

# Household Composition and Housing Assistance: Examining the Link

---

Lance Freeman  
Columbia University  
Graduate School of Architecture, Planning, and Preservation

## *Abstract*

*The living arrangements of public assistance recipients have been a concern of policymakers and researchers alike. Although the effects of welfare on household composition have been studied extensively, relatively little research has examined how housing assistance might relate to household composition. This research explores the relationship between housing assistance and household composition using data from the New York City Housing Vacancy Survey. The results show that household composition is indeed related to the receipt of housing assistance. In particular, married and cohabiting partners are less likely to be recipients of housing assistance, all else being equal.*

## Introduction

Welfare reform has been driven in part by a concern over how public assistance influences household composition. To date, however, relatively little research has been done on the relationship between other types of public assistance, including housing assistance, and household composition. This research aims to begin filling this void by focusing on how household composition is related to the receipt of household assistance. To the extent that policymakers are concerned about how housing assistance affects household composition, a first step is ascertaining whether such a relationship even exists and discerning the nature of that relationship.

## Conceptual Framework

Economic and social considerations are the prime determinants of whom we choose to live with. Examples of social forces include the desire for companionship that comes with marriage or cohabiting with a romantic partner or the desire to be a parent. Economic factors include the economies of scale achieved by living with others, which are counterbalanced by the inconveniences associated with having to share living space. Economies of scale are achieved because some housing costs can be shared or do not increase at the same rate as increases in household size. Certain additions to a household, such as minor children, may not increase household income enough to offset the additional costs they incur. Household composition thus reflects the balancing of these competing forces, the

desire for companionship and costs saved due to economies of scale, and disadvantages associated with sharing living space and the additional costs associated with each individual in the house.

Housing assistance, to the extent it allows households to consume more housing than they otherwise would, might affect household composition in several different ways. By reducing the importance of the cost component in the household composition calculus, households may have less of an incentive to share their housing; consequently, housing assistance might reduce household size. Using data from the Social Indicators Survey in New York City, Gould Ellen and O'Flaherty (2002) found in their analysis of the determinants of household size that recipients of housing assistance had fewer adults.

In some circumstances, however, housing assistance might make households larger. For example, parents derive some satisfaction from each additional child that they have. The resources needed to take care of each additional child, including living space, puts an upward boundary on the number they are likely to have. Anything that provides additional resources to take care of an additional child might make having more children feasible. Housing assistance, by allowing households to consume more housing than they otherwise would, might induce some households to have more children. In addition, housing assistance might free resources to take care of a child. In this way, the effects of housing assistance might be similar to those of welfare, where a consensus is emerging in the literature that welfare does indeed lead to parents' having more children (Moffitt, 1997).

The literature on welfare and household composition also points to a third way that housing assistance might be expected to affect household composition. Such assistance may increase the prevalence of single-parent households. This theory posits that welfare discourages marriage and/or encourages partners to break up (Murray, 1984). Beyond the regulations that make the receipt of welfare more difficult for married partners, welfare may have also facilitated some partners' fleeing unsatisfactory relationships. Housing assistance, because it augments income, might also affect household composition for the same reasons. One can easily imagine a wife who puts up with a philandering husband, perhaps because he is a good provider and she has few options on her own. Housing assistance might expand those options by making alternative living arrangements—one in which she lives apart from her husband—feasible.

Turner's (2003) results suggest that housing assistance may dampen the likelihood of parents living together by providing the custodial parent with an alternative and feasible living arrangement—living in subsidized housing without the other parent. Turner's research was based on data from the Fragile Families and Child Well-Being Survey. Among the key findings was that cohabitation before birth was much less likely if the mother lived in government-assisted housing rather than unsubsidized rental housing.

Although these studies are important first steps in broadening our understanding of the relationship between household composition and housing assistance, neither Gould Ellen and O'Flaherty's or Turner's study examines whether marriage or childbearing is related to the receipt of housing assistance. The exploratory research presented here thus builds on the findings of Gould Ellen and O'Flaherty (2002) and Turner (2003) by considering a broader set of household composition outcomes, using a data set that will have less respondent error with regard to participation in housing assistance programs, and examining changes in household composition over time. Because of data limitations, which are detailed below, this research should still be considered an exploration of the relationship between housing assistance and household composition rather than a definitive analysis of causality.

## Data

This study draws on data from the New York City Housing and Vacancy Survey (NYCHVS). The NYCHVS is a longitudinal survey of approximately 18,000 housing units designed to be representative of all housing units in New York City. It is conducted every 3 years by the Census Bureau for New York City in accordance with the city's rent regulation guidelines. For this analysis, the 1996 and 1999 NYCHVS longitudinal data files are used. Because federal housing assistance is targeted to certain income groups, the sample was limited to households meeting U.S. Department of Housing and Urban z to low- and very low-income households with adjustments for household size. Low income is defined as income at or below 80 percent of the median family income for the area. For this study, HUD's income limits for the New York City Primary Metropolitan Statistical Area were used for the 1996 and 1999 analysis years. The sample was further limited to households in which the head was younger than 63 years of age, which is the age HUD uses to define the elderly. Because the elderly are likely to face a different set of decisions regarding household composition (for example, they are unlikely to have additional children) and HUD has separate housing assistance programs for the elderly, these households were excluded from the analysis. This exclusion leaves a sample of 10,374 low-income renter households for the pooled 1996 and 1999 analysis years.

This NYCHVS has several strengths to recommend it. The NYCHVS includes both households receiving housing assistance and those not. A sample size of approximately 10,374 low-income renter households should be large enough to generate sufficient statistical power to discern any effects housing assistance has on household composition. The NYCHVS also has a wealth of relevant socioeconomic data. These data include the relation of all other people in the unit to the householder; the age, gender, race/ethnicity, place of birth, place of parents' birth, income, and education of the householder; and characteristics of the housing unit, including tenure, cost, rooms, and physical deficiencies. Finally, the longitudinal nature of the NYCHVS allows for modeling changes in household composition over time.

For those receiving project-based housing assistance, the housing assistance status of NYCHVS respondents is determined by using administrative data from the New York State Division of Housing and Community Renewal and the New York City Department of Housing Preservation and Development. All rental units must be classified to determine eligibility for rent regulation. This action results in the classification of all project-based housing assistance, including public housing, other HUD-sponsored developments, and state and local subsidized developments. By relying on administrative data, the NYCHVS circumvents the problem of misclassification of project-based housing assistance due to respondent's misreporting whether they live in assisted housing (Shroder 2002). The data on local housing programs and regulations available in the NYCHVS enable one to discern the effect of these programs on household composition.

The potential problem of inaccurate reporting of tenant-based housing assistance still exists. Unlike project-based housing assistance, the NYCHVS does not use administrative records to determine the status of tenant-based housing assistance such as vouchers. Instead, respondents identify their participation in tenant-based housing assistance in response to the following question:

Is any part of the monthly rent for this apartment (house) paid by any of the following government programs, either to a member of this household or directly to the landlord?<sup>1</sup>

- Federal Section 8 certificate or voucher program.
- Another federal housing subsidy program.
- Another city housing subsidy program.

Respondents then choose which program, if any, is applicable. Research conducted by the National Opinion Research Center (NORC) (Rucinski and Athey, 1995) suggests inaccuracies among recipients of certificates and vouchers may be less problematic than those pertaining to the specific identification of project-based housing assistance programs. “Those receiving Certificates/Vouchers appear to know that a certificate is being used,” they write (Rucinski and Athey, 1995: 10). If the results of the NORC study can be generalized to New York City, errors associated with the identification of Section 8 (currently known as Housing Choice Voucher) recipients may be minimal. The two categories of other housing subsidy programs might invite erroneous responses, however, because it is not clear what programs these responses are referring to. In any case, the project-based housing assistance results should be reliable.

## Methodology

This research examines the relationship between household composition and housing assistance in two stages. The first stage employs a cross-sectional analytic approach in which differences in household composition are contrasted between recipients of housing assistance and eligible nonrecipients of housing assistance. The second stage examines differences in longitudinal changes in household composition between recipients of housing assistance and eligible nonrecipients of housing assistance. Because the NYCHVS follows housing units rather than people, this second analysis is limited to households that do not move. In the first stage, various measures of household composition will be the dependent variable and the receipt of housing assistance will be the independent variable.

Because housing assistance is not an entitlement and demand far exceeds supply, as evidenced by lengthy waiting lists, eligible nonrecipients of housing assistance can serve as a “control” group in the analyses that follow. Nevertheless, recipients of housing assistance might differ from nonrecipients in ways that affect household composition; thus, the analysis will statistically control for demographic and economic determinants of household composition.

In the second stage, changes in household composition between time  $t$  and time  $t+3$  will serve as the dependent variable. Receipt of housing assistance at time  $t$  will be the independent variable. The analysis will statistically control for demographic and economic determinants of household composition at time  $t$ .

## Cross-sectional Dependent Variables

### Household Composition

The cross-sectional analysis of household composition is conducted in two stages. The first stage limits the sample to households with minor children and examines how household composition is related to the receipt of housing assistance. The second stage examines the relationship between the number of children in a household and the receipt of housing assistance.

The rationale for conducting separate analyses on different types of households is that the factors that influence decisions about household composition are likely to vary. For example, the decision to add another person to the household through marriage or cohabiting is different than the decision to add another person to the household by having a child.

### Households With Minor Children

This analysis of the relationship between receipt of housing assistance and household composition will consider both the effect of housing assistance on the type of households people live in and the size of these households, respectively, among households with children.

Limiting the sample to households with children leaves a sample of 5,557 low-income renter households. The dependent variable will consist of the following four categories based on household composition:

1. Married or cohabiting with children. In addition to married couples, this category includes all households with children in which an unrelated adult is classified as a “partner” in the NYCHVS.
2. Married or cohabiting with children and other adults.
3. Single parent with children.
4. Single parent with children and other adults.

Although the NYCHVS does distinguish between married and cohabiting partners, it does not distinguish between biological and stepparents. Because much of the debate over changes in marital patterns stems from concerns about children living with their biological parents, the inability to distinguish between biological and stepparents in the NYCHVS renders the distinction between married and cohabiting partners less important. Consequently, this article treats married and cohabiting partners as one category. The analysis examining the relationship between housing assistance and housing size among households with minor children will use a count of the number of minor children in the household. Demographic and economic characteristics will serve as statistical controls but, in this case, marital status and the number of adults in the household will also be included as controls.

## Longitudinal Analysis of Household Composition

This section examines whether housing assistance is related to changes in household composition. The longitudinal nature of the NYCHVS allows one to examine changes in household composition over time. During the 1996–99 study period, 4,050 low-income renter households did not move and, hence, can be analyzed for changes in household composition.

The fact that the NYCHVS follows housing units rather than people, however, is a drawback. Households that move are no longer in the sample. Moreover, mobility is likely to be correlated with changes in household composition as households seek new quarters to meet changes in housing needs due to changes in household composition. This correlation means that any modeling exercise will suffer from sample selection bias. That is, the results will be applicable only to those households that do not move. To attempt to dampen the threat of sample selection bias, Olsen’s (1980) method for using  $P-1$  as a correction term was employed where  $P$  is the probability of being excluded from the sample.

The life-cycle theory of residential mobility was used to develop a model that predicts the probability of someone’s moving (Speare, 1974; Rossi, 1980). This model uses length of tenure, number of persons per room, and the respondent’s rating of his or her neighborhood as instruments and also includes housing assistance, public assistance, gender, the presence of children, marital status, age, race/ethnicity, immigrant status, income, and educational attainment as covariates. The results of this regression model’s predicting if someone moved are available from the author on request. Olsen’s correction term is calculated as the probability of a household moving minus one.

With the use of Olsen’s correction of sample selectivity, the NYCHVS can be used for an exploratory analysis of the relationship between changes in household composition and housing assistance. Nevertheless, the results of the longitudinal analysis should be interpreted cautiously.

In this analysis of changes in household composition two types of changes are considered: whether a change occurred in the number of children in the household, and, qualitatively,

whether a change occurred in the partnership status of households with children. To discern the effect of housing assistance on changes in household composition over time, the following changes will be examined.

**Unattached to Married or Cohabiting.** The dependent variable in this case will be whether a household head who is unpartnered in 1996 is married or cohabiting in 1999. The sample will be limited to all unpartnered household heads in 1996.

**Married or Cohabiting to Unattached.** The dependent variable here will be whether a married or cohabiting household in 1996 is a single head of household in 1999. Because the NYCHVS only asks the relationship of people in the household to the household head, a married or cohabiting person who loses his or her partner through death will be indistinguishable from one who loses his or her partner due to divorce, separation, or an ending of a cohabiting relationship. This lack of information is a drawback because the interest is in determining whether a relationship exists between housing assistance and partners severing ties due to economic incentives, and not due to death. It may not result in biased results if mortality and housing assistance are uncorrelated. I am unaware of any reason to suspect that housing assistance itself would be correlated with mortality. Moreover, statistical controls for age, race/ethnicity, income, and gender should temper any differences in mortality rates between housing assistance recipients and nonrecipients.

Someone who divorces and remarries will also be classified as having remained married and someone who marries and divorces between 1996 and 1999 will be classified as not marrying. This could be viewed as a misclassification and, again, points to caution in interpreting the results of the longitudinal analysis.

## Housing Assistance

As described in the conceptual framework, housing assistance could affect housing composition by substituting for the cost savings derived from living with others; by allowing households to consume more space and, consequently, live comfortably with more people; or by facilitating single-parent households among individuals who would prefer not to stay with their partner. This section spells out the operationalization of housing assistance.

Project-based housing assistance subsidizes housing units and in New York City includes federally sponsored programs such as public housing, other HUD-subsidized housing, and Mitchell-Lama Housing, a New York State project-based housing assistance program for moderate- and middle-income households. The federal government, through the Section 8 program, provides tenant-based housing assistance. As mentioned earlier, eligibility for HUD-sponsored programs, including public housing, Section 8, and other HUD developments, is limited to those earning 80 percent or less of the median area income. Income guidelines for the state-sponsored Mitchell-Lama rentals are based on the annual apartment rent. The maximum income allowable is the annual rent multiplied by seven for households of one to three people, or by eight for households of four or more people. Little reason exists to suspect that project-based housing assistance will differ from tenant-based housing assistance in its relation to household composition unless project-based housing units are larger than market units, which is true in public housing, or smaller, as in certain project-based Section 8 units. Nevertheless, because this analysis is exploratory, distinctions will be made between the various types of housing assistance programs.

In addition to having means-tested housing assistance programs, New York City also has rent regulations that effectively keep rents in some units below market rates. Although rent regulation is not targeted toward low-income or moderate-income households, as are housing assistance programs such as public housing or Section 8, households might respond to this type of housing subsidy as they would to federal transfer programs. In any case, regulated units would be comparable to project-based units.

Housing assistance is measured using two distinct approaches. Recognizing the possibility that varying types of housing assistance might affect household composition in varying ways, the first approach categorizes housing assistance. Project-based assistance categories are (1) public housing, (2) other HUD project-based housing assistance, and (3) Mitchell-Lama Housing. Rent regulation comprises (4) rent-controlled units, (5) rent-stabilized units, and (6) *in rem* (tax-foreclosed) housing or other city of New York regulated apartments. Tenant-based housing assistance is operationalized by two measures including (7) Section 8 certificate or voucher and (8) other unidentified government subsidies. This last category corresponds to the second and third responses to the NYCHVS inquiry about housing subsidies listed in the earlier Data section.

*In rem* housing is housing that the city of New York has acquired through tax foreclosures. Other city-regulated units included in this category are Article 4 buildings, which was a program for moderate-income households. Units in this other “city housing subsidy” category typically have rents that diverge from what the market would dictate.

The second analytic approach takes into account the size of the subsidy that recipients of housing assistance receive. To the extent housing assistance affects housing composition, it seems likely that the amount of housing assistance would be of import as well. The amount of housing assistance is the difference between the actual rent the resident pays and the market rent for that unit. The plethora of housing unit and locational characteristics in the NYCHVS enables one to estimate the market rent for subsidized units using a hedonic regression for all unregulated, unsubsidized units in the NYCHVS sample.

This hedonic regression equation uses the monthly contract rent as the dependent variable and the housing unit and locational characteristics as the independent variables. Housing unit characteristics include the number of bedrooms, total number of rooms, age of the structure, the floor the unit is on, the interviewer’s rating of the building, the number of units in the building, the number of stories in the building, and the number of maintenance deficiencies in the unit. Locational characteristics include whether broken or boarded-up windows are on the block of the unit, the respondent’s rating of the neighborhood, and in which of the 55 subborough areas the unit is located. These subborough areas correspond closely to New York City’s Community Board Districts, the smallest unit of municipal government, which were drawn to represent coherent geographic, demographic, and political entities. They consisted of approximately 131,000 people on average in 1999.

The parameters of this hedonic regression model are used to predict the market rate for subsidized units in the NYCHVS sample. The results of this hedonic regression are available from the author on request. The difference between the predicted market rent and the rent the respondent actually pays is the amount of the subsidy. Descriptive statistics for the estimated subsidy are available from the author on request. The analyses are conducted separately for the type of housing assistance and the amount of housing assistance, respectively.

## Demographic, Social, and Economic Controls

The analyses control for race/ethnicity, immigrant status, age, income, educational attainment, and gender of the household head in the estimates of the relationship between housing assistance and household composition. Race and ethnicity need to be taken into account because substantial evidence suggests household composition varies across racial and ethnic groups (Angel and Tienda, 1982; Patterson, 1998; Richards, White, and Tsui, 1987). The use of housing assistance also varies across racial and ethnic groups (Casey, 1992). Likewise, use of public assistance, including housing assistance, and household composition vary between immigrants and natives (Borjas, 2001). Age is a potential confounding factor because the probability of marriage rises and then declines with age. In addition,

differences exist in the propensity to marry across age cohorts. For example, cohorts born during the 1960s are less likely to marry during their 20s than cohorts born during the 1940s (Wilson, 2003). Socioeconomic status has also been found to be a determinant of household composition; hence, the need to control for educational attainment and income is taken into account. (Wilson, 1987). Gender is also included as a control, because gender is related to the receipt of housing assistance (Casey, 1992).

## Analytic Strategy

To isolate the effect of housing assistance on household composition while holding constant potentially confounding factors such as age and race/ethnicity, multivariate regression techniques are employed. The measurement scale of the dependent variable dictates the type of regression model to be employed. The effects of housing assistance on dependent variables consisting of two categories, such as changes in partnership status, will be estimated using binomial logistic regression. The effects of housing assistance on partnership status, a dependent variable consisting of three or more unordered categories, will be estimated using multinomial regression. Dependent variables that represent the number of children can be considered count data and are best estimated using Poisson regression models. Count data, measured by nonnegative integers, are relatively rare, and the underlying characteristics are assumed to be a Poisson process (Liao, 1994). Exhibit 1 illustrates the means and frequencies of the variables to be used in the multivariate analyses and exhibit 2 provides frequencies for the dependent variables in the longitudinal analyses.

### Exhibit 1

#### Means of Variables

<b>Dependent Variable: Household Type</b>	
Married	27.9%
Married or cohabiting with children	14.5%
Married or cohabiting with children and other adults	6.1%
Single-parent household	20.7%
Single-parent household with other adults	10.5%
Number of persons	2.76
Number of children	1.05
<b>Independent Variable</b>	
Amount of housing subsidy	\$303
Public housing	11.5%
Other HUD housing	2.6%
Mitchell-Lama Housing	3.5%
Rent stabilized	48.6%
Rent controlled	1.2%
Other city regulated	6.9%
Section 8 certificate/voucher	9.1%
Other government subsidy	4.7%
<b>Control Variable</b>	
White	29.7%
African American	32.6%
Hispanic	37.8%
Asian	6.7%
Immigrant, non-second generation	47.8%
Second generation	8.1%
Age	39.9
Household income	\$16,043
High school graduate	30.8%
Some college	19.5%
College graduate	14.5%
Male	37.4%
n	10,374

## Exhibit 2

### Means of Dependent Variables Used in Longitudinal Analyses

Dependent Variable: Household Types	
Married between 1996 and 1999	13.3%
No longer married in 1999	9.9%
Had additional child between 1996 and 1999	16.1%
n	4,727

## Results

The cross-sectional analyses will be presented first followed by the longitudinal analyses. For each outcome of interest, two models will be presented, one using the amount of housing subsidy as the independent variable, and one using the specific housing programs as the independent variables. The focus of the presentations will be on the housing assistance variables. The other control variables will be discussed for the model that uses the amount of housing subsidy as the independent variable. Only if there are substantial differences in the control variables between the two models will the control variables be discussed in the model that uses the specific housing programs as the independent variables.

## Cross-sectional Analyses

### Household Composition for Households With Children

The results presented in exhibit 3 are for the multinomial regression analyzing the relationships between housing assistance and household composition for households with children. This analysis tests the notion that housing assistance is related to decisions about living with a partner or other adults. The results are presented in terms of relative risk ratios, which are analogous to odds ratios; but, because more than one comparison is being made in a multinomial logistic regression, they are referred to as relative risk ratios. Four categories are used: married households, married households with other adults, single-parent households, and single-parent households with other adults. The base category was chosen to be single-parent households. This means the results are presented in terms of the increase or decrease in the likelihood of being in one of the three other household composition categories relative to being a single-parent household. Relative risk ratios greater than 1 mean an increase in the likelihood of being in one of the three other household composition categories while relative risk ratios less than 1 mean a decrease in the likelihood of being in one of the three other household composition categories. For the sake of brevity, relative risk ratios for the multinomial logistic regression models without the corresponding p-values are presented. Statistically significant terms at the 95 percent level of confidence are in bold. The models as a whole are statistically significant as indicated by the chi-square statistic.

The results presented in exhibit 3 suggest that housing assistance is most consistently related to household composition when single-parent households are contrasted to either married households or married households with other adults. In contrast, the differences between households with single parents and single parents with other adults are not consistent. The second column and fifth columns of exhibit 3 show the amount of the housing subsidy and only one significant categorical measure of housing assistance for whether a household is a single parent with other adults. That one measure, receiving a Section 8 voucher certificate, suggests that residents receiving this type of housing are less likely to have other adults in the household.

### Exhibit 3

#### Household Type

Estimation Technique: Multinomial Logistic Regression

#### Independent Variable

	Relative Risk Ratios					
	Single Parent & Other Adults	Married With Other Adults	Married	Single Parent & Other Adults	Married With Other Adults	Married
Amount of housing subsidy*	<b>1.001</b>	<b>.99</b>	<b>.99</b>			
Public housing				1.21	<b>.63</b>	<b>.50</b>
Other HUD housing				1.14	<b>.57</b>	<b>.49</b>
Mitchell-Lama Housing				1.09	<b>.49</b>	<b>.48</b>
Rent stabilized				.84	<b>.77</b>	<b>.76</b>
Rent controlled				2.42	<b>.52</b>	<b>.37</b>
Other city regulated				1.23	<b>.99</b>	<b>.89</b>
Section 8 certificate/voucher				<b>.74</b>	<b>.57</b>	<b>.55</b>
Other government subsidy				.98	<b>.68</b>	<b>.61</b>
<b>Control Variable</b>						
Public assistance	1.05	.84	<b>.39</b>	1.04	.82	<b>.35</b>
Age	.99	.95	.97	.99	.93	<b>.95</b>
Age squared	1.01	<b>1.001</b>	1.001	1.001	<b>1.001</b>	1.001
African American (White serves as reference category)	1.10	<b>.41</b>	<b>.16</b>	1.12	<b>.44</b>	<b>.16</b>
Hispanic (White serves as reference category)	1.08	<b>.57</b>	<b>.23</b>	1.14	<b>.59</b>	<b>.23</b>
Asian (White serves as reference category)	1.79	<b>3.79</b>	<b>2.08</b>	1.76	<b>3.83</b>	<b>2.07</b>
Immigrant (Native, non-second generation serves as reference category)	<b>1.77</b>	<b>2.11</b>	<b>2.42</b>	<b>1.83</b>	<b>2.95</b>	<b>2.47</b>
Second generation (Native, non-second generation serves as reference category)	1.01	1.42	1.33	1.12	1.24	<b>1.37</b>
Household income	<b>1.001</b>	<b>1.001</b>	<b>1.001</b>	<b>1.001</b>	<b>1.001</b>	<b>1.001</b>
High school graduate (Non-HS graduate serves as reference category)	<b>.74</b>	<b>.67</b>	.91	<b>.70</b>	<b>.69</b>	.96
Some college (Non-HS graduate serves as reference category)	<b>.69</b>	<b>.42</b>	<b>.67</b>	<b>.67</b>	<b>.43</b>	<b>.71</b>
College graduate (Non-HS graduate serves as reference category)	<b>.62</b>	<b>.37</b>	.75	<b>.61</b>	<b>.38</b>	.77
Year = 1996	1.01	1.05	<b>1.19</b>	.99	1.14	<b>1.27</b>
n	4,817			4,872		
$\chi^2$ statistic	8,420	.01		1,214	.01	

Note: Figures in **bold** are statistically significant at the 95 percent level of confidence.

The third, fourth, sixth, and seventh columns of exhibit 3 show significant relationships between housing assistance and household composition. Consider the public housing variable. The relative risk ratio in column six shows residents of public housing are only 63 percent as likely to be in a married household with other adults, as opposed to residing in a single-parent household. A similar relationship is evident when the comparison is made to married households. These results tell us that residents of public housing are substantially less likely to be part of married couple households, even after controlling for other predictors of household composition. Residents of Mitchell-Lama, rent-stabilized, and Section 8 subsidized units are also substantially less likely to be part of married couple

households. All of these relative risk ratios are substantially less than 1, meaning single-parent households, of either type, are more prevalent among recipients of housing assistance, all else being equal. Residents of other HUD developments and other government-subsidized units are more likely to be in single-parent households than married couple households as indicated in column seven, but are not more likely to be in single-parent households in contrast to married households with other adults, as indicated by the insignificant relative risk ratios in column six. No consistent relationship was found between household composition and residence in a rent-controlled or other city-regulated apartment among families with children.

When the contrast is between married couples with other adults to single-parent households, race/ethnicity, immigrant status, income, and educational attainment are significant predictors, as indicated by the statistically significant relative risk ratios in columns three and six. When the contrast is between married couples to single-parent households (shown in columns four and seven), public assistance, race/ethnicity, immigrant status, income, having some college, and the year 1996 are significant predictors.

## Number of Children

This section describes the relationship between receipt of housing assistance and the number of children in a household. To the extent housing assistance allows people to live in larger units or frees up resources that would otherwise be used for housing, housing assistance should be correlated with more children. The second and third columns of exhibit 4 present the results of the Poisson regression for the number of children, using the amount of the housing subsidy as the independent variable. The variable is statistically significant, but the size of the relationship is modest. A \$1 increase in the amount of the subsidy is associated with a less than 1/10<sup>th</sup> of 1 percent increase in household size.

The last two columns in exhibit 4 show how each of the different types of housing assistance is related to the number of children in a household. Public housing, Section 8, and other government subsidies are positively related to the number of children in a household. That is, recipients of these types of housing assistance have a higher number of children. For example, the incidence rate ratio for public housing, 1.16, means that residents of public housing had 1.16 times as many children as residents of unsubsidized apartments, all things being equal. In contrast, some of the other housing assistance variables had a negative relationship with the number of children in a household. Residents of other HUD developments, rent-stabilized, and rent-controlled units all had fewer children. Residents of other HUD developments, for example, had .81 as many children as residents of unsubsidized units. These results appear to be somewhat contradictory, but it should be kept in mind that, even with statistical controls, residents of rent-regulated apartments are likely to differ from recipients of housing assistance. Residents of rent-regulated apartments are known to be much older and, therefore, would be less likely to have children (Salins, 1992). It is therefore not surprising to find a negative relationship between rent regulation and the number of children, whereas most of the other housing assistance variables exhibit a positive effect. The negative relationship between residing in other HUD developments and the number of children in the household could be related to other HUD developments that are targeted specifically for the elderly. These developments are not designed to house children.

## Exhibit 4

### Number of Children in Household

#### Estimation Technique: Poisson Regression

#### Independent Variable

	Incidence Rate Ratios	P-value	Incidence Rate Ratios	P-value
Amount of housing subsidy*	1.001	.01		
Public housing			1.16	.01
Other HUD housing			.81	.01
Mitchell-Lama Housing			.92	.23
Rent stabilized			.85	.01
Rent controlled			.49	.01
Other city regulated			1.07	.13
Section 8 certificate/voucher			1.38	.01
Other government subsidy			1.19	.01
<b>Control Variable</b>				
Public assistance	1.37	.01	1.38	.01
Married or cohabiting	2.58	.01	2.51	.01
Single-parent household	2.75	.01	2.72	.01
Age	1.33	.01	1.31	.01
Age squared	.99	.01	.99	.01
African American (White serves as reference category)	1.23	.01	1.21	.01
Hispanic (White serves as reference category)	1.16	.01	1.18	.01
Asian (White serves as reference category)	1.09	.13	1.09	.08
Immigrant (Native, non-second generation serves as reference category)	1.11	.01	1.14	.01
Second generation (Native, non-second generation serves as reference category)	1.15	.01	1.16	.01
Household income	1.001	.73	1.001	.01
High school graduate (Non-HS graduate serves as reference category)	.84	.01	.83	.01
Some college (Non-HS graduate serves as reference category)	.79	.01	.80	.01
College graduate (Non-HS graduate serves as reference category)	.70	.01	.71	.01
Year = 1996	.87	.01	.86	.01
n	8,760		8,919	
$\chi^2$ statistic	3,733	.01	3,956	.01

## Conclusion: Cross-sectional Analysis of Housing Assistance and Household Composition

Despite the somewhat contradictory findings, a general pattern does emerge from the cross-sectional analyses of the relationship between housing assistance and household composition. The amount of the housing subsidy is positively correlated with being a single parent and having more children. The two largest HUD programs, public housing and Section 8, are also positively associated with being a single parent and having more children. Both rent control and rent stabilization are negatively associated with the number of children, while rent stabilization is negatively associated with being part of a married household. Residence in a Mitchell-Lama unit is positively correlated with being a single parent.

These relationships are consistent with the notion that housing assistance is causally related to household composition, but the cross-sectional nature of the analysis does not allow one to draw firm conclusions. Perhaps most problematic, it does not allow one to rule out the possibility that causality between household composition and housing assistance runs from the former to the latter. For example, the evidence presented above demonstrated

a link between larger households and the receipt of household assistance. But this link could be due to larger households seeking out and receiving housing assistance more so than smaller households, other things being equal. From a methodological perspective, the results reported above were likely biased. From a policy perspective, much of the concern is over whether housing assistance influences household composition. Thus, it is paramount that light be shed on whether there is any evidence that the causality runs in this direction. The longitudinal analysis in the next section attempts to do this.

## Results of the Longitudinal Analysis

The longitudinal analysis focused on two types of household change between 1996 and 1999 among households that did not move: changes in marital status and having a child.

### Changes in Marital Status

Exhibit 5 presents the results of a logistic regression model of the relationship between the receipt of housing assistance in 1996 and marital status in 1999. This analysis tests whether housing assistance is related to the decision to marry. Recall that, for the purposes of this article, cohabiting adults are considered married. The sample is limited to those households that were not married in 1996. The dependent variable thus takes on a value of 1 if the householder was married in 1999, and 0 otherwise. The second and third columns of exhibit 5 show that the amount of the housing subsidy is significantly related to the odds of someone getting married, but only at a 90-percent level of confidence. Householders with children and older householders were more likely to marry, whereas college graduates were substantially less likely to marry during this period. The Olsen correction term is positive and statistically significant, meaning that the probability of moving is positively correlated with getting married, as might be expected.

When the relationship between specific types of housing assistance and getting married is examined, a relatively consistent pattern emerges. The fourth and fifth columns of exhibit 5 show recipients of project-based housing assistance in 1996 were less likely to be married in 1999. The only exception is residents of rent-controlled apartments. Even among that category, the relationship would be significant and negative if a confidence level of 90 percent were being used. Recipients of tenant-based housing assistance, however, were not significantly less likely to marry. Indeed, the direction of the relationship is positive, although the relationship is insignificant. Why tenant-based housing assistance appears unrelated to marital decisions is unclear. Columns four and five of exhibit 5 also show public assistance, having a child, being Asian, and the Olsen correction term to be significant predictors of getting married. Taken together, the results presented in exhibit 5 are consistent with the notion that recipients of housing assistance are less likely to partner with another person.

The results presented in Exhibit 6 consider the converse of marrying—whether a household that is married in 1996 is no longer married in 1999. The hypothesis being tested here is whether housing assistance contributed to marital dissolution, perhaps by making it easier for individuals to live alone. As mentioned earlier, a drawback of the NYCHVS is that it does not distinguish between widowed individuals and those who are separated or divorced. Nonetheless, little reason exists to expect housing assistance to be correlated with mortality. We thus assume that measurement error from death of a partner is a random process that does not bias results.

## Exhibit 5

### Married Between 1996 and 1999

#### Estimation Technique: Logistic Regression

#### Independent Variable

	Odds Ratios	P-value	Odds Ratios	P-value
Amount of housing subsidy*	.99	.10		
Public housing			.33	.01
Other HUD housing			.46	.05
Mitchell-Lama Housing			.40	.02
Rent stabilized			.60	.01
Rent controlled			.33	.08
Other city regulated			.48	.03
Section 8 certificate/voucher			1.03	.87
Other government subsidy			1.08	.84

#### Control Variable

Public assistance	.77	.10	.75	.05
Male	1.33	.08	1.32	.07
Has child	1.91	.01	1.67	.01
Age	1.09	.01	1.08	.08
Age squared	.99	.16	.99	.13
African American (White serves as reference category)	.82	.30	.98	.93
Hispanic (White serves as reference category)	.89	.58	1.10	.63
Asian (White serves as reference category)	1.59	.19	2.45	.01
Immigrant (Native, non-second generation serves as reference category)	1.32	.09	1.19	.27
Second generation (Native, non-second generation serves as reference category)	1.32	.30	1.20	.48
Household income	.99	.62	1.001	.79
High school graduate (non-HS graduate serves as reference category)	1.03	.83	1.10	.52
Some college (Non-HS graduate serves as reference category)	1.31	.14	1.25	.20
College graduate (Non-HS graduate serves as reference category)	.56	.03	.63	.07
Olsen correction term	97.30	.01	12.08	.02
n	1,798		1,913	
$\chi^2$ statistic	100.04	.01	124.58	.01

For the most part, the results presented in exhibit 6 offer mixed evidence of a relationship between receipt of housing assistance and dissolving a partnership. Housing assistance, measured as the amount of subsidy, is not significantly related to dissolving a partnership. Married couples with children were less likely to separate, while African Americans and Hispanics were more likely to separate. Among the variables measuring receipt of a specific type of housing assistance, shown in the fourth and fifth columns of exhibit 6, only the public housing and rent-stabilized variables are statistically significant at the 95-percent level of confidence. It should be noted that limiting the sample to low-income renters who were married in 1996 substantially reduces the sample size. This reduction increases the likelihood that the lack of evidence of a relationship between housing assistance and separating may be due to the lack of statistical power rather than the lack of such a relationship in the population.

## Exhibit 6

### Marriage Dissolved Between 1996 and 1999

#### Estimation Technique: Logistic Regression

#### Independent Variable

	Odds Ratios	P-value	Odds Ratios	P-value
Amount of housing subsidy*	1.001	.87		
Public housing			2.11	.02
Other HUD housing			2.23	.21
Mitchell-Lama Housing			1.56	.29
Rent stabilized			1.35	.05
Rent controlled			1.32	.67
Other city regulated			.83	.62
Section 8 certificate/voucher			1.13	.73
Other government subsidy			.49	.19

#### Control Variable

Public assistance	1.19	.34	1.18	.33
Male	.83	.21	.80	.11
Has child	.62	.01	.66	.01
Age	1.01	.85	1.02	.61
Age squared	.99	.75	.99	.59
African American (White serves as reference category)	1.67	.01	1.53	.03
Hispanic (White serves as reference category)	1.63	.01	1.40	.06
Asian (White serves as reference category)	1.36	.19	1.22	.39
Immigrant (Native, non-second generation serves as reference category)	.86	.39	.89	.49
Second generation (Native, non-second generation serves as reference category)	1.21	.51	1.34	.30
Household income	.99	.56	.99	.55
High school graduate (Non-HS graduate serves as reference category)	.97	.86	.89	.47
Some college (Non-HS graduate serves as reference category)	.81	.29	.75	.13
College graduate (Non-HS graduate serves as reference category)	.88	.58	.77	.24
Olsen correction term	2.44	.15	5.39	.14
n	1,111		1,172	
$\chi^2$ statistic	32.79	.01	45	.01

Overall, the results presented in exhibit 5 suggest housing assistance dampens the likelihood of marriage. Exhibit 6 shows that marriages are more likely to dissolve in public housing and rent-stabilized units. But given that none of the other assisted housing variables are statistically significant, this finding might be idiosyncratic to these specific programs. In addition, the lack of evidence may be due to the lack of statistical power, although it is also possible that housing assistance is more consistently related to decisions about marrying but not to marital dissolutions.

### Having a Child

To the extent that housing assistance subsidizes consumption and allows households to afford more housing than they otherwise might, this subsidy could facilitate having more children.

The results presented in exhibit 7 do not support this hypothesis. None of the variables measuring housing assistance, including the subsidy amount and the other program specific variables, are significant. In general, housing assistance appears unrelated to decisions to procreate.

The model does suggest that being African American or Hispanic, already having a child, and being married increased the likelihood of a household adding a child between 1996 and 1999. Likewise, moving or being lost from the sample for some other reason is positively correlated with having a child, as indicated by the significant and positive Olsen correction term. Higher incomes are associated with a lower likelihood of having an additional child.

## Exhibit 7

### Has a Child Between 1996 and 1999

#### Estimation Technique: Logistic Regression

#### Independent Variable

	Odds Ratios	P-value	Odds Ratios	P-value
Amount of housing subsidy*	.99	.29		
Public housing			.84	.42
Other HUD housing			.71	.32
Mitchell-Lama Housing			.77	.43
Rent stabilized			1.11	.37
Rent controlled			.67	.52
Other city regulated			.84	.52
Section 8 certificate/voucher			.97	.87
Other government subsidy			1.14	.94

#### Control Variable

Public assistance	1.06	.62	1.01	.94
Male	.89	.37	.96	.72
Married	1.56	.01	1.55	.01
Has child	2.35	.01	2.54	.01
Age	1.01	.77	.98	.60
Age squared	.99	.21	.99	.70
African American (White serves as reference category)	1.50	.01	1.61	.01
Hispanic (White serves as reference category)	1.42	.03	1.57	.01
Asian (White serves as reference category)	1.20	.41	1.24	.33
Immigrant (Native, non-second generation serves as reference category)	1.03	.22	.94	.63
Second generation (Native, non-second generation serves as reference category)	1.16	.44	1.01	.95
Household income	.99	.03	.99	.04
High school graduate (Non-HS graduate serves as reference category)	.82	.10	.82	.10
Some college (Non-HS graduate serves as reference category)	1.01	.98	1.04	.78
College graduate (Non-HS graduate serves as reference category)	.78	.18	.79	.19
Olsen correction term	7.66	.01	7.50	.01
n	3,489		3,717	
$\chi^2$ statistic	145	.01	280	.01

## Discussion

The results of the cross-sectional and longitudinal analyses provide important clues about the relationship between housing assistance and household composition. First, the evidence supports the contention that a relationship exists. Measures of housing assistance proved to be significant predictors of household composition across a number of model specifications. The relationship varies and/or diminishes, however, depending on what type of household composition is under consideration. The following discussion sums up the evidence on two categorizations of household composition: marital status and the presence of children.

**Marital Status.** As discussed earlier, housing assistance may affect marital choices to the extent that economies of scale in household production achieved through marriage are considered in the decision to marry or remain married. The results of the cross-sectional analysis showed that, in most instances, recipients of housing assistance were less likely to be married. The results of the longitudinal analysis were consistent with the cross-sectional findings. Housing assistance was negatively correlated with getting married. These results are consistent with the notion that housing assistance dampens the likelihood of marriage. The results do not rule out the possibility that unmarried households are more likely to seek housing assistance, independent of any effect such assistance might have on the decision to marry. But they certainly point to a conclusion that recipients of housing assistance are less likely to partner. This finding jibes with Turner's (2003) research that showed cohabitation was much less likely if the mother lived in government-assisted housing compared to unsubsidized rental housing.

When we consider the converse, the dissolution of a partnership, the evidence is less conclusive. The longitudinal analysis only found public housing and rent regulation to be related to marital dissolutions, but other types of housing assistance were not. One possible explanation for finding only these two variables significant is the small sample size used with the marital dissolution models. But without additional research it is safer to conclude that housing assistance is associated with lessening the likelihood of marrying rather than concluding that assisted housing contributes to partners splitting up.

**The Presence of Children.** Housing assistance, by expanding the household budget, might facilitate the adding of children to a household. The cross-sectional results show larger housing subsidies are associated with more children. In addition, those in public housing and Section 8 and recipients of other federal housing assistance tend to have more children, whereas residents of rent-regulated units and other HUD developments have fewer children. These contradictory results defy easy interpretation. The longitudinal analysis finds little in the way of a consistent relationship between housing assistance in 1996 and having a child by 1999. Therefore, the results presented here do not allow for definitive conclusions on the relationship between housing assistance and procreation, but do imply that households with more children may be more likely to seek out housing assistance.

## Conclusion and Implications

Taken together, the results of the cross-sectional and longitudinal analyses point to the existence of a relationship between housing assistance and household composition. Consider the two types of household composition addressed in this analysis: marital status and the number of children in a household. Marital status was most consistently related to the receipt of housing assistance. Recipients of housing assistance were less likely to be married and less likely to get married over time. The amount of the housing subsidy was also modestly but negatively associated with getting married. Little evidence was found, however, to suggest that, after people married or started cohabiting, housing assistance contributed to the dissolution of partnerships. This result is consistent with the household production view of marriage or cohabiting, which views partnering as a cost-saving strategy, in part. Recipients of housing assistance might be more selective in choosing a partner because the incentive to reduce housing costs is less when one's housing is being subsidized. These results do not rule out the possibility that unmarried individuals are more likely to seek out housing assistance, but they do imply that, at a minimum, housing assistance influences partnering decisions.

The second set of results considered pertains to the presence of children in a household. Here the cross-sectional results appear to be completely at odds with the longitudinal results. In general, recipients of housing assistance have more children but were less likely to have a new child between 1996 and 1999. These seemingly contradictory results are

consistent with an account that has households with more children more likely to seek out housing assistance but, once they have housing assistance, they are less likely to have additional children. Unlike welfare, housing assistance does not increase automatically with the addition of a child to the household. Obtaining an increase in housing assistance means finding another unit, which is no easy task in a tight housing market like New York City, a task made even more difficult by the need to find a unit that is subsidized or accepts Section 8. Faced with these options, housing assistance recipients may be more likely to forego having additional children.

These results, in conjunction with the findings of Gould Ellen and O'Flaherty (2002) and Turner (2003), should be viewed as the first steps in an exploration of the relationship between housing assistance and household composition. These exploratory analyses clearly illustrate a relationship between housing assistance and household composition. The next steps should be to determine whether this relationship is causal or not and in what direction(s) this causality may run. This research should be pursued using experimental data or panel data that follow people over time and have reliable and valid information on housing assistance receipt. It is also desirable to extend this study beyond New York City, an atypical housing market. Using one of these latter approaches would make clear the direction of causality between housing assistance and household composition and would allow for generalization beyond nonmoving households in New York City.

To the extent policymakers wish to influence household decisions on household composition, and recent changes in welfare law suggests this is clearly the case, these results suggest housing assistance may play a role. But it would be wise to gain a clearer picture of exactly what that role is before attempting to manipulate household composition decisions through housing assistance.

In conclusion, the results suggest that choices about whom to live with are influenced by housing assistance. By subsidizing the largest item in most household budgets, housing assistance provides recipients with living arrangement options they might otherwise not have.

### *Author*

*Lance Freeman is an assistant professor in the Graduate School of Architecture, Planning, and Preservation at Columbia University. The research reported in this article was supported by the U.S. Department of Housing and Urban Development.*

### *Note*

1. Two other possible responses to this question are (1) the Public Assistance Shelter Allowance Program (PASAP) and (2) the Senior Citizen Rent Increase Exemption (SCRIE). The PASAP refers to the amount of the welfare grant that is applied to housing and is not determined by the cost of the housing unit. Thus, this program is not truly housing assistance and is not considered explicitly here. The SCRIE is an additional subsidy available for elderly householders in rent-regulated apartments. Because the elderly are excluded from this analysis, this program is not applicable here.

### *References*

Angel, Roland, and Marta Tienda. 1982. "Determinants of Extended Household Structure: Cultural Pattern or Economic Need?" *American Journal of Sociology* 87 (6): 1360–1383.

Borjas, George J. 2001. *Heaven's Door*. Princeton, NJ: Princeton University Press.

Casey, Connie H. 1992. *Characteristics of HUD-Assisted Renters and Their Units in 1989*. Washington, DC: U.S. Department of Housing and Urban Development, Office of Policy Development and Research.

Gould Ellen, Ingrid, and Brendan O'Flaherty. 2002. "Do Housing and Social Policies Make Households Too Small? Evidence from New York." Discussion Paper #0203–07. New York: Columbia University, Department of Economics.

Liao, Tim Futing. 1994. *Interpreting Probability Models: Logit, Probit and Other Generalized Linear Models*. Thousand Oaks, CA: Sage Publications.

Moffitt, Robert A. 1997. "The Effect of Welfare on Marriage and Fertility: What Do We Know and What Do We Need to Know?" Institute for Research on Poverty Discussion Paper No. 1153-97. Madison: University of Wisconsin.

Murray, Charles. 1984. *Losing Ground*. New York: Basic Books.

Olsen, Randall J. 1980. "A Least Squares Correction for Selectivity Bias," *Econometrica* 48 (7): 1815–1820.

Patterson, Orlando. 1998. *Rituals of Blood: Consequences of Slavery in Two American Centuries*. Washington, DC: Civitas.

Richards, Toni, Michael J. White, and Amy Ong Tsui. 1987. "Changing Living Arrangements: A Hazard Model of Transitions Among Household Types," *Demography* 24 (1): 77–97.

Rossi, P.H. 1980. *Why Families Move*. New York: Free Press.

Rucinski, Dianne, and Leslie Athey. 1995. *Identifying Recipients of Housing Assistance Through Survey Questions*. Chicago: National Opinion Research Center.

Salins, Peter. 1992. *Scarcity by Design*. Cambridge, MA: Harvard University Press.

Shroder, Mark. 2002. "Does Housing Assistance Perversely Affect Self-Sufficiency? A Review Essay," *Journal of Housing Economics* 11 (4): 381–417.

Speare, A. 1974. "Residential Satisfaction as an Intervening Variable in Residential Mobility," *Demography* 11 (2): 173–188.

Turner, Mark. 2003. *Cohabitation of Unwed Parents in Federally Subsidized Housing: Effects of Income and Housing Prices*. Draft report. Washington, DC: Urban Institute.

Wilson, James Q. 2003. *The Marriage Problem*. New York: Harper Collins.

Wilson, William J. 1987. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press.

### **Additional Reading**

Heckman, James. 1979. "Sample Bias as a Specification Error," *Econometrica* 42: 679–694.

Stolzenberg, Ross M., and Daniel A. Relles. 1997. "Tools for Intuition About Sample Selection Bias and Its Correction," *American Sociological Review* 62: 494–507.