐☐***]***

month year month year

[INTERVIEWER: IF THERE IS A DIFFERENCE OF MORE THAN ONE MONTH, DISCUSS WITH RESPONDENT AND RESOLVE DISCREPANCY]

N1A. Before you moved in, did DHA give you more than one neighborhood in which you could have chosen to live in a DHA unit?

○ Yes ○ No ○ Don't Know

[INTERVIEWER: If YES, confirm that multiple DHA units offered were located in different neighborhoods.]

N2pre. And how many children, IN TOTAL, do you have? *[In this study, we ask you to consider as children your biological children, stepchildren, grandchildren, siblings, foster children, or any other children that you have cared for as the primary caregiver and guardian.]*

☐☐ total number of children

N2. At the time when you FIRST moved into DHA housing, what was the name of the **oldest** child living in the household who was under the age of 18 when you moved in and who lived with you for at least 1 year when you lived in DHA housing?

KEY NAME CHILD #1	Date of Birth	N2rel. What is your relation to CHILD?
☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐ / ☐☐ / ☐☐☐☐ month day year	☐☐ code* ☐ other (specify)

[NB: THIS name gets populated into Homelessness Module and is used as KEY NAME CHILD #1 in Question N5 below. INTERVIEWER: Please reconfirm the name of the oldest child who lived with the R in DHA housing before moving to the next question. Verify spelling of CHILD's name.]

** See RELATIONSHIP CODES on bottom of next page (pg. 3).*

N3pre1. Did any of your **other** children live with you ***in DHA housing for at least a year*** when they were under the age of 18? ○ Yes ○ No

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N3pre2. ***If yes***, how many? ☐☐

N3. Starting with the oldest child after [KEY NAME CHILD #1], please tell me the names of these children.

N3age. What is the child's DOB?

N3rel. What is your relation to CHILD?

		month / day / year	code*	other (specify)
Child 2		/ /		
Child 3		/ /		
Child 4		/ /		
Child 5		/ /		
Child 6		/ /		

[INTERVIEWER: Please check the list of additional children before moving to Question N4]

N4pre1. Do you ***have any other children*** that we have not yet mentioned? ○ Yes ○ No

N4pre2. ***If yes***, how many? ☐☐

N4. Starting with the oldest child please tell me the names of these children.

N4age. What is child's current age?

N4rel. What is your relation to CHILD?

Non-DHA (other) child name	age	code*	other (specify)

***RELATIONSHIP TO R INSTRUCTION TO INTERVIEWER: Please use the following codes for relationship of respondent to CHILD for questions N3rel and N4rel:**

1 Biological mother
2 Biological father
3 Adoptive or step parent
4 Legal foster parent
5 Informal foster parent
6 Grandparent
96 Other (specify)
98 Don't know
99 Refused

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For the remainder of the study, we will be asking you questions about all of the children mentioned above that lived with you in DHA housing at some point while under the age of 18.

N5pre. First, how many different places have you lived since [KEY NAME CHILD #1] was born? ☐☐ total number of places

N5. Now I'd like you to think back about **ALL** the places where you've lived since **[KEY NAME CHILD #1]** was born, even if you only lived there a short time. Let's begin by listing the place where you lived when **[KEY NAME CHILD #1]** was born, giving me as much information as you can remember about the address. Then we'll talk about where you lived next, and so on, up to your current home. However, I only want you to list places where at least one of the children who lived with you in DHA housing were still residing with you.

What was the street number and name of the place you lived when [KEY NAME CHILD #1] was born?

[FILL IN AS MUCH ADDRESS INFORMATION AS POSSIBLE FOR EACH PLACE BEFORE ASKING QUESTIONS A-D FOR ANY LOCATION. COMPLETE THE LOCATION TABLE BELOW FROM N5A THROUGH N5D BEFORE BEGINNING WITH THE NEXT SET OF QUESTIONS.]

	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	Location 7	Location 8	Location 9	Location 10
Number Street										
What were the nearest 2 cross streets?										
What was the name of the neighborhood?										
What City										
State										
Zip?										
When did you: Move in?	Mo / Year	Mo / Year	Mo / Year	Mo / Year	Mo / Year	Mo / Year	Mo / Year	Mo / Year	Mo / Year	Mo / Year
Move out?	Mo / Year	Mo / Year	Mo / Year	Mo / Year	Mo / Year	Mo / Year	Mo / Year	Mo / Year	Mo / Year	Mo / Year
[CATI COMPUTE/ interviewer check if LT 12 months]	Months	Months	Months	Months	Months	Months	Months	Months	Months	Months

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	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	Location 7	Location 8	Location 9	Location 10
A. What was your main reason for moving here? **Interviewer: Fill in text box for each location**										
B. What type of building was it? 1. single-family, detached house 2. duplex w/ 2 living units 3. townhouse w/ attached units 4. mobile home 5. apartment in building w/ 3-6 units 6. apartment in building w/ 6+ units 96. other, specify 97. NA 98. DK	○ 1 ○ 2 ○ 3 other ○ 4 ○ 5 ○ 6 ○ 96 ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 other ○ 4 ○ 5 ○ 6 ○ 96 ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 other ○ 4 ○ 5 ○ 6 ○ 96 ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 other ○ 4 ○ 5 ○ 6 ○ 96 ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 other ○ 4 ○ 5 ○ 6 ○ 96 ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 other ○ 4 ○ 5 ○ 6 ○ 96 ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 other ○ 4 ○ 5 ○ 6 ○ 96 ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 other ○ 4 ○ 5 ○ 6 ○ 96 ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 other ○ 4 ○ 5 ○ 6 ○ 96 ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 other ○ 4 ○ 5 ○ 6 ○ 96 ○ NA ○ DK ○ REF
C1. Did you rent or own this dwelling? ***[IF RENT ASK C2-C3]***	○ own ○ rent ○ other ○ DK ○ REF	○ own ○ rent ○ other ○ DK ○ REF	○ own ○ rent ○ other ○ DK ○ REF	○ own ○ rent ○ other ○ DK ○ REF	○ own ○ rent ○ other ○ DK ○ REF	○ own ○ rent ○ other ○ DK ○ REF	○ own ○ rent ○ other ○ DK ○ REF	○ own ○ rent ○ other ○ DK ○ REF	○ own ○ rent ○ other ○ DK ○ REF	○ own ○ rent ○ other ○ DK ○ REF
C2. How much did you pay per month in rent?	$	$	$	$	$	$	$	$	$	$
C3. Did your rent include utilities?	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF

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	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	Location 7	Location 8	Location 9	Location 10
D1.Was dwelling run by public housing authority?	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF
D2.Was dwelling receiving subsidy that reduced your rent (Section 8)?	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF

[If reside more than 12 mos., then ask E.-F.]

E. Try to recall the conditions in the NEIGHBORHOOD at the time you were living there. Tell me whether your neighborhood had the following...
[INTERVIEWER: ASK EACH QUESTION FOR EACH LOCATION BEFORE MOVING TO NEXT QUESTION]

	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	Location 7	Location 8	Location 9	Location 10
1. People who could get together to solve neighborhood problems.	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF
2. Many neighbors who watch out for my children and property.	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF
3. Many neighbors who knew me and my children by name.	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF
4. Local health clinics or hospitals.	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF
5. Many adult neighbors you and your children could look up to.	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF
6. Good police protection.	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF
7. Many neighbors you could count on for help in times of trouble.	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF

(continued) E. Please try to recall conditions in the neighborhood where you were living at this time. Tell me whether your neighborhood had the following...
[INTERVIEWER: ASK EACH QUESTION FOR EACH LOCATION BEFORE MOVING TO NEXT QUESTION]

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	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	Location 7	Location 8	Location 9	Location 10
[Negative Neighborhood Conditions]										
8. People selling drugs.	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF
9. Gang activity.	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF
10. Homes that were broken into by burglars.	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF
11. People being robbed or mugged often.	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF
12. Many children or teens who got into trouble.	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF
13. People getting beaten or raped.	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF
14. Neighbors who did not accept me or my children because of our race, ethnicity, or income.	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF
15. ***[If YES, to any negative conditions listed above, ask the following]:*** Please describe how your behavior changed, if at all, to reduce the effects of these neighborhood conditions.										
Next, I'd like to talk to you about resources. In your neighborhood were there...										
16. Parks or playgrounds where children could play?	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF	◯ Yes ◯ No ◯ DK ◯ REF
17. ***If Yes***, did your child(ren) use the parks or playgrounds? ***[If No, skip to E19]***	◯ Yes ◯ No ◯ NA ◯ DK ◯ REF	◯ Yes ◯ No ◯ NA ◯ DK ◯ REF	◯ Yes ◯ No ◯ NA ◯ DK ◯ REF	◯ Yes ◯ No ◯ NA ◯ DK ◯ REF	◯ Yes ◯ No ◯ NA ◯ DK ◯ REF	◯ Yes ◯ No ◯ NA ◯ DK ◯ REF	◯ Yes ◯ No ◯ NA ◯ DK ◯ REF	◯ Yes ◯ No ◯ NA ◯ DK ◯ REF	◯ Yes ◯ No ◯ NA ◯ DK ◯ REF	◯ Yes ◯ No ◯ NA ◯ DK ◯ REF

(continued) E. Please try to recall conditions in the neighborhood where you were living at this time. Tell me whether your neighborhood had the following...
[INTERVIEWER: ASK EACH QUESTION FOR EACH LOCATION BEFORE MOVING TO NEXT QUESTION]

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	Location 1	**Location 2**	**Location 3**	**Location 4**	**Location 5**	**Location 6**	**Location 7**	**Location 8**	**Location 9**	**Location 10**
18. ***If Yes***, what impact did using the parks or playgrounds have on your child(ren)?	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF
19. Indoor recreation center?	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF
20. ***If Yes***, did your child(ren) use the indoor recreation center? ***[If No, skip to E22]***	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF
21. ***If Yes***, what impact did using the indoor recreation center have on your child(ren)?	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF
22. Mentoring or counseling centers for children?	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF
23. ***If Yes***, did your child(ren) use the mentoring or counseling centers? ***[If No, skip to E25]***	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF
24. ***If Yes***, what impact did using the mentoring or counseling centers have on your child(ren)?	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF	○ Negative ○ None ○ Positive ○ NA ○ DK ○ REF
25. Were you active in any organizations located in the neighborhood, such as block clubs, tenant groups, religious organizations, and the like?	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF

F. Next I'd like to ask you about your employment, assets, and sources of income when you lived in this place.
[INTERVIEWER: ASK EACH QUESTION FOR EACH LOCATION BEFORE MOVING TO NEXT QUESTION]

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	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	Location 7	Location 8	Location 9	Location 10
[repeat address info]										
1. Were you employed? ***[If No, skip to F5]***	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF	○ Yes ○ No ○ DK ○ REF
2. How many hours per week did you usually work (total for all jobs)?										
3. How many weeks per year did you usually work (total for all jobs)?										
4. How much did you usually earn, on average, per hour?	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.
5a. Was anyone else in the household employed?	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF	○ Yes ○ No ○ NA ○ DK ○ REF
5b. ***If Yes***, number of others employed in household. If DK enter -1; if REF enter -2.										
6. Did you or anyone in your household receive:										
a. SSI (Supplemental Security Income)?	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF
b. Unemployment Compensation?	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF
c. Social Security?	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF
d. Alimony or child support?	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF
e. Food stamps?	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF
f. AFDC, TANF, or welfare?	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF
g. Death (survivor) benefits?	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF
h. Student grants/scholarships?	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF
i. Other income NOT from employment (specify):?	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF	○Y ○N ○DK ○REF

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[INTERVIEWER: ASK EACH QUESTION FOR EACH LOCATION BEFORE MOVING TO NEXT QUESTION]

[F. Income and assets continued]	**Location 1**	**Location 2**	**Location 3**	**Location 4**	**Location 5**	**Location 6**	**Location 7**	**Location 8**	**Location 9**	**Location 10**
7. Did you have:										
a. A checking account?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
b. A savings account?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
c. Individual Retirement Account?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
d. Retirement or pension plan?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
e. Stocks, bond, mutual funds?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
f. Life insurance?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
g. Business account or assets?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
h. Health insurance for you and your child?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
i. Car, truck or van you owned free and clear?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
8. During this time did you ever:										
a. Lose a job and were unemployed for a month or more?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
b. Lose your health insurance?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
c. Have a major illness or injury?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
d. Have too little money to buy enough food for your family?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
e. Have your electricity, gas, or phone service cut off?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF
f. Get evicted from your home?	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF	○ Y ○ N ○ DK ○ REF

[F. Income and assets continued]	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	Location 7	Location 8	Location 9	Location 10
9. During this time, did you ever have difficulty paying **all** your regular monthly bills on time (e.g., rent or mortgage, utilities, credit cards or other debts and loans)? 1. Never ***[IF NEVER SKIP PAST F10]*** 2. Some of the time 3. Most of the time 4. All of the time DK. Don't know	○ 1 ○ 2 ○ 3 ○ 4 ○ DK	○ 1 ○ 2 ○ 3 ○ 4 ○ DK	○ 1 ○ 2 ○ 3 ○ 4 ○ DK	○ 1 ○ 2 ○ 3 ○ 4 ○ DK	○ 1 ○ 2 ○ 3 ○ 4 ○ DK	○ 1 ○ 2 ○ 3 ○ 4 ○ DK	○ 1 ○ 2 ○ 3 ○ 4 ○ DK	○ 1 ○ 2 ○ 3 ○ 4 ○ DK	○ 1 ○ 2 ○ 3 ○ 4 ○ DK	○ 1 ○ 2 ○ 3 ○ 4 ○ DK
10. Please describe the circumstances surrounding the difficulty paying your bills. ***[INTERVIEWER FILL IN TEXT BOX]***										

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[CONTINUE WITH HOMELESSNESS HISTORY MODULE ONCE YOU'VE COMPLETED THIS SECTION]

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HH1. Since **[KEY NAME CHILD #1]**: [the oldest child when you first moved into DHA public housing] was born, have you and your children ever stayed in a facility for the homeless, such as a shelter, hotel, church, or mission, because you had no place to live?

○ No ○ Yes ○ DK ○ REF

[If NO, skip to next question HH2]

HH1num. How many times did you stay in such a facility? [ ][ ] number of times

	[If YES, ask: When was the first/next time this occurred?] Month / Year	**How long were you in such a facility the first/next time this occurred?**	
Incident #1:	[ ][ ] / [ ][ ][ ][ ]	[ ][ ] months	[ ][ ] days
Incident #2:	[ ][ ] / [ ][ ][ ][ ]	[ ][ ] months	[ ][ ] days
Incident #3:	[ ][ ] / [ ][ ][ ][ ]	[ ][ ] months	[ ][ ] days
Incident #4:	[ ][ ] / [ ][ ][ ][ ]	[ ][ ] months	[ ][ ] days
Incident #5:	[ ][ ] / [ ][ ][ ][ ]	[ ][ ] months	[ ][ ] days

HH2. Since [**KEY NAME CHILD #1**] was born, have you and your children ever stayed outdoors, in a car, or with friends or relatives because you had no place to live?

○ No ○ Yes ○ DK ○ REF

[If NO, skip to next module CHILD ROSTER]

HH2num. How many times did this happen to you? [ ][ ] number of times

	[If YES, ask: When was the first/next time this occurred?] Month / Year	**For how long were you in this situation?**	
Incident #1:	[ ][ ] / [ ][ ][ ][ ]	[ ][ ] months	[ ][ ] days
Incident #2:	[ ][ ] / [ ][ ][ ][ ]	[ ][ ] months	[ ][ ] days
Incident #3:	[ ][ ] / [ ][ ][ ][ ]	[ ][ ] months	[ ][ ] days
Incident #4:	[ ][ ] / [ ][ ][ ][ ]	[ ][ ] months	[ ][ ] days
Incident #5:	[ ][ ] / [ ][ ][ ][ ]	[ ][ ] months	[ ][ ] days

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Now for the rest of this interview I'd like to focus only on the children who lived with you in DHA housing for at least a year when they were under age 18. Earlier you told me that these children were: ***[INTERVIEWER: REVERIFY WITH RESPONDENT the names listed in row A below; KEY CHILD should always be listed as #1. ASK EACH QUESTION ACROSS FOR ALL CHILDREN BEFORE MOVING ON TO THE NEXT QUESTION]***

C1. I'd like to ask several things about each of these children.

	Child 1	**Child 2**	**Child 3**	**Child 4**	**Child 5**	**Child 6**
a. Name of **CHILD**						
b. Gender	○ Male ○ Female	○ Male ○ Female	○ Male ○ Female	○ Male ○ Female	○ Male ○ Female	○ Male ○ Female
c. Which of the following best describes **CHILD**'s ethnic background? 1. African-American / Black 2. Latino / Hispanic 96. Other (specify) 98. DK 99. REF	○ 1 ○ 2 ○ other ______ ○ DK ○ REF	○ 1 ○ 2 ○ other ______ ○ DK ○ REF	○ 1 ○ 2 ○ other ______ ○ DK ○ REF	○ 1 ○ 2 ○ other ______ ○ DK ○ REF	○ 1 ○ 2 ○ other ______ ○ DK ○ REF	○ 1 ○ 2 ○ other ______ ○ DK ○ REF
d. Was **CHILD** born in the U.S.? ***If NO***: How long has **CHILD** lived in U.S.?	○ No ○ Yes ○ DK ○ REF __ __ years	○ No ○ Yes ○ DK ○ REF __ __ years	○ No ○ Yes ○ DK ○ REF __ __ years	○ No ○ Yes ○ DK ○ REF __ __ years	○ No ○ Yes ○ DK ○ REF __ __ years	○ No ○ Yes ○ DK ○ REF __ __ years
e. When did **CHILD** live with you? From *(age at Starting Date in years; birth age coded as "0")* To *(age at Ending Date in years)*	 __ __ age __ __ age	 __ __ age __ __ age	 __ __ age __ __ age	 __ __ age __ __ age	 __ __ age __ __ age	 __ __ age __ __ age

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
f. Was there any time when **CHILD *DID NOT*** live with you for 6 months or more? ***If NO***, ask for next child. ***If YES***: When did **CHILD *NOT*** live with you? ***INTERVIEWER: IF FROM BIRTH ENTER "0" FOR CHILD'S AGE***	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF
From *(age at Starting Date in years)*	age	age	age	age	age	age
To *(age at Ending Date in years)*	age	age	age	age	age	age
And ***WHERE*** was **CHILD** living during this period? 1. with other parent 2. with friends or relatives 3. in a hospital 4. in a foster home 5. in a detention center or jail 6. child is deceased 96. other (specify) 98. DK 99. REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ other ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ other ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ other ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ other ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ other ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ other ○ DK ○ REF

[INTERVIEWER: after all children completed, continue with BIOLOGICAL FATHER/MOTHER MODULE]

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[Interviewers, if biological father is the same for all children, ask question for each child before continuing with the next question. If fathers are different, please ask questions in sequence for each child before continuing with next child.]

Now I'd like to ask about the parents and other important adults in your children's lives.

	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
F1. Who is **CHILD's** biological father? [first name]						
F2. Since **CHILD** was born, has **BIOLOGICAL FATHER** always lived in the household with you and your children? ***[IF YES, skip to F7]*** ***[IF NO, continue with F3-F9]***	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF
F3. When did **FATHER** live in the household for the first time? NO=Never lived in household ***[SKIP TO F4]*** YES=Lived in household from: Start date (mo/yr) End date (mo/yr)	○ No ○ Yes ○ NA ○ DK ○ REF Start __ __ / __ __ End __ __ / __ __	○ No ○ Yes ○ NA ○ DK ○ REF Start __ __ / __ __ End __ __ / __ __	○ No ○ Yes ○ NA ○ DK ○ REF Start __ __ / __ __ End __ __ / __ __	○ No ○ Yes ○ NA ○ DK ○ REF Start __ __ / __ __ End __ __ / __ __	○ No ○ Yes ○ NA ○ DK ○ REF Start __ __ / __ __ End __ __ / __ __	○ No ○ Yes ○ NA ○ DK ○ REF Start __ __ / __ __ End __ __ / __ __
Second time lived in household? Start date (mo/yr) End date (mo/yr)	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __
Third time lived in household? Start date (mo/yr) End date (mo/yr)	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __
F4. What is the ***primary reason*** that **FATHER does/did not** live in the household? 1. Divorce or legal separation 2. Hospitalized or in mental institution 3. In jail or prison 4. Deceased 5. Violent or abusive behavior 6. Moved out of town 7. Alcohol or drug abuse 8. Served in the military 9. Father was not married to or cohabiting with CHILD's mother. 96. Other (specify) 98. DK 99. REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ Other ____ ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ Other ____ ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ Other ____ ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ Other ____ ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ Other ____ ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ Other ____ ○ DK ○ REF

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
F5. When **FATHER** did not live in the household, how often did he provide financial support for **CHILD**?	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ REF
F6. Overall, how often did/does **CHILD** see **FATHER**, on average?	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ NA ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ NA ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ NA ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ NA ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ NA ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ NA ○ REF
F7. Overall, would you say that **FATHER'S** influence on **CHILD** has been: 1. Very positive 2. Somewhat positive 3. Neither positive or negative/no influence 4. Somewhat negative 5. Very negative ***(NA if not involved with child)***	○ Very positive ○ Somewhat positive ○ No influence ○ Somewhat negative ○ Very negative ○ DK ○ NA ○ REF	○ Very positive ○ Somewhat positive ○ No influence ○ Somewhat negative ○ Very negative ○ DK ○ NA ○ REF	○ Very positive ○ Somewhat positive ○ No influence ○ Somewhat negative ○ Very negative ○ DK ○ NA ○ REF	○ Very positive ○ Somewhat positive ○ No influence ○ Somewhat negative ○ Very negative ○ DK ○ NA ○ REF	○ Very positive ○ Somewhat positive ○ No influence ○ Somewhat negative ○ Very negative ○ DK ○ NA ○ REF	○ Very positive ○ Somewhat positive ○ No influence ○ Somewhat negative ○ Very negative ○ DK ○ NA ○ REF
F8a. Who is the **CHILD**'s **BIOLOGICAL MOTHER**?						
F8b. Since **CHILD** was born, has **BIOLOGICAL MOTHER** always lived with this child in the same household? ***[IF YES, Skip to F12]*** ***[IF NO, Continue with F9-F11]***	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF	○ No ○ Yes ○ DK ○ REF
F9. When did **MOTHER** live in the household with **CHILD** for the first time? No: Never lived with **CHILD** ***[SKIP TO F10]*** Yes: Lived with **CHILD** from: Start date (mo/yr) End date (mo/yr)	○ No ○ Yes ○ NA ○ DK ○ REF Start / End /	○ No ○ Yes ○ NA ○ DK ○ REF Start / End /	○ No ○ Yes ○ NA ○ DK ○ REF Start / End /	○ No ○ Yes ○ NA ○ DK ○ REF Start / End /	○ No ○ Yes ○ NA ○ DK ○ REF Start / End /	○ No ○ Yes ○ NA ○ DK ○ REF Start / End /
Second time lived with **CHILD**: Start date (mo/yr) End date (mo/yr)	Start / End /	Start / End /	Start / End /	Start / End /	Start / End /	Start / End /
Third time lived with **CHILD**: Start date (mo/yr) End date (mo/yr)	Start / End /	Start / End /	Start / End /	Start / End /	Start / End /	Start / End /

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
F10. What is the ***primary reason*** that **MOTHER does/did not** live in the household? 1. Divorce or legal separation 2. Hospitalized or in mental institution 3. In jail or prison 4. Deceased 5. Violent or abusive behavior 6. Moved out of town 7. Alcohol or drug abuse 8. Served in the military 9. Mother not married to or cohabiting with CHILD's father 96. Other (specify) 98. DK 99. REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ Other ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ Other ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ Other ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ Other ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ Other ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ Other ◯ DK ◯ REF
F11. Overall, how often did/does **CHILD** see **MOTHER**, on average?	◯ Never ◯ Rarely, only a few times ◯ Once a year ◯ Couple of times a year ◯ Most every month ◯ Weekly or more often ◯ DK ◯ NA ◯ REF	◯ Never ◯ Rarely, only a few times ◯ Once a year ◯ Couple of times a year ◯ Most every month ◯ Weekly or more often ◯ DK ◯ NA ◯ REF	◯ Never ◯ Rarely, only a few times ◯ Once a year ◯ Couple of times a year ◯ Most every month ◯ Weekly or more often ◯ DK ◯ NA ◯ REF	◯ Never ◯ Rarely, only a few times ◯ Once a year ◯ Couple of times a year ◯ Most every month ◯ Weekly or more often ◯ DK ◯ NA ◯ REF	◯ Never ◯ Rarely, only a few times ◯ Once a year ◯ Couple of times a year ◯ Most every month ◯ Weekly or more often ◯ DK ◯ NA ◯ REF	◯ Never ◯ Rarely, only a few times ◯ Once a year ◯ Couple of times a year ◯ Most every month ◯ Weekly or more often ◯ DK ◯ NA ◯ REF
F12. Overall, would you say that **MOTHER'S** influence on **CHILD** has been: 1. Very positive 2. Somewhat positive 3. Neither positive or negative/no influence 4. Somewhat negative 5. Very negative ***(NA if not involved with CHILD)***	◯ Very positive ◯ Somewhat positive ◯ No influence ◯ Somewhat negative ◯ Very negative ◯ DK ◯ NA ◯ REF	◯ Very positive ◯ Somewhat positive ◯ No influence ◯ Somewhat negative ◯ Very negative ◯ DK ◯ NA ◯ REF	◯ Very positive ◯ Somewhat positive ◯ No influence ◯ Somewhat negative ◯ Very negative ◯ DK ◯ NA ◯ REF	◯ Very positive ◯ Somewhat positive ◯ No influence ◯ Somewhat negative ◯ Very negative ◯ DK ◯ NA ◯ REF	◯ Very positive ◯ Somewhat positive ◯ No influence ◯ Somewhat negative ◯ Very negative ◯ DK ◯ NA ◯ REF	◯ Very positive ◯ Somewhat positive ◯ No influence ◯ Somewhat negative ◯ Very negative ◯ DK ◯ NA ◯ REF
F13. Since **CHILD** was born, have there been any ***men other than*** the **BIOLOGICAL FATHER** who were very important influences - either good or bad - on **CHILD**? ***[IF NO, skip to the next child or end module]*** ***[IF YES, ask F14-F17]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
F14. I'd like you to think of the adult man other than the father who was the **most** important influence on **CHILD**. How would you describe the relationship between this man and **CHILD**? 1. Adoptive father 2. Stepfather 3. Foster care father 4. Grandfather 5. Uncle 6. Brother 7. Boyfriend/Partner of the mother 8. Godfather 9. Minister, priest, or religious leader 10. Teacher 11. Coach 12. Employer 13. Volunteer mentor 14. Policeman or court official 15. Neighbor 96. Other, specify 97. NA 98. DK 99. REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ other ○ NA ○ DK ○ REF
F15. Did this man ever live in the household with **CHILD**? NO=Never lived with CHILD ***[SKIP TO F16]*** YES=Lived with CHILD from: FIRST TIME: Start date (mo/yr) End date (mo/yr)	○ No ○ Yes Start __ __ / __ __ End __ __ / __ __	○ No ○ Yes Start __ __ / __ __ End __ __ / __ __	○ No ○ Yes Start __ __ / __ __ End __ __ / __ __	○ No ○ Yes Start __ __ / __ __ End __ __ / __ __	○ No ○ Yes Start __ __ / __ __ End __ __ / __ __	○ No ○ Yes Start __ __ / __ __ End __ __ / __ __
SECOND TIME: Start date (mo/yr) End date (mo/yr)	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __
THIRD TIME: Start date (mo/yr) End date (mo/yr)	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __	Start __ __ / __ __ End __ __ / __ __
F16. When this man was in contact with **CHILD**, how often did he provide financial support for **CHILD**?	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ NA ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ NA ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ NA ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ NA ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ NA ○ REF	○ Never ○ Rarely, only a few times ○ Once a year ○ Couple of times a year ○ Most every month ○ Weekly or more often ○ DK ○ NA ○ REF

	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
F17. Overall, would you say that this man's influence on **CHILD** has been: 1. Very positive 2. Somewhat positive 3. Neither positive or negative/no influence 4. Somewhat negative 5. Very negative ***[NA if not involved with CHILD]***	○ Very positive ○ Somewhat positive ○ No influence ○ Somewhat negative ○ Very negative ○ NA ○ DK ○ REF	○ Very positive ○ Somewhat positive ○ No influence ○ Somewhat negative ○ Very negative ○ NA ○ DK ○ REF	○ Very positive ○ Somewhat positive ○ No influence ○ Somewhat negative ○ Very negative ○ NA ○ DK ○ REF	○ Very positive ○ Somewhat positive ○ No influence ○ Somewhat negative ○ Very negative ○ NA ○ DK ○ REF	○ Very positive ○ Somewhat positive ○ No influence ○ Somewhat negative ○ Very negative ○ NA ○ DK ○ REF	○ Very positive ○ Somewhat positive ○ No influence ○ Somewhat negative ○ Very negative ○ NA ○ DK ○ REF

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CHILD'S HEALTH OUTCOMES MODULE

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In the next several sections of the survey, I will be asking you questions about your child(ren) in terms of their health, their experiences at school, behavior, employment, and their own marital and childbearing histories. Since we are speaking to many different families, some of the questions I will be asking may not apply to your child(ren). When that happens, you just need to let me know that it is not applicable and we will move on to the next question. I would like to begin by asking you some questions about your child(ren)'s health.

	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name of Child						
Age of Child						
H1. Were any of your **CHILDREN** born prematurely (less than 32 weeks)?	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H2. Did any of your **CHILDREN** weigh less than five pounds at birth?	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H3. Did any of your **CHILDREN** have any other health problems at birth? ***[IF NO, SKIP TO H5]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H4. ***If Yes***, what were these other health problems at birth? ***[INTERVIEWER FILL IN TEXT BOX]***						
H5. While growing up, did all of your **CHILDREN** receive regular, routine medical care such as check-ups and immunizations?	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H6. Has your doctor or health care provider ever said that any of your **CHILDREN** have asthma? ***[IF NO, SKIP TO H13]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H7. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with asthma?						
H8. ***If Yes***, has **CHILD** ever been seen in the emergency room because of **his/her** asthma? ***[IF NO, SKIP TO H10]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H9. ***If Yes***, how many times has **CHILD** been seen in the emergency room because of **his/her** asthma?						
H10. ***If Yes***, has **CHILD** ever been hospitalized because of **his/her** asthma? ***[IF NO, SKIP TO H12]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H11. ***If Yes***, how many times has **CHILD** been hospitalized because of **his/her** asthma?						

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
H12. How old was **CHILD** when **his/her** asthma was under control? ***[IF NOT UNDER CONTROL, ENTER "97"]***						
H13. Has your doctor or health care provider ever said that any of your **CHILDREN** have elevated levels of lead in the blood? ***[IF NO, SKIP TO H15]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H14. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with elevated levels of lead in the blood?						
H15. Has your doctor or health care provider ever said that any of your **CHILDREN** have tuberculosis (TB)? ***[IF NO, SKIP TO H18]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H16. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with tuberculosis (TB)?						
H17. ***If Yes***, how old was **CHILD** when **his/her** tuberculosis was under control? ***[IF NOT UNDER CONTROL, ENTER "97"]***						
H18. Has your doctor or health care provider ever said that any of your **CHILDREN** were overweight or obese? ***[IF NO, SKIP TO H22]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H19. ***If Yes***, how old was **CHILD** when your doctor or health care provider first told you **he/she** was overweight or obese?						
H20. Has **CHILD** returned to and maintained a normal, healthy weight? ***[IF NO, SKIP TO H22]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H21. ***If Yes***, how old was **CHILD** when **he/she** returned to a normal, healthy weight? ***[IF NOT YET RETURNED TO HEALTHY WEIGHT, ENTER "97"]***						
H22. Has your doctor or health care provider ever said that any of your **CHILDREN** have mental retardation? ***[IF NO, SKIP TO H24]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H23. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with mental retardation?						

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
H24. Has your doctor or health care provider ever said that any of your **CHILDREN** have cerebral palsy? ***[IF NO, SKIP TO H28]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H25. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with cerebral palsy?						
H26. Has **CHILD** gotten **his/her** cerebral palsy under control? ***[IF NO, SKIP TO H28]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H27. ***If Yes***, how old was **CHILD** when **his/her** cerebral palsy was under control? ***[IF NOT UNDER CONTROL, ENTER "97"]***						
H28. Has your doctor or health care provider ever said that any of your **CHILDREN** have autism spectrum disorder? ***[IF NO, SKIP TO H30]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H29. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with autism spectrum disorder?						
H30. Has your doctor or health care provider ever said that any of your **CHILDREN** have epilepsy? ***[IF NO, SKIP TO H34]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H31. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with epilepsy?						
H32. Has **CHILD** gotten **his/her** epilepsy under control? ***[IF NO, SKIP TO H34]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H33. ***If Yes***, how old was **CHILD** when **his/her** epilepsy was under control? ***[IF NOT UNDER CONTROL, ENTER "97"]***						
H34. Has your doctor or health care provider ever said that any of your **CHILDREN** have hyperactivity, ADHD, or ADD? ***[IF NO, SKIP TO H38]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H35. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with hyperactivity, ADHD, or ADD?						
H36. Has **CHILD** gotten **his/her** hyperactivity, ADHD, or ADD under control? ***[IF NO, SKIP TO H38]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF

	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
H37. ***If Yes***, how old was **CHILD** when **his/her** hyperactivity, ADHD, or ADD was under control? ***[IF NOT UNDER CONTROL, ENTER "97"]***	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
H38. Has your doctor or health care provider ever said that any of your **CHILDREN** have a developmental delay? ***[IF NO, SKIP TO H40]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H39. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with a developmental delay?	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
H40. Has your doctor or health care provider ever said that any of your **CHILDREN** have a learning disability? ***[IF NO, SKIP TO H42]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H41. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with a learning disability?	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
[Ask all remaining questions only if child is age 9 or older, otherwise skip to next module.]						
H42. Was **CHILD** early, on time, or late in reaching puberty?	○ early ○ on time ○ late ○ DK ○ NA	○ early ○ on time ○ late ○ DK ○ NA	○ early ○ on time ○ late ○ DK ○ NA	○ early ○ on time ○ late ○ DK ○ NA	○ early ○ on time ○ late ○ DK ○ NA	○ early ○ on time ○ late ○ DK ○ NA
H43. Have any of your **CHILDREN** ever seen a psychiatrist, psychologist, or a counselor? ***[IF NO, SKIP TO NEXT CHILD OR END HEALTH MODULE]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H44. ***If Yes***, when was the first time; last time **CHILD** saw a psychiatrist, psychologist, or a counselor?	First (mo/yr) ☐☐ / ☐☐ Last (mo/yr) ☐☐ / ☐☐	First (mo/yr) ☐☐ / ☐☐ Last (mo/yr) ☐☐ / ☐☐	First (mo/yr) ☐☐ / ☐☐ Last (mo/yr) ☐☐ / ☐☐	First (mo/yr) ☐☐ / ☐☐ Last (mo/yr) ☐☐ / ☐☐	First (mo/yr) ☐☐ / ☐☐ Last (mo/yr) ☐☐ / ☐☐	First (mo/yr) ☐☐ / ☐☐ Last (mo/yr) ☐☐ / ☐☐
H45. Has a psychiatrist, psychologist, or counselor ever said that any of your **CHILDREN** have post-traumatic stress or PTSD? ***[IF NO, SKIP TO H49]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H46. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with PTSD?	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
H47. Has **CHILD** gotten **his/her** PTSD under control? ***[IF NO, SKIP TO H49]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
H48. ***If Yes***, how old was **CHILD** when **his/her** PTSD was under control? ***[IF NOT UNDER CONTROL, ENTER "97"]***	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
H49. Has a psychiatrist, psychologist, or counselor ever said that any of your **CHILDREN** have problems with depression? ***[IF NO, SKIP TO H53]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
H50. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with depression?						
H51. Has **CHILD** gotten **his/her** depression under control? ***[IF NO, SKIP TO H53]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
H52. ***If Yes***, how old was **CHILD** when **his/her** depression was under control? ***[IF NOT UNDER CONTROL, ENTER "97"]***						
H53. Has a psychiatrist, psychologist, or counselor ever said that any of your CHILDREN have anxiety problems? ***[IF NO, SKIP TO NEXT CHILD OR END HEALTH MODULE]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
H54. ***If Yes***, how old was **CHILD** when **he/she** was first diagnosed with anxiety problems?						
H55. Has **CHILD** gotten **his/her** anxiety problems under control? ***[IF NO, SKIP TO NEXT CHILD OR END HEALTH MODULE]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
H56. ***If Yes***, how old was **CHILD** when **his/her** anxiety problems were under control? ***[IF NOT UNDER CONTROL, ENTER "97"]***						

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Interviewer: Complete for children ages 5 and older, starting with the oldest child

Now I am going to ask you about your child(ren)'s experiences in school. As far as you know...

	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
ED1. Did any of your **CHILDREN** ever attend an official, government-sponsored Head Start program? ***[IF NO, SKIP TO ED5]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
ED2. ***If Yes***, is/was this Head Start program located in the neighborhood where you live/lived?	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
ED3. ***If Yes***, at what age did **CHILD** first attend a Head Start program?						
ED4. ***If Yes***, how long did **CHILD** attend a Head Start program?	years months	years months	years months	years months	years months	years months
ED5. Aside from Head Start, did any of your **CHILDREN** ever go to a nursery school, preschool, or child care center before starting school? ***[IF NO, SKIP TO ED8]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
ED6. ***If Yes***, at what age did **CHILD** first attend a nursery school, preschool, or child care center?						
ED7. ***If Yes***, how long did **CHILD** attend all the nursery schools, preschools, and child care centers that she/he went to?	years months	years months	years months	years months	years months	years months
ED8. At what age did your **CHILDREN** start school? ***(Use Kindergarten; if did not attend Kindergarten, use first grade)***						
ED9. How many schools have your **CHILDREN** attended since they first started school? ***(Record the number of schools attended for each level of school; use "00" if not applicable)***	elementary middle high	elementary middle high	elementary middle high	elementary middle high	elementary middle high	elementary middle high
ED10. Did any of your **CHILDREN** attend elementary school in the neighborhood? ***(IF NO, list name, city and state of school)***	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
ED11. Did any of your **CHILDREN** attend middle school in the neighborhood? ***(IF NO, list name, city and state of school)***	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*
ED12. Did any of your **CHILDREN** attend high school in the neighborhood? ***(IF NO, list name, city and state of school)***	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*	◯ Yes ◯ No *name & location*
ED13. Are any of your **CHILDREN** currently enrolled in school? ***[IF NO, SKIP TO ED15]*** ***[IF CHILD NOT YET IN ELEMENTARY SCHOOL, SKIP TO ED19]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
ED14. ***If Yes***, is this a regular public school, a magnet school, a charter school, a private nonreligious school, a religious school, home schooling, or some other type of special program? ***[SKIP TO ED18]***	◯ Public school ◯ Magnet school ◯ Charter school ◯ Private-nonreligious ◯ Religious school ◯ Home schooling ◯ Other, specify	◯ Public school ◯ Magnet school ◯ Charter school ◯ Private-nonreligious ◯ Religious school ◯ Home schooling ◯ Other, specify	◯ Public school ◯ Magnet school ◯ Charter school ◯ Private-nonreligious ◯ Religious school ◯ Home schooling ◯ Other, specify	◯ Public school ◯ Magnet school ◯ Charter school ◯ Private-nonreligious ◯ Religious school ◯ Home schooling ◯ Other, specify	◯ Public school ◯ Magnet school ◯ Charter school ◯ Private-nonreligious ◯ Religious school ◯ Home schooling ◯ Other, specify	◯ Public school ◯ Magnet school ◯ Charter school ◯ Private-nonreligious ◯ Religious school ◯ Home schooling ◯ Other, specify
ED15. ***If No***, was the school most recently attended a regular public school, a magnet school, a charter school, a private nonreligious school, a religious school, home schooled or some other type of special program?	◯ Public school ◯ Magnet school ◯ Charter school ◯ Private-nonreligious ◯ Religious school ◯ Home schooled ◯ Other, specify ◯ NA ◯ DK ◯ REF	◯ Public school ◯ Magnet school ◯ Charter school ◯ Private-nonreligious ◯ Religious school ◯ Home schooled ◯ Other, specify ◯ NA ◯ DK ◯ REF	◯ Public school ◯ Magnet school ◯ Charter school ◯ Private-nonreligious ◯ Religious school ◯ Home schooled ◯ Other, specify ◯ NA ◯ DK ◯ REF	◯ Public school ◯ Magnet school ◯ Charter school ◯ Private-nonreligious ◯ Religious school ◯ Home schooled ◯ Other, specify ◯ NA ◯ DK ◯ REF	◯ Public school ◯ Magnet school ◯ Charter school ◯ Private-nonreligious ◯ Religious school ◯ Home schooled ◯ Other, specify ◯ NA ◯ DK ◯ REF	◯ Public school ◯ Magnet school ◯ Charter school ◯ Private-nonreligious ◯ Religious school ◯ Home schooled ◯ Other, specify ◯ NA ◯ DK ◯ REF
ED16. ***If not in school***, what is the primary reason **CHILD** doesn't attend school? 1. Health problems 2. Dropped out to help support family 3. Dropped out because didn't like school 4. Dropped out to take a job 5. Parental decision 6. Pregnancy/childbirth 7. Expelled 8. Graduated 96. Other, specify 97. NA 98. DK 99. REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ Other, specify ◯ NA ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ Other, specify ◯ NA ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ Other, specify ◯ NA ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ Other, specify ◯ NA ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ Other, specify ◯ NA ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ Other, specify ◯ NA ◯ DK ◯ REF

	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
ED17. ***If not in school***, do you expect that **CHILD** will return to school?	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
ED18. What is the highest grade **CHILD** has completed so far?	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
ED19. What is the highest grade that you think **CHILD** will go in school? 1. 8th grade or less 2. Some high school 3. GED 4. High school diploma 5. Some college or technical school 6. College degree 7. Graduate or professional degree 98. DK 99. REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ DK ◯ REF
ED20. Are/were any of your **CHILDREN** on the honor roll or have other academic achievements? ***[IF NO, SKIP TO ED22]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
ED21. ***If Yes***, was this when **CHILD** was in elementary school, middle school or high school? ***(Fill in all that apply)***	◯ elementary ◯ middle ◯ high	◯ elementary ◯ middle ◯ high	◯ elementary ◯ middle ◯ high	◯ elementary ◯ middle ◯ high	◯ elementary ◯ middle ◯ high	◯ elementary ◯ middle ◯ high
ED22. What kind of grades did **CHILD** generally earn while attending elementary school? All A's Mostly A's and B's All B's Mostly B's and C's All C's Mostly C's and D's Grades D or below Other, specify NA DK REF	◯ All A's ◯ Mostly A's and B's ◯ All B's ◯ Mostly B's and C's ◯ All C's ◯ Mostly C's and D's ◯ Grades D or below ◯ Other, specify ☐ ◯ NA ◯ DK ◯ REF	◯ All A's ◯ Mostly A's and B's ◯ All B's ◯ Mostly B's and C's ◯ All C's ◯ Mostly C's and D's ◯ Grades D or below ◯ Other, specify ☐ ◯ NA ◯ DK ◯ REF	◯ All A's ◯ Mostly A's and B's ◯ All B's ◯ Mostly B's and C's ◯ All C's ◯ Mostly C's and D's ◯ Grades D or below ◯ Other, specify ☐ ◯ NA ◯ DK ◯ REF	◯ All A's ◯ Mostly A's and B's ◯ All B's ◯ Mostly B's and C's ◯ All C's ◯ Mostly C's and D's ◯ Grades D or below ◯ Other, specify ☐ ◯ NA ◯ DK ◯ REF	◯ All A's ◯ Mostly A's and B's ◯ All B's ◯ Mostly B's and C's ◯ All C's ◯ Mostly C's and D's ◯ Grades D or below ◯ Other, specify ☐ ◯ NA ◯ DK ◯ REF	◯ All A's ◯ Mostly A's and B's ◯ All B's ◯ Mostly B's and C's ◯ All C's ◯ Mostly C's and D's ◯ Grades D or below ◯ Other, specify ☐ ◯ NA ◯ DK ◯ REF
ED23. What kind of grades did **CHILD** generally earn while attending middle school? All A's Mostly A's and B's All B's Mostly B's and C's All C's Mostly C's and D's Grades D or below Other, specify NA DK REF	◯ All A's ◯ Mostly A's and B's ◯ All B's ◯ Mostly B's and C's ◯ All C's ◯ Mostly C's and D's ◯ Grades D or below ◯ Other, specify ☐ ◯ NA ◯ DK ◯ REF	◯ All A's ◯ Mostly A's and B's ◯ All B's ◯ Mostly B's and C's ◯ All C's ◯ Mostly C's and D's ◯ Grades D or below ◯ Other, specify ☐ ◯ NA ◯ DK ◯ REF	◯ All A's ◯ Mostly A's and B's ◯ All B's ◯ Mostly B's and C's ◯ All C's ◯ Mostly C's and D's ◯ Grades D or below ◯ Other, specify ☐ ◯ NA ◯ DK ◯ REF	◯ All A's ◯ Mostly A's and B's ◯ All B's ◯ Mostly B's and C's ◯ All C's ◯ Mostly C's and D's ◯ Grades D or below ◯ Other, specify ☐ ◯ NA ◯ DK ◯ REF	◯ All A's ◯ Mostly A's and B's ◯ All B's ◯ Mostly B's and C's ◯ All C's ◯ Mostly C's and D's ◯ Grades D or below ◯ Other, specify ☐ ◯ NA ◯ DK ◯ REF	◯ All A's ◯ Mostly A's and B's ◯ All B's ◯ Mostly B's and C's ◯ All C's ◯ Mostly C's and D's ◯ Grades D or below ◯ Other, specify ☐ ◯ NA ◯ DK ◯ REF

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
ED24. What kind of grades did **CHILD** generally earn while attending high school? All A's Mostly A's and B's All B's Mostly B's and C's All C's Mostly C's and D's Grades D or below Other, specify NA DK REF	All A's Mostly A's and B's All B's Mostly B's and C's All C's Mostly C's and D's Grades D or below Other, specify NA DK REF	All A's Mostly A's and B's All B's Mostly B's and C's All C's Mostly C's and D's Grades D or below Other, specify NA DK REF	All A's Mostly A's and B's All B's Mostly B's and C's All C's Mostly C's and D's Grades D or below Other, specify NA DK REF	All A's Mostly A's and B's All B's Mostly B's and C's All C's Mostly C's and D's Grades D or below Other, specify NA DK REF	All A's Mostly A's and B's All B's Mostly B's and C's All C's Mostly C's and D's Grades D or below Other, specify NA DK REF	All A's Mostly A's and B's All B's Mostly B's and C's All C's Mostly C's and D's Grades D or below Other, specify NA DK REF
ED25. Did any of your **CHILDREN** participate in clubs or activities at school? ***[IF NO, SKIP TO ED27]***	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF
ED26. ***If Yes***, was this when **CHILD** was in elementary school, middle school or high school? ***(Fill in all that apply)***	elementary middle high	elementary middle high	elementary middle high	elementary middle high	elementary middle high	elementary middle high
ED27. Did any of your **CHILDREN** participate in sports teams at school? ***[IF NO, SKIP TO ED29]***	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF
ED28. ***If Yes***, was this when **CHILD** was in elementary school, middle school or high school? ***(Fill in all that apply)***	elementary middle high	elementary middle high	elementary middle high	elementary middle high	elementary middle high	elementary middle high
ED29. Did any of your **CHILDREN** ever attend a special or advanced class or school for gifted students? ***[IF NO, SKIP TO ED32]***	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF
ED30. ***If Yes***, how old was **CHILD** when she/he first attended a special or advanced class or school for gifted students?						
ED31. ***If Yes***, when did **CHILD** attend a special or advanced class or school for gifted students? In what grade did this begin? In what grade did this end?	Starting grade Ending grade Starting grade Ending grade	Starting grade Ending grade Starting grade Ending grade	Starting grade Ending grade Starting grade Ending grade	Starting grade Ending grade Starting grade Ending grade	Starting grade Ending grade Starting grade Ending grade	Starting grade Ending grade Starting grade Ending grade
ED32. Have any of your **CHILDREN** ever been classified by school personnel as needing special education? ***[IF NO, SKIP TO ED35]***	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF	No Yes NA DK REF

	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
ED33. ***If Yes***, at what age was **CHILD** first classified as needing special education?						
ED34. ***If Yes***, when did **CHILD** attend special education classes?	Starting grade Ending grade Starting grade Ending grade	Starting grade Ending grade Starting grade Ending grade	Starting grade Ending grade Starting grade Ending grade	Starting grade Ending grade Starting grade Ending grade	Starting grade Ending grade Starting grade Ending grade	Starting grade Ending grade Starting grade Ending grade
ED35. Do any of your **CHILDREN** have any physical or mental condition that would limit or prevent 'his/her' ability to: a. do usual childhood activities? b. attend school regularly? c. do regular school work? ***[IF NO TO a, b, and c, SKIP TO ED38]***	a. ○ Yes ○ No ○ DK b. ○ Yes ○ No ○ DK c. ○ Yes ○ No ○ DK	a. ○ Yes ○ No ○ DK b. ○ Yes ○ No ○ DK c. ○ Yes ○ No ○ DK	a. ○ Yes ○ No ○ DK b. ○ Yes ○ No ○ DK c. ○ Yes ○ No ○ DK	a. ○ Yes ○ No ○ DK b. ○ Yes ○ No ○ DK c. ○ Yes ○ No ○ DK	a. ○ Yes ○ No ○ DK b. ○ Yes ○ No ○ DK c. ○ Yes ○ No ○ DK	a. ○ Yes ○ No ○ DK b. ○ Yes ○ No ○ DK c. ○ Yes ○ No ○ DK
ED36. ***If Yes*** to ED35 a, b, or c, what physical or mental condition is this?	a. b. c.	a. b. c.	a. b. c.	a. b. c.	a. b. c.	a. b. c.
ED37. ***If Yes***, at what age were these limitations first diagnosed? ***[CODE "97" IF NOT APPLICABLE]***	a. b. c.	a. b. c.	a. b. c.	a. b. c.	a. b. c.	a. b. c.
ED38. Have any of your **CHILDREN** ever repeated a grade? ***[IF NO, SKIP TO ED40]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
ED39. ***If Yes***, which grades did **CHILD** repeat? ***(Start with earliest grade first. Enter "0" for Kindergarten. Enter 97 for no additional grades repeated.)***	grade grade grade	grade grade grade	grade grade grade	grade grade grade	grade grade grade	grade grade grade
ED40. Did any of your **CHILDREN** ever have problems with skipping school? ***[IF NO, SKIP TO ED42]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
ED41. ***If Yes***, was this when **CHILD** was in elementary school, middle school or high school? ***(Circle all that apply)***	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high
ED42. Did any of your **CHILDREN** ever receive detention in elementary school? ***[ASK ONLY FOR CHILDREN WHO HAVE ATTENDED GIVEN LEVEL OF SCHOOLING]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
ED43. Did any of your **CHILDREN** ever receive detention in middle school?	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF

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Name/Age of Child						
ED44. Did any of your **CHILDREN** ever receive detention in high school?	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
ED45. Were any of your **CHILDREN** ever suspended from elementary school? ***[IF NO, SKIP TO ED48]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
ED46. ***If Yes***, how many times was **CHILD** suspended from elementary school?						
ED47. ***If Yes***, in which grades was **CHILD** suspended from elementary school? ***(Start with earliest grade)*** ***(Grades should be between 0 and 5)*** ***(Enter "97" if no additional grades suspended)***	grade grade grade	grade grade grade	grade grade grade	grade grade grade	grade grade grade	grade grade grade
ED48. Were any of your **CHILDREN** ever suspended from middle school? ***[IF NO, SKIP TO ED51]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
ED49. ***If Yes***, how many times was **CHILD** suspended from middle school?						
ED50. ***If Yes***, in which grades was **CHILD** suspended from middle school? ***(Start with earliest grade)*** ***(Grades should be between 6 and 8)*** ***(Enter "97" if no additional grades suspended)***	grade grade grade	grade grade grade	grade grade grade	grade grade grade	grade grade grade	grade grade grade
ED51. Were any of your **CHILDREN** ever suspended from high school? ***[IF NO, SKIP TO ED54]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
ED52. ***If Yes***, how many times was **CHILD** suspended from high school?						
ED53. ***If Yes***, in which grades was **CHILD** suspended from high school? ***(Start with earliest grade)*** ***(Grades should be between 9 and 12)*** ***(Enter "97" if no additional grades suspended)***	grade grade grade	grade grade grade	grade grade grade	grade grade grade	grade grade grade	grade grade grade
ED54. Were any of your **CHILDREN** ever expelled from elementary school? ***[IF NO, SKIP TO ED58]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
ED55. ***If Yes***, how many times was **CHILD** expelled from elementary school?						
ED56. ***If Yes***, in which grades was **CHILD** expelled from elementary school? ***(Start with earliest grade)*** ***(Enter "97" if no additional expulsions)***	grade grade grade	grade grade grade	grade grade grade	grade grade grade	grade grade grade	grade grade grade

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Name/Age of Child	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
ED57. ***If Yes***, what was the ***primary reason*** for the ***most recent expulsion*** from elementary school? 1. Possession of a firearm, knife or other weapon 2. Use of a weapon/object as weapon 3. Physical assault of an employee/ volunteer 4. Destruction of property 5. Theft or receipt of stolen property 6. Arson 7. Sale/distribution of controlled substances or illegal materials 8. Physical assault of another student 9. Criminal sexual conduct 10. Sexual misconduct 11. Forgery/fraud 96. Other, specify 97. NA 98. DK 99. REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ Other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ Other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ Other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ Other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ Other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ Other ○ NA ○ DK ○ REF
ED58. Were any of your **CHILDREN** ever expelled from middle school? ***[IF NO, SKIP TO ED62]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
ED59. ***If Yes***, how many times was **CHILD** expelled from middle school?						
ED60. ***If Yes***, in which grades was **CHILD** expelled from middle school? ***(Start with earliest grade)*** ***(Enter "97" if no additional expulsions)***	grade grade grade	grade grade grade	grade grade grade	grade grade grade	grade grade grade	grade grade grade
ED61. ***If Yes***, what was the ***primary reason*** for the ***most recent expulsion*** from middle school? 1. Possession of a firearm, knife or other weapon 2. Use of a weapon/object as weapon 3. Physical assault of an employee/ volunteer 4. Destruction of property 5. Theft or receipt of stolen property 6. Arson 7. Sale/distribution of controlled substances or illegal materials 8. Physical assault of another student 9. Criminal sexual conduct 10. Sexual misconduct 11. Forgery/fraud 96. Other, specify 97. NA 98. DK 99. REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ Other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ Other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ Other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ Other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ Other ○ NA ○ DK ○ REF	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ Other ○ NA ○ DK ○ REF

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
ED62. Were any of your **CHILDREN** ever expelled from high school? ***[IF NO, SKIP TO END OF MODULE OR CONTINUE WITH NEXT CHILD]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
ED63. ***If Yes***, how many times was **CHILD** expelled from high school?	☐☐	☐☐	☐☐	☐☐	☐☐	☐☐
ED64. ***If Yes***, in which grades was **CHILD** expelled from high school? ***(Start with earliest grade)*** ***(Enter "97" if no additional expulsions)***	☐☐ grade ☐☐ grade ☐☐ grade	☐☐ grade ☐☐ grade ☐☐ grade	☐☐ grade ☐☐ grade ☐☐ grade	☐☐ grade ☐☐ grade ☐☐ grade	☐☐ grade ☐☐ grade ☐☐ grade	☐☐ grade ☐☐ grade ☐☐ grade
ED65. ***If Yes***, what was the ***primary reason*** for the ***most recent expulsion*** from high school? 1. Possession of a firearm, knife or other weapon 2. Use of a weapon/object as weapon 3. Physical assault of an employee/ volunteer 4. Destruction of property 5. Theft or receipt of stolen property 6. Arson 7. Sale/distribution of controlled substances or illegal materials 8. Physical assault of another student 9. Criminal sexual conduct 10. Sexual misconduct 11. Forgery/fraud 96. Other, specify 97. NA 98. DK 99. REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ 10 ◯ 11 ◯ Other ☐ ◯ NA ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ 10 ◯ 11 ◯ Other ☐ ◯ NA ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ 10 ◯ 11 ◯ Other ☐ ◯ NA ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ 10 ◯ 11 ◯ Other ☐ ◯ NA ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ 10 ◯ 11 ◯ Other ☐ ◯ NA ◯ DK ◯ REF	◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7 ◯ 8 ◯ 9 ◯ 10 ◯ 11 ◯ Other ☐ ◯ NA ◯ DK ◯ REF

CHILD'S BEHAVIORAL OUTCOMES MODULE

Interviewers: Complete for children ages 8 and older, starting with the oldest child

Now I'd now like to ask you some questions about your child(ren)'s behavior. Again, some of these questions may not apply to your child(ren). Please let me know that and I will move on to the next question. Also, please remember to focus only on the children who lived with you in DHA housing for at least a year when they were under age 18.

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
ASK B1 if CHILD is age 8 or older. B1. Have any of your **CHILDREN** run away from home? ***[IF NO, SKIP TO B5]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
B2. ***If Yes***, how many times has **CHILD** run away from home?						
B3. ***If Yes***, how old was **CHILD** when he/she first ran away from home?						
B4. ***If Yes***, how old was **CHILD** when he/she ran away from home most recently?						
B5. Have any of your **CHILDREN** ever smoked tobacco? ***[IF NO, SKIP TO B7]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
B6. ***If Yes***, how old was **CHILD** when he/she first began to smoke?						
B7. Have any of your **CHILDREN** ever drank alcohol? ***[IF NO, SKIP TO B9]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
B8. ***If Yes,*** how old was **CHILD** when he/she first began to drink?						
B9. Have any of your **CHILDREN** ever smoked marijuana (pot)? ***[IF NO, SKIP TO B11]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
B10. ***If Yes***, how old was **CHILD** when he/she first smoked marijuana?						
B11. Have any of your **CHILDREN** ever used other drugs? ***[IF NO, SKIP TO B13]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
B12. ***If Yes***, how old was **CHILD** when he/she first began to use other drugs?						
B13. Have any of your **CHILDREN** ever belonged to a gang? ***[IF NO, SKIP TO B15]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
B14. ***If Yes***, how old was **CHILD** when he/she first joined a gang?						
B15. Have any of your **CHILDREN** ever used violent or aggressive behavior such as fighting, slapping, shoving, hitting? ***[IF NO, SKIP TO B17]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
B16. ***If Yes***, how old was **CHILD** when he/she first used violent or aggressive behavior?						
B17. Have any of your **CHILDREN** ever destroyed property? ***[IF NO, SKIP TO B19]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
B18. ***If Yes***, how old was **CHILD** when he/she first destroyed any property?						
B19. Have any of your **CHILDREN** ever engaged in activities that have resulted in being stopped or arrested by the police? ***[IF NO, SKIP TO B21]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
B20. ***If Yes***, how old was **CHILD** when he/she first was stopped or arrested by the police?						
B21. Have any of your **CHILDREN** ever spent time in a reform school, detention center, jail, or prison? ***[IF NO, SKIP TO B25]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
B22. ***If Yes,*** how old was **CHILD** the first time he/she spent time in a reform school, detention center, jail, or prison?						
B23. ***If Yes***, how old was **CHILD** the most recent time that he/she spent time in a reform school, detention center, jail, or prison?						
B24. ***If Yes***, what was the total time that **CHILD** spent in a reform school, detention center, jail, or prison for all times?	years months	years months	years months	years months	years months	years months
B25. In what grades did your **CHILDREN** participate in clubs and sports teams activities in the community? ***[FILL IN ALL THAT APPLY]***	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high
B26. In what grades did your **CHILDREN** attend church or religious services/ activities? ***[FILL IN ALL THAT APPLY]***	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high
B27. In what grades did your **CHILDREN** do volunteer work in the community? ***[FILL IN ALL THAT APPLY]***	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high	○ elementary ○ middle ○ high

CHILD'S EMPLOYMENT OUTCOMES

Now I'd like to ask you some questions about your children's employment since they turned age 14. Again, only focus on the children who lived with you in DHA housing for at least a year when they were under age 18.

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child ***[ONLY ask if age 14 or older]***						
CE1. Were any of your **CHILDREN** employed before age 18? ***[IF NO, SKIP TO CE4]*** ***(Fill in NA for all children under 14)***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
CE2. ***If Yes***, at what age did **CHILD** begin working?						
CE3. ***If Yes***, on average, how many hours per week did **CHILD** work before age 18? ***[IF DK enter "98"; IF REF enter "99"]***						
CE4. ***[ONLY ask if age 18 or older]*** Since turning 18, have any of your **CHILDREN** been working full-time, working part-time, not working but attending school or neither working nor attending school? ***[IF NOT WORKING, SKIP TO CE6]*** ***(Fill in NA for all children under 18)***	○ Working FT ○ Working PT ○ Not working but in school ○ Neither working nor in school ○ NA ○ DK ○ REF	○ Working FT ○ Working PT ○ Not working but in school ○ Neither working nor in school ○ NA ○ DK ○ REF	○ Working FT ○ Working PT ○ Not working but in school ○ Neither working nor in school ○ NA ○ DK ○ REF	○ Working FT ○ Working PT ○ Not working but in school ○ Neither working nor in school ○ NA ○ DK ○ REF	○ Working FT ○ Working PT ○ Not working but in school ○ Neither working nor in school ○ NA ○ DK ○ REF	○ Working FT ○ Working PT ○ Not working but in school ○ Neither working nor in school ○ NA ○ DK ○ REF
CE5. ***If working***, at what age since turning 18 did **CHILD** begin working at their first job?						
CE6. Since turning 18, have any of your **CHILDREN** been unemployed (looking for work and unable to find work) for more than one month? ***[IF NO, GO TO CE10]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
CE7. How many times has **CHILD** been unemployed since turning 18?						
CE8. ***If Yes***, how old was **CHILD** when he/she was unemployed the first time?						
CE9. ***If Yes***, how old was **CHILD** when he/she was unemployed the last time?						
CE10. Since turning 18, have any of your **CHILDREN** received public assistance? ***[IF NO, GO TO NEXT CHILD OR END MODULE]***	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF	○ No ○ Yes ○ NA ○ DK ○ REF
CE11. ***If Yes***, how old was **CHILD** when he/she first received public assistance?						
CE12. ***If Yes***, how old was **CHILD** when he/she last received public assistance?						

[GO TO NEXT CHILD AGE 14 OR OLDER, ELSE GO TO NEXT MODULE]

CHILD'S MARITAL AND CHILDBEARING HISTORY MODULE

Now I'd like to ask you some questions about your children who are aged 15 years or older. Again, some of these questions might not apply to your child(ren) so just let me know and I will move to the next question.

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	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child ***[Ask M1-M10 if age 15 or older]***						
M1. Have any of your **CHILDREN** ever been married or lived with a partner? ***[IF NO, SKIP TO M6]*** ***(Fill in NA for all children under 15)***	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF
M2. ***If Yes***, how many times has **CHILD** been married or lived with a partner?						
M3. ***If Yes***, at what age did **CHILD** first get married or start living with a partner?						
M4. ***If Yes,*** is **CHILD** still married or living with partner? ***[IF YES, SKIP TO M6]***	O No O Married O Living w/ partner O NA O DK O REF	O No O Married O Living w/ partner O NA O DK O REF	O No O Married O Living w/ partner O NA O DK O REF	O No O Married O Living w/ partner O NA O DK O REF	O No O Married O Living w/ partner O NA O DK O REF	O No O Married O Living w/ partner O NA O DK O REF
M5. ***[If no longer married or living with partner]*** at what age did **CHILD** end the marriage or stop living with their partner?						
M6. Have any of your **CHILDREN** given birth to or fathered children of their own? ***[IF NO, SKIP TO NEXT CHILD 15+ OR GO TO END OF MODULE]***	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF
M7. ***If Yes***, how many children does **CHILD** have?						
M8. ***If Yes***, how old was **CHILD** when she/he had her/his first child?						
M9. ***If Yes***, how old was **CHILD** when she/he had her/his last child?						
M10. ***If Yes***, was **CHILD** married when she/he had her/his first child?	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF	O No O Yes O NA O DK O REF

[CONTINUE WITH ALL CHILDREN 15 AND OLDER, ELSE END MODULE]

CHILD'S EXPOSURE TO VIOLENCE MODULE

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Children today often witness violence in different places. I'd like to ask about times that your **CHILDREN** may have witnessed violence. Again, some of these questions may not apply to your child(ren).

	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
Name/Age of Child						
V1. Have any of your **CHILDREN** ever witnessed violence in or around the neighborhood? ***[IF NO, SKIP TO V3]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
V2. ***If Yes***, how old was **CHILD** when **he/she** first witnessed violence in or around the neighborhood? ***[IF DK enter "98"; IF REF enter "99"]***						
V3. Have any of your **CHILDREN** been beaten up, chased, threatened, or robbed in or around the neighborhood? ***[IF NO, SKIP TO V9]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
V4. ***If Yes***, how many times was **CHILD** beaten up, chased, threatened, or robbed in or around the neighborhood? ***[IF DK enter "98"; IF REF enter "99"]***						
V5. ***If Yes***, how old was **CHILD** when this occurred for the first time? ***[IF DK enter "98"; IF REF enter "99"]***						
V6. ***If Yes***, how old was **CHILD** when this occurred most recently? ***[IF DK enter "98"; IF REF enter "99"]***						
V7. ***If Yes***, did **CHILD** ever have to go to the emergency room because of injuries sustained from being beaten or robbed in the neighborhood? ***[IF NO, SKIP TO V9]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
V8. ***If Yes***, how many times did **CHILD** go to the emergency room for injuries sustained because of being beaten or robbed in the neighborhood? ***[IF DK enter "98"; IF REF enter "99"]***						
V9. Have any of your **CHILDREN** ever witnessed violence in or around school? ***[IF NO, SKIP TO V11]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
V10. ***If Yes***, how old was **CHILD** when **he/she** first witnessed violence in or around school? ***[IF DK enter "98"; IF REF enter "99"]***						

	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6
V11. Have any of your **CHILDREN** ever gotten beaten up, chased, threatened, or robbed in or around school? ***[IF NO, SKIP TO V17]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
V12. ***If Yes***, how many times was **CHILD** beaten up, chased, threatened, or robbed in or around school? ***[IF DK enter "98"; IF REF enter "99"]***						
V13. ***If Yes***, how old was **CHILD** when this occurred for the first time? ***[IF DK enter "98"; IF REF enter "99"]***						
V14. ***If Yes***, how old was **CHILD** when this occurred most recently? ***[IF DK enter "98"; IF REF enter "99"]***						
V15. ***If Yes***, did **CHILD** ever have to go to the emergency room because of being beaten or robbed in or around school? ***[IF NO, SKIP TO V17]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
V16. ***If Yes***, how many times did **CHILD** go to the emergency room for injuries because of being beaten or robbed in or around school? ***[IF DK enter "98"; IF REF enter "99"]***						
V17. Have any of your **CHILDREN** ever witnessed violence in your home? ***[IF NO, SKIP TO NEXT MODULE]***	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF	◯ No ◯ Yes ◯ NA ◯ DK ◯ REF
V18. ***If Yes***, how old was **CHILD** when **he/she** first witnessed violence in the home? ***[IF DK enter "98"; IF REF enter "99"]***						

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NEIGHBORHOOD EFFECTS MODULE

NE1. Now I'd like to ask you about the people who might have or have had an influence on your child(ren). As I read the list of people, please tell me if each person's influence on your child(ren) has been very positive, somewhat positive, somewhat negative, very negative, no influence at all, or not applicable.

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a. Child(ren)'s mother	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
b. Child(ren)'s father	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
c. Primary caregiver (if not mother or father)	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
d. Child(ren)'s stepmother/ stepfather	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
e. Grandparents	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
f. Godparents	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
g. Child(ren)'s brothers and sisters	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
h. Other relatives	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
i. Child(ren)'s friends	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
j. Child(ren)'s classmates	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
k. Adult neighbors	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
l. Teachers	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
m. School counselors/social workers/administrators	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
n. Leaders of religious groups	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
o. Club/team leaders	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF
p. Someone else not already mentioned (specify):	○ Very Positive	○ Somewhat Positive	○ Neither Positive nor Negative; No Influence	○ Somewhat Negative	○ Very Negative	○ NA	○ DK	○ REF

INTERVIEWERS, ASK QUESTIONS NE2a through NE2d for families with appropriate age children. All families should have had preschoolers, most will have had elementary school children, many but not all families will have currently or have had middle and/or high school age children in their households. ONLY record the MOST IMPORTANT POSITIVE INFLUENCE during each age group identified by the respondent.

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NE2a. Who would you say has been the ***most important positive influence*** on your child(ren) when they were preschoolers?
NE2b. Who would you say has been the ***most important positive influence*** on your child(ren) when they were in elementary school?
NE2c. Who would you say has been the ***most important positive influence*** on your child(ren) when they were in middle school?
NE2d. Who would you say has been the ***most important positive influence*** on your child(ren) when they were in high school?

	[NE2a] **Preschool**	[NE2b] **Elementary School**	[NE2c] **Middle School**	[NE2d] **High School**
a. Child(ren)'s mother	a ○	a ○	a ○	a ○
b. Child(ren)'s father	b ○	b ○	b ○	b ○
c. Primary caregiver (if not mother or father)	c ○	c ○	c ○	c ○
d. Child(ren)'s stepmother/stepfather	d ○	d ○	d ○	d ○
e. Grandparents	e ○	e ○	e ○	e ○
f. Godparents	f ○	f ○	f ○	f ○
g. Child(ren)'s brothers and sisters	g ○	g ○	g ○	g ○
h. Other relatives	h ○	h ○	h ○	h ○
i. Child(ren)'s friends	i ○	i ○	i ○	i ○
j. Child(ren)'s classmates	j ○	j ○	j ○	j ○
k. Adult neighbors	k ○	k ○	k ○	k ○
l. Teachers	l ○	l ○	l ○	l ○
m. School counselors/social workers/ administrators	m ○	m ○	m ○	m ○
n. Leaders of religious groups	n ○	n ○	n ○	n ○
o. Club/team leaders	o ○	o ○	o ○	o ○
p. Someone else not already mentioned (specify):	○ ____	○ ____	○ ____	○ ____
q. Not applicable, not appropriate age	q ○	q ○	q ○	q ○
r. None	r ○	r ○	r ○	r ○
s. Don't Know	DK ○	DK ○	DK ○	DK ○
t. Refused	REF ○	REF ○	REF ○	REF ○

INTERVIEWERS, ASK QUESTIONS NE3a through NE3d for families with appropriate age children. All families should have had preschoolers, most will have had elementary school children, many but not all families will have currently or have had middle and/or high school age children in their households. ONLY record the MOST IMPORTANT NEGATIVE INFLUENCE during each age group identified by the respondent.

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NE3a. Who would you say has been the ***most important negative influence*** on your child(ren) when they were preschoolers?
NE3b. Who would you say has been the ***most important negative influence*** on your child(ren) when they were in elementary school?
NE3c. Who would you say has been the ***most important negative influence*** on your child(ren) when they were in middle school?
NE3d. Who would you say has been the ***most important negative influence*** on your child(ren) when they were in high school?

	[NE3a] **Preschool**	[NE3b] **Elementary School**	[NE3c] **Middle School**	[NE3d] **High School**
a. Child(ren)'s mother	a ○	a ○	a ○	a ○
b. Child(ren)'s father	b ○	b ○	b ○	b ○
c. Primary caregiver (if not mother or father)	c ○	c ○	c ○	c ○
d. Child(ren)'s stepmother/stepfather	d ○	d ○	d ○	d ○
e. Grandparents	e ○	e ○	e ○	e ○
f. Godparents	f ○	f ○	f ○	f ○
g. Child(ren)'s brothers and sisters	g ○	g ○	g ○	g ○
h. Other relatives	h ○	h ○	h ○	h ○
i. Child(ren)'s friends	i ○	i ○	i ○	i ○
j. Child(ren)'s classmates	j ○	j ○	j ○	j ○
k. Adult neighbors	k ○	k ○	k ○	k ○
l. Teachers	l ○	l ○	l ○	l ○
m. School counselors/social workers/ administrators	m ○	m ○	m ○	m ○
n. Leaders of religious groups	n ○	n ○	n ○	n ○
o. Club/team leaders	o ○	o ○	o ○	o ○
p. Someone else not already mentioned (specify):	○	○	○	○
q. Not applicable, not appropriate age	q ○	q ○	q ○	q ○
r. None	r ○	r ○	r ○	r ○
s. Don't Know	DK ○	DK ○	DK ○	DK ○
t. Refused	REF ○	REF ○	REF ○	REF ○

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INTERVIEWERS, ASK QUESTIONS NE4a1 through NE4d2 for families with appropriate age children. All families should have had preschoolers, most will have had elementary school children, many but not all families will have currently or have had middle and/or high school age children in their households.

Now I'd like to ask you to think about the ways in which living in particular neighborhoods influenced your child(ren) as they were growing up.

NE4a1. Thinking back to when your child(ren) were young - from birth until about age five - what kind of influence did the neighborhood you were living in have on your child(ren)? Was it very positive, somewhat positive, somewhat negative, very negative, or no influence at all?

- ○ Very positive
- ○ Somewhat positive
- ○ Neither positive nor negative influence, no influence at all
- ○ Somewhat negative
- ○ Very negative
- ○ NA

NE4a2. Please describe the ways in which the neighborhood influenced your child(ren) when they were young.

NE4b1. Thinking back to when your child(ren) were in elementary school, what kind of influence did the neighborhood you were living in have on your child(ren)? Was it very positive, somewhat positive, somewhat negative, very negative, or no influence at all?

- ○ Very positive
- ○ Somewhat positive
- ○ Neither positive nor negative influence, no influence at all
- ○ Somewhat negative
- ○ Very negative
- ○ NA

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NE4b2. Please describe the ways in which the neighborhood influenced your child(ren) when they were in elementary school?

NE4c1. Thinking back to when your child(ren) were in middle school, what kind of influence did the neighborhood you were living in have on your child(ren)? Was it very positive, somewhat positive, somewhat negative, very negative, or no influence at all?

- ○ Very positive
- ○ Somewhat positive
- ○ Neither positive nor negative influence, no influence at all
- ○ Somewhat negative
- ○ Very negative
- ○ NA

NE4c2. Please describe the ways in which the neighborhood influenced your child(ren) when they were in middle school?

NE4d1. Thinking back to when your child(ren) were in high school, what kind of influence did the neighborhood you were living in have on your child(ren)? Was it very positive, somewhat positive, somewhat negative, very negative, or no influence at all?

- ○ Very positive
- ○ Somewhat positive
- ○ Neither positive nor negative influence, no influence at all
- ○ Somewhat negative
- ○ Very negative
- ○ NA

NE4d2. Please describe the ways in which the neighborhood influenced your child(ren) when they were in high school?

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DEMOGRAPHIC MODULE FOR ADULT PARENT/CAREGIVER

Finally, we would like to ask some questions about you. Again, because we are talking to many people with a lot of different life experiences some of these questions may not apply to you or your experiences. When that happens you can let me know and I will move on to the next question.

D1. Have you ever had a physical problem or disability that limited your ability to care for the needs of your children?

- ○ No ***[IF NO,SKIP TO D4]***
- ○ Yes
- ○ DK
- ○ REF

	Illness 1	**Illness 2**	**Illness 3**	**Illness 4**	**Illness 5**
D2. ***If Yes***, please describe the problem/disability:					
D3a. ***If Yes***, how old were you when this problem/disability was first diagnosed?	age in years	age in years	age in years	age in years	age in years
D3b. Is this problem/disability under control? ***[IF NO, SKIP TO D4]***	○ No ○ Yes ○ Dk ○ REF	○ No ○ Yes ○ Dk ○ REF	○ No ○ Yes ○ Dk ○ REF	○ No ○ Yes ○ Dk ○ REF	○ No ○ Yes ○ Dk ○ REF
D3c. How old were you when the problem/disability was controlled? ***[LEAVE BLANK IF NOT UNDER CONTROL]***	age in years	age in years	age in years	age in years	age in years

D4. Now I am going to ask you about some of the ways you may have felt or behaved recently. For each statement I read, please tell me how often you have felt this way during the past week. Would you say rarely or none of the time, some of the time, occasionally, or most or all of the time.

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During the past week:	***Rarely*** or none of the time (less than 1 day)	***Some*** or a little of the time (1-2 days)	***Occasionally*** or a moderate amount of time (3-4 days)	***Most*** or all of the time (5-7 days)	***Don't know***
a. I was bothered by things that usually don't bother me.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
b. I did not feel like eating; my appetite was poor.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
c. I felt that I could not shake off the blues even with the help from family or friends.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
d. I felt that I was just as good as other people.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
e. I had trouble keeping my mind on what I was doing.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
f. I felt depressed.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
g. I felt that everything I did was an effort.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
h. I felt hopeful about the future.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
i. I thought my life had been a failure.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
j. I felt fearful.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
k. My sleep was restless.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
l. I was happy.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
m. I talked less than usual.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
n. I felt lonely.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
o. People were unfriendly.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
p. I enjoyed life.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
q. I had crying spells.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
r. I felt sad.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
s. I felt that people disliked me.	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK
t. I could not get "going."	○ Rarely	○ Some of the time	○ Occasionally	○ Most of the time	○ DK

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D5. Have you ever seen a psychiatrist, psychologist, or a counselor?

- ○ No ***[IF NO,SKIP TO D7]***
- ○ Yes
- ○ Don't know
- ○ Missing/Refused

D6. ***If Yes***, how old were you the first time; and the last time you saw a psychiatrist, psychologist, or a counselor?

First Time [ ][ ] age in years   Last Time [ ][ ] age in years

D7. In the past 30 days, have you:

a. Drunk alcohol to the point of intoxication? ○ Yes ○ No ○ REF

b. Smoked marijuana or "pot"? ○ Yes ○ No ○ REF

c. Used other illegal drugs (such as crystal meth, cocaine, heroin, or crack)? ○ Yes ○ No ○ REF

INTERVIEWERS: IF THE RESPONDENT ANSWERS NEVER TO ALL THREE QUESTIONS D8a - D8c, SKIP TO D11. IF THE RESPONDENT ANSWERS 2 to 7 FOR ANY OF QUESTIONS D8a - D8c, CONTINUE WITH THE APPROPRIATE QUESTIONS D9a - D10c.

D8. Since becoming a parent, how many times have you...

a. <u>Drunk alcohol to the point of intoxication?</u>

- ○ Never
- ○ Couple of times a year
- ○ Once a year
- ○ Once a month
- ○ Couple of times a month
- ○ Once a week
- ○ Couple of times a week
- ○ Daily
- ○ DK
- ○ REF

b. <u>Smoked marijuana or "pot"?</u>

- ○ Never
- ○ Couple of times a year
- ○ Once a year
- ○ Once a month
- ○ Couple of times a month
- ○ Once a week
- ○ Couple of times a week
- ○ Daily
- ○ DK
- ○ REF

c. Used other illegal drugs (such as crystal <u>meth, cocaine, heroin, or crack)?</u>

- ○ Never
- ○ Couple of times a year
- ○ Once a year
- ○ Once a month
- ○ Couple of times a month
- ○ Once a week
- ○ Couple of times a week
- ○ Daily
- ○ DK
- ○ REF

INTERVIEWERS: ASK QUESTIONS D9a - D9c and D10a - D10c ONLY OF RESPONDENTS WHO INDICATED THEY EVER HAVE BEEN INTOXICATED, SMOKED MARIJUANA, OR USED ILLEGAL DRUGS SINCE BECOMING A PARENT. IF RESPONDENT ANSWERED NEVER, DON'T KNOW, OR REFUSED TO ALL OF THE ABOVE, SKIP TO D11.

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IF RESPONDENT HAS NOT HAD A PERIOD OF VOLUNTARY ABSTINENCE, CODE AS -1.

D9. How long was your last period of voluntary abstinence from:

a. alcohol? [ ][ ] years [ ][ ] months

b. marijuana or "pot"? [ ][ ] years [ ][ ] months

c. other illegal drugs? [ ][ ] years [ ][ ] months

D10. How many months ago did this last period of voluntary abstinence end?

a. alcohol? [ ][ ] months

b. marijuana or "pot"? [ ][ ] months

c. other illegal drugs? [ ][ ] months

D11. Have you ever spent time in a reform school, detention center, jail, or prison?

○ No ***[IF NO,SKIP TO D13]***
○ Yes
○ Missing/Refused

If Yes, at what age did you first spend time in a reform school, detention center, jail, or prison?

	Time 1	**Time 2**	**Time 3**	**Time 4**	**Time 5**
D12a. From age:	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]
D12b. To age:	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]	[ ][ ]
D12c. Total length of time spent in facility.	[ ][ ] years [ ][ ] months	[ ][ ] years [ ][ ] months	[ ][ ] years [ ][ ] months	[ ][ ] years [ ][ ] months	[ ][ ] years [ ][ ] months

D13. Let me ask about your current marital situation. ***[READ LIST]*** Are you...

○ Legally married (continue with D14a)
○ Living with a partner but not married (continue with D14a)
○ Divorced or separated (continue with D14a)
○ Widowed (continue with D14a)
○ Never married, and not now living with a partner (skip to D14b)
○ Single but previously living with a partner (skip to D14b)
○ Other (specify): [ ]
○ REF

D14a. How many times have you been legally married? [ ][ ] times

[IF NEVER MARRIED, SKIP TO D14b; OTHERWISE COMPLETE D14a1 THROUGH D14a3 FOR EACH MARRIAGE AND THEN ASK D14b]

	Marriage 1	Marriage 2	Marriage 3	Marriage 4	Marriage 5
D14a1. When did the marriage begin?	month / year	month / year	month / year	month / year	month / year
D14a2. When did the marriage end? ***[INTERVIEWER: IF THE MARRIAGE HAS NOT ENDED, PLEASE LEAVE THIS FIELD BLANK AND SKIP TO D14b]***	month / year	month / year	month / year	month / year	month / year
D14a3. How did the marriage end? 1. Separation, no legal divorce 2. Legal divorce 3. Death of spouse 4. Annulment 96. Other 97. NA/Still married 98. Don't know 99. Refused/Missing	○ Separation, no legal divorce ○ Legal divorce ○ Death of spouse ○ Annulment ○ Other ○ NA/Still married ○ DK ○ REF/Missing	○ Separation, no legal divorce ○ Legal divorce ○ Death of spouse ○ Annulment ○ Other ○ NA/Still married ○ DK ○ REF/Missing	○ Separation, no legal divorce ○ Legal divorce ○ Death of spouse ○ Annulment ○ Other ○ NA/Still married ○ DK ○ REF/Missing	○ Separation, no legal divorce ○ Legal divorce ○ Death of spouse ○ Annulment ○ Other ○ NA/Still married ○ DK ○ REF/Missing	○ Separation, no legal divorce ○ Legal divorce ○ Death of spouse ○ Annulment ○ Other ○ NA/Still married ○ DK ○ REF/Missing

D14b. How many times have you lived with a partner for at least one year without being legally married? [ ][ ] times

[IF YOU NEVER LIVED TOGETHER WITH A PARTNER, SKIP TO D15; OTHERWISE COMPLETE D14b1 AND D14b2 FOR EACH PARTNER]

	Partner 1	Partner 2	Partner 3	Partner 4	Partner 5
D14b1. When was the first time you lived with the partner?	month / year	month / year	month / year	month / year	month / year
D14b2. When did you stop living with this partner? ***[INTERVIEWER: IF THE RELATIONSHIP HAS NOT ENDED, PLEASE LEAVE THIS FIELD BLANK AND SKIP TO D15]***	month / year	month / year	month / year	month / year	month / year

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D15. When you were growing up, before you reached age 18, did you live in public housing at any time?

- ○ No ***[IF NO,SKIP TO D17]***
- ○ Yes
- ○ Don't know
- ○ Missing/Refused

D16a. ***If Yes***, how many years did you live in public housing before the age of 18? [ ][ ] Total years living in public housing

D16b1. From what age? [ ][ ] age in years D16b2. To what age? [ ][ ] age in years

D17. When growing up (before age 18), did you ever live in a home that was owned by a parent?

- ○ No ***[IF NO,SKIP TO D19]***
- ○ Yes
- ○ Don't know
- ○ Missing/Refused

D18a. ***If Yes***, how many years did you live in a home owned by your parent(s) before the age of 18? [ ][ ] Total years living in home owned by parent

D18b1. From what age? [ ][ ] age in years D18b2. To what age? [ ][ ] age in years

D19. Are you currently in school?

- ○ No
- ○ Yes
- ○ Missing/Refused

D20a. What is the **highest** diploma, degree, or certificate you have earned, if any? (e.g. high school diploma, two-year college degree, technical certificate)

- ○ No degree or certification or diploma
- ○ Technical Certificate (no HS diploma)
- ○ G.E.D. (High School Equivalency)
- ○ High School Diploma
- ○ Technical Certificate (post High School)
- ○ Two-Year College Degree (AA, AS, AAS)
- ○ Four Year College Degree (BA, BS)
- ○ Graduate or Professional Degree (specify): [ ]
- ○ Other (specify): [ ]
- ○ DK
- ○ REF

D20b. How old were you when you received your HIGHEST diploma, degree, or certificate? [ ][ ] age in years

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D21. Now I'd like to ask you a few questions about how you think children should be raised and your level of confidence in parenting your children. How confident are you about the following? Would you say very confident, somewhat confident or not confident at all?

a. Your parenting skills?	○ Very Confident	○ Somewhat Confident	○ Not Confident at All	○ DK	○ Refused/Missing
b. Providing for your children's needs?	○ Very Confident	○ Somewhat Confident	○ Not Confident at All	○ DK	○ Refused/Missing
c. Raising healthy children?	○ Very Confident	○ Somewhat Confident	○ Not Confident at All	○ DK	○ Refused/Missing
d. Helping your child(ren) achieve their goals?	○ Very Confident	○ Somewhat Confident	○ Not Confident at All	○ DK	○ Refused/Missing
e. Setting a good example for your children?	○ Very Confident	○ Somewhat Confident	○ Not Confident at All	○ DK	○ Refused/Missing
f. Your ability to protect your child(ren) from negative influences at school?	○ Very Confident	○ Somewhat Confident	○ Not Confident at All	○ DK	○ Refused/Missing
g. Your ability to protect your child(ren) from negative influences in the neighborhood?	○ Very Confident	○ Somewhat Confident	○ Not Confident at All	○ DK	○ Refused/Missing
h. Your ability to keep your child(ren) out of trouble?	○ Very Confident	○ Somewhat Confident	○ Not Confident at All	○ DK	○ Refused/Missing
i. Your ability to maintain a balance between work, school and parenting responsibilities?	○ Very Confident	○ Somewhat Confident	○ Not Confident at All	○ DK	○ Refused/Missing
j. Handling the stress related to raising children?	○ Very Confident	○ Somewhat Confident	○ Not Confident at All	○ DK	○ Refused/Missing

D22. For each of the following statements, please tell me how accurately it describes **your** beliefs about parenting. Would you say it perfectly describes me, closely describes me, fairly describes me, somewhat describes me, slightly describes me, or doesn't describe me at all?

	Doesn't describe me at all	**Slightly describes me**	**Somewhat describes me**	**Fairly describes me**	**Closely describes me**	**Perfectly describes me**	**DK**	**REF**
a. I believe that a child should be seen and not heard.	○	○	○	○	○	○	○	○
b. I believe that consistently picking up a crying infant is wrong.	○	○	○	○	○	○	○	○
c. I do not allow my child to question my decisions.	○	○	○	○	○	○	○	○
d. I agree with the statement, 'spare the rod, spoil the child'.	○	○	○	○	○	○	○	○
e. When my child needs my help, I am always there.	○	○	○	○	○	○	○	○
f. I feel that a child should be given comfort and understanding when he/she is scared or upset.	○	○	○	○	○	○	○	○

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D23. Which of the following best describes your ethnic background?

- ○ African American/Black
- ○ Latino/Hispanic
- ○ Other (Specify): ______

D24. What is your date of birth? __ __ / __ __ / __ __ __ __
Month Day Year

D25. Were you born in the United States?

- ○ No
- ○ Yes ***(If Yes, GO TO LOCATING PAGE)***

D26. ***If No***, how old were you when you first moved to the United States? __ __
age in years

[IF LESS THAN ONE YEAR, ENTER 0]

These are all of the questions that we have. I want to thank you very much for you time today. We would like to send you a copy of the study findings when the project is completed in 2007, as well as your $50 for participating in this study.

LOCATING INFORMATION

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At this time I do need to verify your address information so that we can send your check or gift certificate.

A. INTERVIEWER: CHECK CONTACT AND VERIFICATION PAGE. RECORD RESPONDENT'S FULL NAME. CHECK SPELLING FOR ALL NAMES AND ADDRESSES ***PLEASE PRINT CLEARLY. VERIFY SPELLING.***

ON THE INFORMED CONSENT SHEET NOTE WHETHER R WANTS A CHECK OR GIFT CERTIFICATE. IF "CHECK", YOU MUST ALSO GET THEIR SOCIAL SECURITY NUMBER (SSN) AND WRITE IT ON THE INFORMED CONSENT SHEET.

First Name

Middle Name

Last Name

B. What is your current street number and street name?

Address

City

State/Province

ZIP/Postal Code

C. What is your telephone number?

Home Phone - -

Work Phone - -

D. Would you please give me the names and phone numbers of two persons who would know how to contact you should you move?

Contact Person #1

First Name

Last Name

Home Phone

Contact Person #2

First Name

Last Name

Home Phone

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