

Using the Weighted Displacement Quotient To Explore Crime Displacement From Public Housing Redevelopment Sites

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Abstract

HOPE VI, a federal funding initiative begun in 1992, is designed to eradicate severely distressed public housing. The program implicitly recognized the importance of geography to its efforts, also aiming to improve conditions in areas surrounding sites targeted for improvement under HOPE VI. This article considers changes effected by HOPE VI redevelopment from the perspective of geography, examining the spatial movement of crime in and around five public housing sites in Milwaukee, Wisconsin and Washington, D.C., throughout their redevelopment, using the Weighted Displacement Quotient (WDQ). The results from Milwaukee were mixed, with evidence of crime displacement provided by some of the WDQs. In Milwaukee, the redevelopment's reduction effects on crime grew with time and were stronger later in the study period. The results from Washington, D.C.'s Capitol Gateway and Capper/Carrollsbury sites were much more consistent than those from Milwaukee, because the WDQs for different areas and time periods produced similar results, indicating a diffusion of benefits. Because of its simplicity, the WDQ should be attractive to practitioners who are studying the effects of this type of redevelopment, as long as the method is used with the understanding that the results are descriptive.

Introduction

Since 1992, HOPE VI has been the largest and perhaps the most visible federal effort to improve—or rebuild altogether—the nation's most decayed public housing and most dire living conditions. At its inception, HOPE VI represented a radical change in housing policy, with the idea that the

worst public housing developments needed extreme changes: most HOPE VI sites are demolished and replaced with new, redesigned housing. The program also aims to reduce the concentration of extreme poverty that is typical in targeted public housing developments by creating mixed-income and mixed-use spaces, and by mixing renters and owners.

The reauthorization of HOPE VI in 1998 cited six main goals of the program, three of which were improving the living conditions and lives of public housing residents, deconcentrating poverty and low-income families, and making those changes sustainable. A fourth goal, “contributing to the improvement of the surrounding neighborhood,”¹ explicitly recognized that redevelopment plans could not ignore what was going on around each site, and that improving the surrounding area was key to sustaining changes brought about by redevelopment. Geography, therefore, was understood to be an important element of HOPE VI efforts. This article considers changes effected by HOPE VI redevelopment from the perspective of geography, examining the spatial movement of crime in and around five public housing sites throughout their redevelopment.

Although many studies have considered the effects of HOPE VI on both residents and neighborhoods (for example, see Castells, 2010; Popkin et al., 2004, 2002; Turbov and Piper, 2005; Zielenbach and Voith, 2010), few have considered the effects of redevelopment under this federal program on crime levels in the neighborhoods surrounding the sites, and fewer still have specifically tied changes in crime levels to a site’s redevelopment timeline and physical changes.

The current research aims to remedy that deficiency through an examination of crime displacement and/or potential diffusion of benefits in and around five public housing developments undergoing redevelopment in Milwaukee, Wisconsin, and Washington, D.C. This article reports on the results from one part of a larger research project that statistically analyzed crime displacement using three different methodologies; this article focuses on the results of the Weighted Displacement Quotient (WDQ) (Bowers and Johnson, 2003).²

The WDQ is a descriptive measure based on simple arithmetic, making it easy to implement and very accessible, even to those without a background in statistics. One big attraction of the quotient is the ease of changing its parameters, which allows a researcher to compare results for different areas and across different time periods in short order. Interpreting the results is straightforward.

The WDQ should be attractive to practitioners who are studying the effects of large-scale public housing redevelopment, as long as the method is used with the understanding that the results are descriptive. Policymakers want to know what works immediately or soon after an intervention is implemented, and this short-term thinking often precludes researchers from using more statistically rigorous designs. This desire for very timely results makes the WDQ valuable. One of this article’s aims is to demonstrate that limited resources or statistical skills should not limit the ability of practitioners to consider possible displacement or diffusion of benefits in the area around the redevelopment site.

¹ U.S. Housing Act of 1937, Section 24(a). Public Law 93–383 (42 U.S.C. 1437v) as amended by Section 535 of the Quality Housing and Work Responsibility Act of 1998. Public Law 105–276, October 21, 1998.

² Contact the author for information on the full report that contains analysis using all three methodologies.

Public housing is being renovated under this federal program nationwide, with the expectation that quality of life in the immediate and surrounding areas will be improved greatly. The program's ability to affect community crime rates, however, is still unclear, and the research for this article sought to address that question.

Background

This article first reviews the relevant literature in two main topic areas on which the current research is founded. A significant amount of previous work has been conducted on levels of crime in public housing and the elements of public housing that might contribute to higher crime rates. Less work, however, has focused on displacement following crime prevention and intervention efforts, and even less has focused on displacement from public housing. This work thus expands the body of evidence on both the effects of crime on public housing redevelopment and the likelihood that crime will be displaced to other areas after such efforts are implemented. Finally, this section details the data and methodology used in this research.

Crime and Public Housing

Two main schools of thought inform our research: (1) crime and space approaches, which include ideas from the Crime Prevention Through Environmental Design school and defensible space theory and (2) social disorganization theory. These approaches have a common focus: the importance of informal social control, manifested, in this case, as public housing residents' ability to control criminal behaviors. Both of these approaches also focus at least in part on the physical nature of the neighborhood—in this case, a public housing site—and its effects on crime and social control.

These perspectives have guided the investigation of public housing and crime over the past several decades, and it is commonly recognized that the residents of the kinds of severely distressed public housing sites targeted by HOPE VI are disproportionately affected by crime (DeFrances and Smith, 1998; HUD, 2000). Pyle (1976) suggested that areas with public housing tended to attract a substantial number of offenders from surrounding areas, while more recent research by Fagan and Davies (2000) found that violent crime tended to be associated with public housing units. Likewise, Dunworth and Saiger (1994) found higher rates for drug arrests and violent crime in areas with public housing compared with similar neighborhoods.

This relationship between public housing and crime is supported by further evidence that the environment of many public housing complexes attracts drug trafficking and violence (Fosburg, Popkin, and Locke, 1996; Popkin et al., 2002). Newman's (1996, 1972) foundational work on defensible space suggested that the physical design of public housing was key in preventing crime there. Likewise, Popkin et al.'s (2004) review of HOPE VI tied the often extremely unsafe conditions that existed in HOPE VI sites before redevelopment to poor physical design of the buildings themselves.

Although the studies mentioned previously analyzed crime in and around public housing, few studies have focused on assessing the effect of large-scale changes to public housing environments (Jones, 2002; Turbov and Piper, 2005). Turbov and Piper (2005) considered changes in crime

levels surrounding HOPE VI sites; while they simply reported crime levels before and after redevelopment, their work did find that crime levels dropped dramatically in HOPE VI neighborhoods.

Crime Displacement

Although numerous types of displacement might occur after implementing an anticrime initiative, this article focuses solely on spatial displacement, or the movement of crime from a targeted area to nearby areas. Previous research in this area has largely focused on displacement that occurs as the result of a focused police enforcement effort or police intervention. These interventions are typically focused on small hot spots of crime—several square blocks at most—and have distinct periods of implementation.

Determining how to predict and test for possible spatial crime displacement following an intervention is one that has been the focus of environmental criminologists for at least the past three decades (Brantingham and Brantingham, 1993; Cornish and Clarke, 1987; Gabor, 1990, 1981; Repetto, 1976; Sherman, Gartin, and Buerger, 1990). The literature on these efforts is limited, and those studies that have considered displacement have shown mixed results (Barclay et al., 1996; Braga and Bond, 2008; Braga et al., 1999; Fritsch, Caeti, and Taylor, 1999; Lawton, Taylor, and Luongo, 2005; Weisburd et al., 2006). Essentially, no clear or consistent finding exists in the literature regarding the likelihood that displacement will occur or the expected magnitude of any displacement that might occur. Although displacement does not appear to be a given after police enforcement efforts, researchers do not know if those conclusions can be applied to other, more long-term events, like the redevelopment of public housing. Nevertheless, this information on whether such displacement may occur is imperative for practitioners planning large-scale redevelopment efforts.

We theorize that crime can be displaced from public housing redevelopment sites in two main ways. Displacement can occur when public housing residents move to new locations and crime moves with those individuals to their new residences. Crime displaced in this manner would be expected particularly in the case where large numbers of residents are moved *en masse* to a new location. Alternatively, crime itself may move out of the redevelopment site to nearby locations. In this case, the perpetrators of crime (for example, drug dealers) might attempt to maintain their criminal activities in the same general area, but are forced out of the redevelopment site itself (for example, by construction or increased enforcement). Or, the criminal opportunities in the redevelopment site might be reduced, but nearby areas may still offer criminal opportunities and thus absorb the crime that would have otherwise been occurring in the redevelopment site itself.

At the outset of our research, our assumption was that crime would move via either or both modes of displacement: with relocated residents moving to their new neighborhoods, or to other nearby areas offering similar criminal opportunities. Because of limitations in the data collected for this study, however, our ability to study explicitly the first mode of spatial displacement was limited. In neither Milwaukee nor Washington, D.C., were we able to obtain information on the locations of individual residents during and after the redevelopment process. These limitations were tempered somewhat, especially in Milwaukee, by one important factor: the housing authority there made a significant effort to keep residents within the redevelopment neighborhood and moved residents around among available units as construction took place elsewhere within the site. Therefore,

although we did not have information on Milwaukee residents' new addresses, we had good reason to believe that many, if not most, remained on site, and were therefore able to test for both types of spatial displacement simultaneously.

In Washington, D.C., we learned from interviews with housing authority staff that residents were moved to any available public housing unit or given Section 8 vouchers. Those interviewed did not feel that critical masses of residents had all moved to the same areas but rather that residents were scattered to various locations throughout the city. The lack of data on residents and the scattering of residents throughout the city made testing the first type of spatial displacement—where crime moves with residents to their new neighborhoods—both impossible and, arguably, irrelevant. The second mode of displacement, however, was fully testable in both Milwaukee and Washington, D.C.

Data

The research team conducted interviews with staff members of the Housing Authority of the City of Milwaukee (HACM) and the District of Columbia Housing Authority (DCHA) to gather information used to determine the redevelopment timelines and define pre-, during-, and post-intervention periods for use in the analyses.

The research team collected address-level incident data for the city of Milwaukee from the Milwaukee Police Department for the January 2002-to-February 2010 period.³ Incident data included all 'Group A' offenses as classified under the National Incident-Based Reporting System. We then geocoded addresses using a streetfile provided by the City of Milwaukee with a 100-percent match rate. Finally, the team classified offenses into personal (violent) and property offenses. Personal offenses included homicide, sexual offenses, assault offenses, and kidnapping. Offenses were aggregated into monthly counts, giving project staff 110 months of data with which to conduct statistical analyses.

The research team also collected address-level incident data for Washington, D.C., from the Metropolitan Police Department (MPD) for the January 2000-to-September 2009 period. Incident data included all Part I offenses as classified under the Uniform Crime Report system run by the Federal Bureau of Investigation. MPD provided the research team with the geographic coordinates of all incident locations, so no geocoding was necessary. As in Milwaukee, researchers classified data into personal and property offenses, following the same scheme used for the Milwaukee data.

Methods

Before analysis began, the research team had to (1) identify the overall timeline of redevelopment for each site in the study; (2) determine the 'intervention' point(s) so that we could identify displacement periods, during which we would expect to see displacement; (3) define the boundaries

³ Note that the police department in Milwaukee changed data systems in early 2005. This shift in systems created two data issues: one was that data for the last 3 months of 2004 were missing. Monthly totals for those months were imputed using data before and after the missing months. The second issue was that arrest data from before 2005 were missing; we thus were unable to analyze arrest data as initially planned.

of the site from which crime displacement might occur; (4) define the displacement areas (those sites to which crime might be displaced); and (5) identify comparison areas. Low-income housing redevelopment under HOPE VI typically takes place over a long period of time, and the redevelopment sites often have poorly defined, vague, or overlapping geographic boundaries. This was the case in Milwaukee, especially, which made site definition very difficult. Site definition in Washington, D.C., however, was relatively straightforward.

Crime displacement is most often studied by choosing an area to which crime will most likely be displaced—referred to as the “displacement zone”—and comparing levels of crime in that area with the target area (area where the intervention took place). The displacement zone most commonly surrounds the target area; this particular design is sometimes described as a “buffer zone.” This buffer zone can be concentric, reaching a set distance in all directions from the target area, or it can be contiguous to the target area but extending only in limited directions (Hamilton-Smith, 2002). Most research thus far has looked for immediate spatial displacement in areas contiguous to the target area (Braga, 2001). The size of the zone varies in the literature as well, and Bowers and Johnson (2003) suggested that there is a displacement gradient that describes displacement as decreasing with increasing distance from the target area; they suggested using multiple displacement zones that increase in distance from the target area for comparison purposes.

The displacement areas for both the Milwaukee and Washington, D.C. sites were drawn as concentric rings (buffer zones) around the target area. We tested two zones for displacement in each site: one ring that was 1,000 feet from each site and one that was 2,000 feet from each site. The two buffer areas were mutually exclusive; the area contained in the 2,000-foot buffer did not include the 1,000-foot buffer. This method allowed us to determine whether displacement or diffusion of benefits occurred only within areas very close to the site, or if either had a wider reach.

In the selected study sites, comparison areas were selected based on recommendations from both HACM and DCHA. Comparison sites were other public housing developments that were similar to the redeveloped sites before their redevelopment. In Milwaukee, because the target area selected was so large, we included the area in a 3,000-foot buffer surrounding the comparable public housing development as the comparison area. In Washington, D.C., only the actual area of the comparison public housing site was used.

For each site, the research team also established an “intervention” period, during which time redevelopment was occurring in earnest. We searched for displacement during and after this period. The selected intervention points are discussed in more depth in the following section.

Weighted Displacement Quotient

Bowers and Johnson (2003) developed the WDQ method to assist displacement research where lengthy time series pre- and post-intervention are not available. They developed the WDQ to identify the possible presence of displacement or diffusion, not the absolute size of any displacement or diffusion that might have occurred. The WDQ considers levels of crime in three areas: target (A), displacement (B), and comparison or control (C) areas.

The quotient has two parts: the *displacement measure*, which measures the change in crime in the displacement area relative to the change in crime in the control area over the same period, and is

the numerator shown in equation 1; and the *success measure*, which measures the success of an intervention—the reduction (or slowed increase) of crime in the target area relative to a comparison area—and is the denominator in equation 1. The displacement measure is divided by the success measure to calculate the final WDQ. The full formula is provided below.

$$WDQ = \frac{\frac{B_{t1}}{C_{t1}} - \frac{B_{t0}}{C_{t0}}}{\frac{A_{t1}}{C_{t1}} - \frac{A_{t0}}{C_{t0}}} \quad (1)$$

where A_{t0} and A_{t1} are crime levels in the target area at times 0 and 1; B_{t0} and B_{t1} are crime levels in the displacement area at times 0 and 1; and C_{t0} and C_{t1} are crime levels in the control area at times 0 and 1.

Interpretation of WDQ results is straightforward. The value of the WDQ is often within or near the range of -1 to 1. Larger values (positive or negative) indicate greater effects. The measure produces a positive score when a diffusion of benefits to the buffer area exists and crime levels have gone down. Positive values that are less than 1 indicate diffusion, or a positive effect on crime levels in the displacement area, that is smaller than the effect of the intervention in the target area. Values greater than 1 indicate that the positive effects on crime levels were greater in the displacement area than in the target area. A negative score indicates displacement of crime; values between 0 and -1 indicate that displacement did occur, but that the negative effect in the displacement area was less than the positive effect of the intervention in the target area. Values less than -1 indicate that the negative effects (increased crime) to the displacement area were actually greater than the positive effects in the target area.

Research Sites

Five redevelopment sites were included in this research: three in Milwaukee and two in Washington, D.C.

Milwaukee, Wisconsin

The three Milwaukee sites are located in the city's North Side. Violence in the area combined with declining housing stock made the area ripe for redevelopment and it was targeted by HACM for improvement in the early 2000s. HACM received \$19 million for redevelopment of the old Highland Park site (known as Highland Gardens/Highland Homes after redevelopment) in 2002 and another \$19.5 million in 2003 for redevelopment of scattered public housing sites ("scattered sites") in the city's Midtown neighborhood. A third site, Cherry Court, located within several blocks of the Highland Park site, was redeveloped as well, but not with HOPE VI funds. Cherry Court was ultimately included in the analysis because its redevelopment likely would not have taken place at the time it did were it not for the co-occurring, nearby HOPE VI activities; it was redeveloped following the same design principles as used in HOPE VI sites; it served as a base for service provision to residents in the scattered sites redeveloped under HOPE VI; and it was located very close to the Highland Park site and surrounded by the scattered sites, so it was reasonable to

expect that changes at Cherry Court could have affected crime and violence occurring at Highland Park and among the scattered sites. The three Milwaukee sites were analyzed together because of their close geographic proximity to each other.

HACM staff said they made every effort possible to both keep the number of moves for any resident at two (once to move out of older housing and once to move back in to newer housing) and to keep residents in the same neighborhood if they desired. This strategy was feasible in Milwaukee because a number of units in the immediate vicinity of the HOPE VI sites were vacant when the HOPE VI awards were made, and because the redevelopment projects moved very quickly.

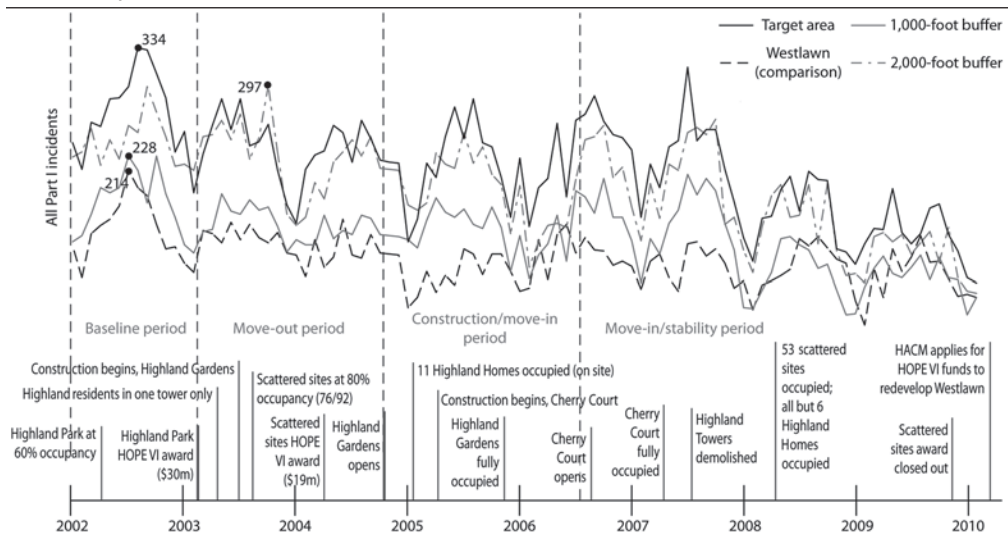
Exhibit 1 displays a timeline of events associated with the redevelopment of the Milwaukee sites. The Highland Park development was a superblock public housing development composed of two highrise towers and, on the same lot, 56 family units in barracks-style multifamily buildings. The new site contains a new midrise building named Highland Gardens, newly constructed single-family homes on the few blocks surrounding Highland Gardens called Highland Homes, and a newly built Cherry Court.

Because the three redevelopment projects in the study neighborhood (Highland Gardens, Highland Homes, and Cherry Court) were located very close to each other, the research team decided to draw the target area boundary around all scattered sites, including Cherry Court and Highland Park. The selected site boundaries contained most of the units among which residents were shuffled during the redevelopment process. In Milwaukee, therefore, we were still able to test for both modes of displacement—with residents to their new addresses or to areas near the site itself—together.

Exhibit 2 is a map of the Milwaukee sites included in this study, including the comparison area, Westlawn. The comparison area was chosen based on recommendations from the HACM and its socioeconomic characteristics.

Exhibit 1

Redevelopment Timeline, Milwaukee



HACM = Housing Authority of the City of Milwaukee.

Exhibit 2

Milwaukee Redevelopment and Comparison Sites

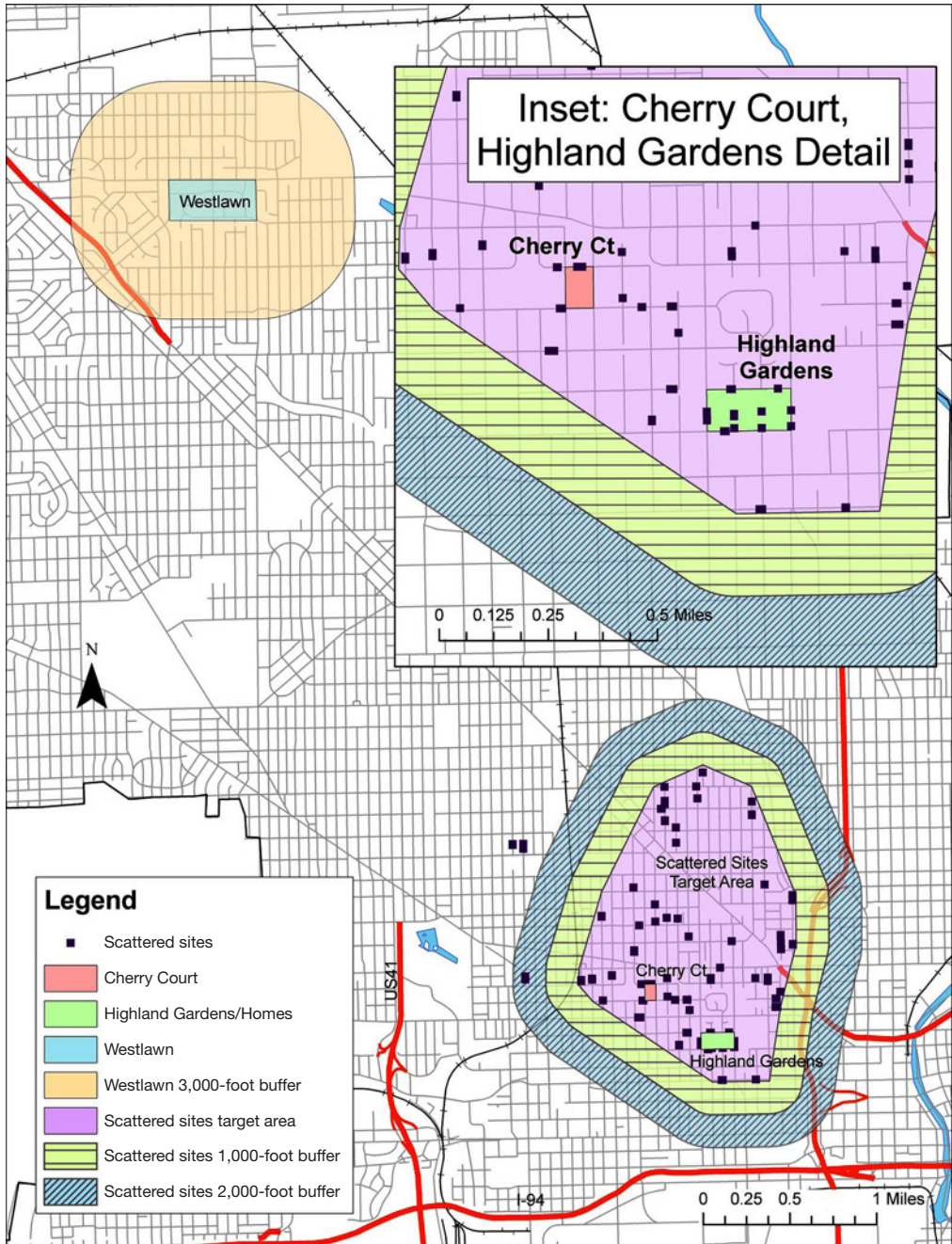


Exhibit 3 provides selected socioeconomic measures for 2000 for the area containing most of the scattered sites; for Highland Gardens, Highland Homes, and Cherry Court; and for the comparison site.⁴

According to HACM staff, before redevelopment took place, loitering was common and youth were involved in delinquent behaviors, but staff reported limited narcotics activity at the Highland site. In the scattered sites area, break-ins were the major complaint of residents. At the Cherry Court site, narcotics were more prevalent and the Cherry Street Mob, a local narcotics gang, was involved in much of the criminal activity in the area. Prostitution was also noted in the site before redevelopment. Following redevelopment, staff reported a significant decline in crime and safety issues in an around the site. The city as a whole, however, also experienced significant declines in crime at the end of the study period. These citywide decreases were accounted for in the displacement analyses through the use of the comparison area.

Exhibit 3

Milwaukee Socioeconomic Indicators, 2000

Socioeconomic Indicators	Area	
	HOPE VI Site	Westlawn
Area (square miles)	1.62	1.96
Residential population	21,323	19,796
Percent of population ages 12–17	13.0	12.3
Percent of population ages 18–24	16.1	9.2
Percent of population male	47.6	45.1
Percent of population Hispanic	4.0	2.7
Percent of population Black	71.5	59.7
Percent of housing units vacant	11.8	4.1
Percent of population high school graduates (> 25)	57.9	71.2
Percent of population in labor force (> 16)	56.0	64.0
Percent of households receiving public assistance	12.4	5.9
Percent of population below poverty level	42.3	23.2
All Part I crimes, 2002*	3,331	1,943
Violent crimes, 2002*	664	418
Property crimes, 2002*	2,023	1,158

* Crime counts are reported for the scattered sites target area and the comparison area (Westlawn plus its 3,000-foot buffer) only, not for larger census blocks used for reporting socioeconomic data.

Source of socioeconomic data: U.S. Census Bureau, 2000

Source of crime data: Milwaukee Police Department

Washington, D.C.

Two HOPE VI sites in Washington, D.C., were selected for this research: the Capitol Gateway site (formerly East Capitol Dwellings and Capitol View Plaza I and II)⁵ and the Arthur Capper/Carrollsborg site.⁶ In Washington, D.C., site definition was straightforward—the sites had clearly

⁴ The comparison site actually comprises a 3,000-foot buffer around Westlawn to accommodate the fact that the scattered sites are spread out, making the target area relatively large.

⁵ Although this site was renamed as part of the development, this report will refer to the site both pre- and post-development as Capitol Gateway (its post-development name) to reduce confusion among readers.

⁶ Although the full name of this site is Arthur Capper, in the text it will simply be referred to as Capper.

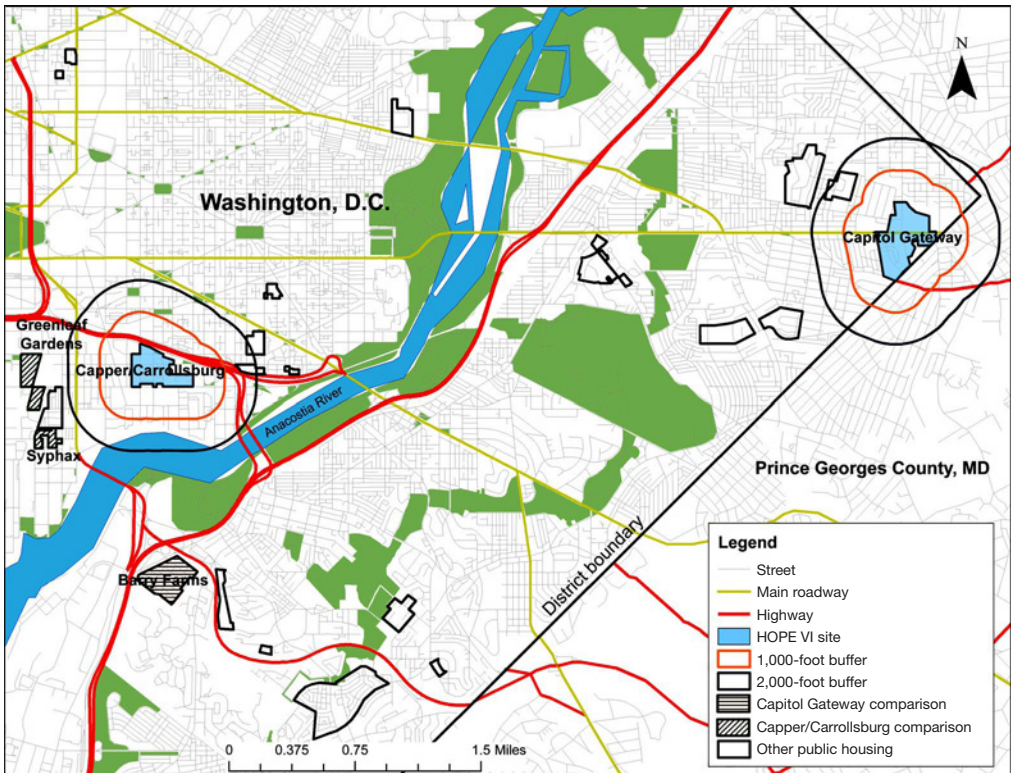
defined boundaries that were used in the current research. The boundaries included the immediate area under redevelopment. Such clearly defined and compact public housing developments resulted in sites that were much smaller than the Milwaukee site. Exhibit 4 provides a map of the two sites selected for this study and their comparison areas.

Two main differences distinguished the Washington, D.C. HOPE VI experience from the Milwaukee experience. First, the redevelopment timeline in Washington, D.C., was much longer—it took longer from the time of the award until newly built units were available for move-in than it did in Milwaukee. The long timeline meant that significant changes in individual family structure took place while redevelopment was progressing: children might grow up and no longer live with the family; adults may become parents and have more family members to house. These changes meant that the available redeveloped units might have been too large or too small for former residents' needs, so they would opt out of returning.

Second, residents were scattered into other available units in the city—while many received vouchers for other housing, including nonpublic housing, because of the tight rental market at the time in Washington, D.C., many residents were forced to move into other public housing (Popkin et al., 2002). The limited availability of nearby rental housing meant that residents were moved to different areas of the city. These relocated residents often formed close ties to their new neighborhoods and chose not to be uprooted a second time, long after their initial move out of the redevelopment site.

Exhibit 4

Washington, D.C. Redevelopment and Comparison Sites



Finally, particularly at the Capper/Carrollsborg site, the character of the neighborhood underwent extreme change over the course of the redevelopment period. The neighborhood change stemmed not just from HOPE VI, but also from other development in the area. For instance, many small businesses closed and were replaced by chain stores or higher end stores than were previously there, and a new baseball stadium and a number of high-end condominiums were built.

Because we did not obtain information on where residents were relocated, the research team was unable to identify possible displacement zones that were noncontiguous to the HOPE VI sites but that housed a large number of displaced HOPE VI residents. The long timeline meant that many residents had already established themselves in the new neighborhoods and had lived there for several years by the time new units were available. By the end of the redevelopment timeline, many did not want to move back to their previous neighborhoods even though they had been redeveloped. In Washington, D.C., then, fewer residents of the new housing were residents of the sites before redevelopment.

Capitol Gateway

In August 2000, DCHA received \$30.8 million to redevelop the East Capitol Dwellings/Capitol View Plaza site, which is located on the border of the northeast and southeast quadrants. The site sits on East Capitol Street, a major thoroughfare into Washington, D.C., from Prince George's County, Maryland, and it is adjacent to a Metro bus stop. The 577-unit barracks-style housing was built in 1955 and was 30 percent vacant at the time of the HOPE VI application in 2000 (DCHA, 2000). The adjacent Capitol Plaza site consisted of two highrise buildings, with units in one building reserved for seniors. In addition to the deteriorating physical conditions of the building, the layout of the site contributed to public safety problems: buildings were isolated from the rest of the neighborhood, and winding streets and open spaces created locations on the interior of the site that were hard to police and provided convenient escape routes for criminals (DCHA, 2000). Drug use was also rampant (Popkin et al., 2002). Although homicides in public housing were dropping throughout Washington, D.C., in the late 1990s, homicides at East Capitol actually increased in 1998, contributing to the site's reputation as one of Washington, D.C.'s most dangerous.

Exhibit 5 displays the timeline of redevelopment events for the Capitol Gateway site starting with the HOPE VI award in 2000. Resident relocation at Capitol Gateway began shortly after the award to DCHA was made and continued for approximately 2 years. The building reserved for senior residents was constructed first, with move-in starting in February 2005. Family units, made up largely of townhouses, were open for occupancy beginning in September 2006. The new sites were designed to have no unit access through common areas—all access to units was from the outside. In addition, extensive lighting was installed, a small toddler playground was built, and the site did *not* include large outdoor areas for residents to congregate, such as a basketball court, to discourage loitering.

Exhibit 6 provides socioeconomic indicators for the two Washington, D.C. sites and their comparison areas. The Capitol Gateway comparison site, Barry Farms, was selected based on input from the DCHA and socioeconomic characteristics to match the former East Capitol site.

Exhibit 5

Redevelopment Timeline, Capitol Gateway, Washington, D.C.

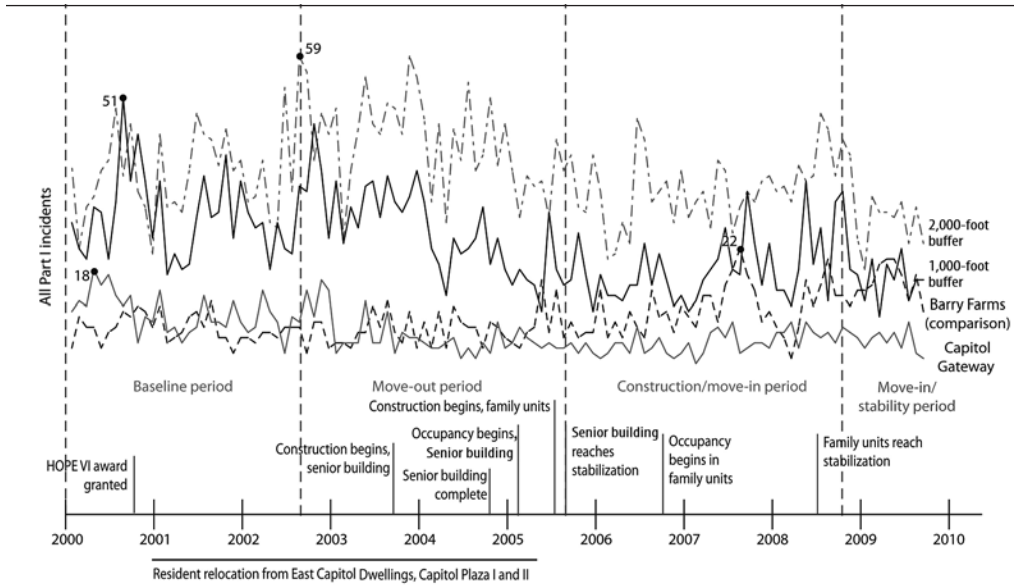


Exhibit 6

Washington, D.C. Socioeconomic Indicators, 2000

Socioeconomic Indicators	Area			
	Capitol Gateway	Barry Farms	Capper/Carrollsborg	Syphax/Greenleaf Gardens
Area (square miles)	0.1	0.05	0.06	0.04
Residential population	3,839	1,796	1,853	1,958
Percent of population ages 12–17	10.6	15.3	10.9	7.6
Percent of population ages 18–24	8.6	14.0	9.8	8.3
Percent of population male	45.3	42.3	45.6	39.7
Percent of population Hispanic	0.6	1.1	0.0	1.2
Percent of population Black	97.0	97.1	97.1	94.4
Percent of housing units vacant	32.6	5.1	6.7	6.4
Percent of population high school graduates (> 25)	44.9	49.2	59.1	57.7
Percent of population in labor force (> 16)	45.0	38.0	35.0	37.0
Percent of households receiving public assistance	18.5	38.8	12.9	16.9
Percent of population below poverty level	41.7	73.5	61.8	53.4
All Part I crimes, 2000*	141	89	98	127
Violent crimes, 2000*	58	48	45	62
Property crimes, 2000*	83	41	53	65

* Crimes counts are reported for the target and comparison areas only, not for larger census blocks used for reporting socioeconomic data.

Source of socioeconomic data: U.S. Census Bureau, 2000

Source of crime data: Metropolitan Police Department (Washington, D.C.)

Capper/Carrollsburg

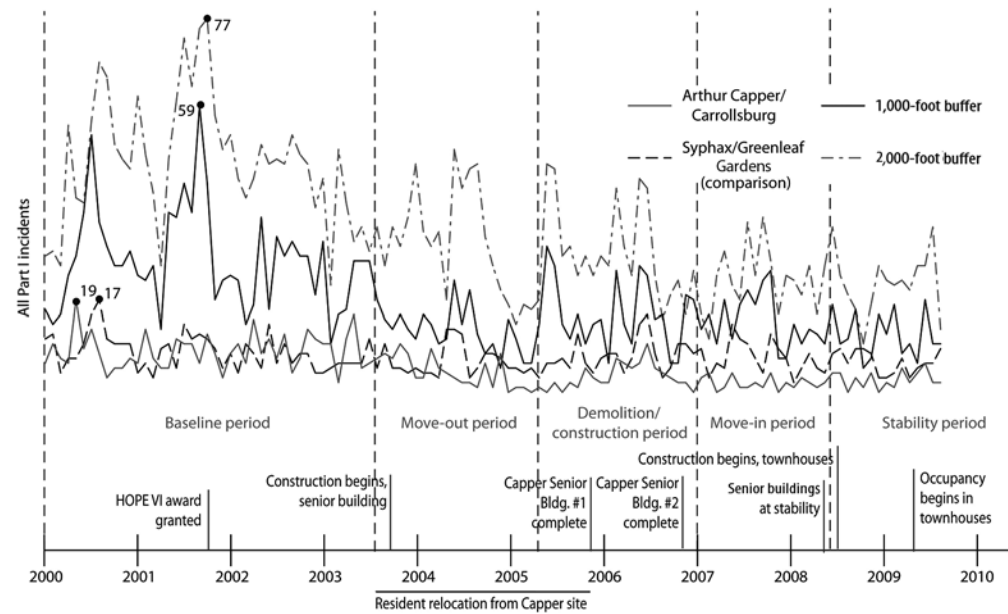
The Arthur Capper/Carrollsburg site, part of which dates to 1958, was located in the city’s southeast quadrant (Dupree, 2007). The site is separated from the rest of the city by the Southeast Freeway, which runs near the northern part of the site and on the other side of which is the economically better-off Capitol Hill section of the city. The site consisted of barracks-style housing and a highrise for seniors. The site became a haven for drugs and crime, and efforts to renovate it in the 1970s did not solve the crime problem. In 2000, the neighborhood that was home to Capper/Carrollsburg had one of the lowest median income levels in the city (Wilgoren, 2003).

In 2001, DCHA was awarded \$34.9 million to redevelop the Arthur Capper/Carrollsburg site, and the city planned a one-to-one replacement of public housing units. At that point, city officials and developers had already started to direct redevelopment funds and plans toward the so-called “Near Southeast” but little redevelopment had begun. Three years later, the Washington Nationals decided to locate their new baseball stadium in the neighborhood, and new federal buildings had already been constructed in the area. The HOPE VI redevelopment was just one part of a larger revitalization of the neighborhood.

Exhibit 7 displays the timeline of redevelopment events for the Capper/Carrollsburg site starting with the HOPE VI award.⁷ Redeveloping the Capper/Carrollsburg site took the longest of the

Exhibit 7

Redevelopment Timeline, Capper/Carrollsburg, Washington, D.C.



⁷ Note that much of the information collected about the Capper/Carrollsburg site and timeline came from www.jdland.com. That website is maintained by a resident of the area who has been documenting the changes in the Near Southeast since 2003 and who is well known by the DCHA. In fact, some DCHA staff members recommended that project staff visit the site for more detailed information about the changes that had taken place since the HOPE VI awards.

five study sites. Phase I of resident move-out of the barracks-style units started in 2003. The site was demolished piece by piece, as new units were built and began to be occupied. The new site contained a number of different elements, including townhouses and two midrise buildings for seniors. The buildings for seniors were the first to be finished and occupied; construction on the townhomes followed. At the end of the study period (end of 2009), occupancy had begun at the townhomes but units were still available for sale.

DCHA staff reported that at Capper/Carrollsborg, drug offenses in particular stayed local even during the redevelopment process. The perception of staff familiar with the area was that drug dealers simply moved a few blocks away from the redevelopment site to maintain their existing drug markets. This makes sense in light of the fact that the site is located next to a highway, providing potential drug customers with an easy entry/exit point to drug markets and dealers in the area. This phenomenon supports the idea of looking for immediate displacement around the site and, although this phenomenon was not identified specifically in Milwaukee or for Capitol Gateway, the likelihood is strong that any drug markets in those two sites followed similar patterns—both are located near major thoroughfares or highways that would contribute to keeping drug markets in the same vicinity as the sites themselves.

Exhibit 6 provides socioeconomic indicators for the neighborhoods of the Capper/Carrollsborg site and its comparison area, Syphax/Greenleaf Gardens. The comparison site was selected based on recommendations from DCHA staff, and the two sites were very similar on the selected measures shown here in 2000, prior to the HOPE VI award.

Results: Milwaukee

The first step in analyzing the HOPE VI redevelopment sites for displacement or diffusion was to examine the change in crime levels before and after the redevelopment efforts. Exhibit 1 includes line graphs of all crime in the four main study areas (the site, two displacement buffers, and comparison area—Westlawn and its 3,000-foot buffer). The timeline suggests that crime in the site and two displacement areas dropped throughout the study period, from 2002 through 2010. Crime in the comparison area remained relatively stable over the same period.

The timeline demonstrates the long nature of the intervention period—the period during which the site was redeveloped. It also illustrates that it is hard to identify a specific date on which the intervention started or ended. The analyses thus use varying lengths of pre- and post-intervention periods. The intervention periods, however, generally center around September 2003 through November 2004, roughly the period of construction on Highland Gardens. Although significant construction on Cherry Court and the scattered sites homes continued after Highland Gardens was finished, this period was chosen based on the idea that once one project within the larger target area was finished and occupants returned, the influence of that redevelopment would start to be felt throughout the site, as residents became more aware and convinced of the changes that were taking place in their neighborhood.

Exhibit 8 provides crime density maps for 4 selected years in the study period: 2003, 2005, 2007, and 2009. The density maps were created using data covering a 1-mile radius around the site to

Exhibit 8

Density of Crime Over Time, Milwaukee (1 of 2)

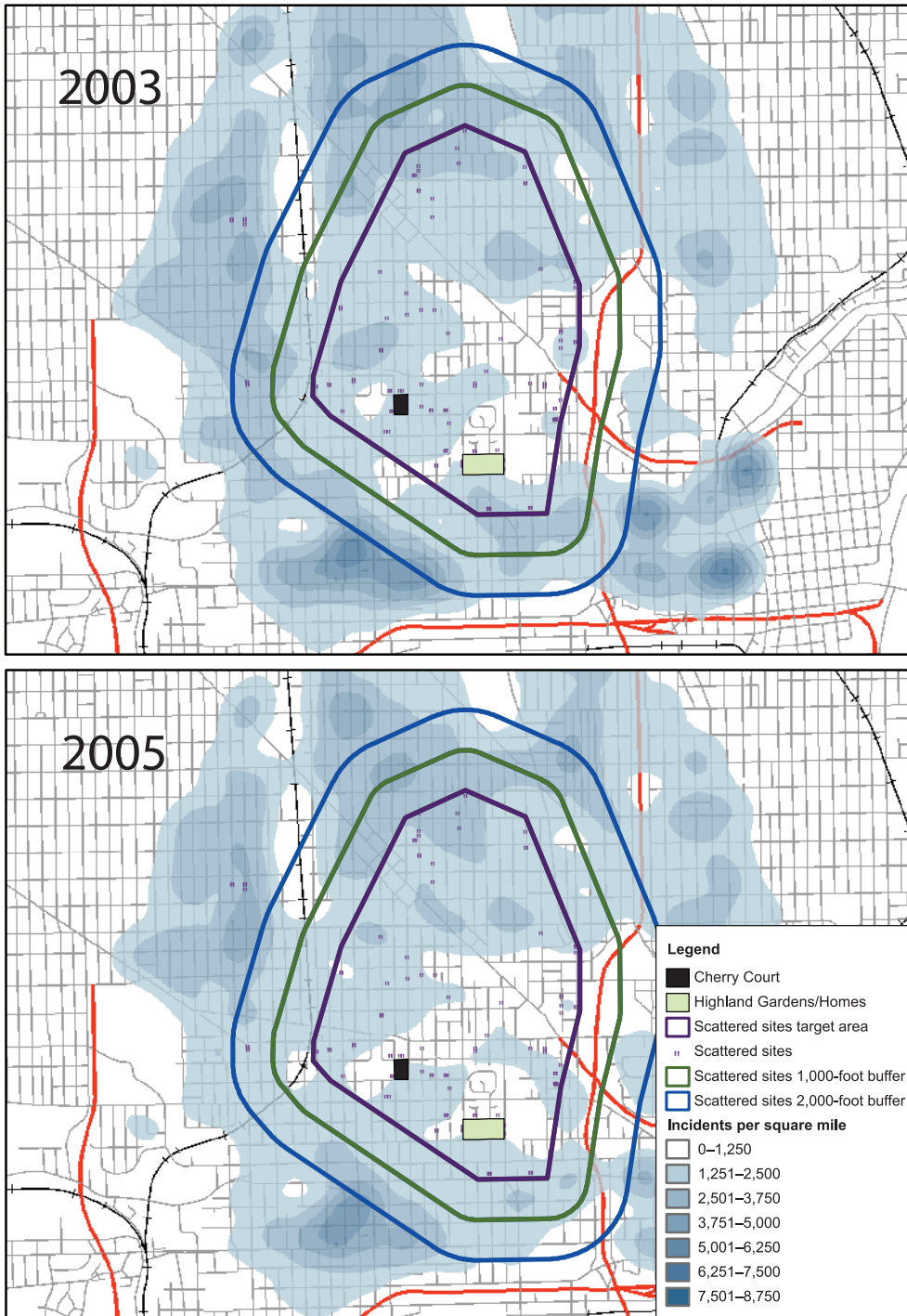
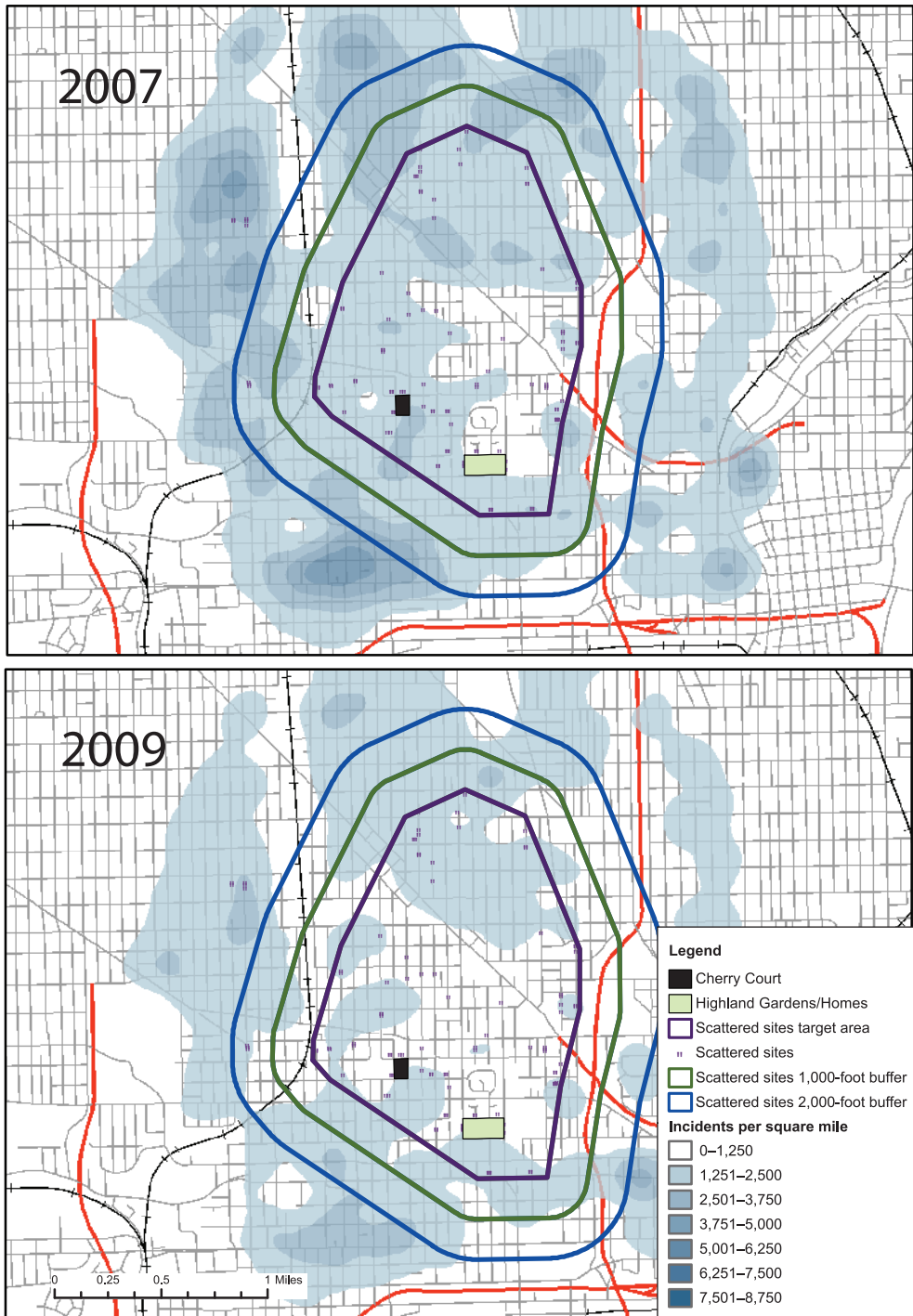


Exhibit 8

Density of Crime Over Time, Milwaukee (2 of 2)



capture any hot spots that might be occurring nearby but just outside the site boundaries. These maps were used purely for descriptive purposes, and they reveal that the density of crime inside the site appears to lessen with time. Hot spots outside the site boundaries, especially to the south, do remain, but they do decrease somewhat with time as well.

We calculated the WDQ using several different sets of pre- and post-intervention periods and looked for displacement during the intervention as well. The intervention period used was September 2003 through November 2004. The WDQ is restrictive in its need for pre- and during-/post-intervention periods to be of the same length. Therefore, the timing of the intervention relative to the start of the period covered by the data can affect the length of the periods examined for displacement. In Milwaukee, the intervention began in September 2003, only 20 months after the start of our period of data coverage (January 2002). Therefore, we could not calculate the WDQ using pre- or post-intervention periods longer than 20 months. We calculated the WDQ for four different time periods, specified in exhibit 9. The WDQ was also calculated for all crime, personal crime, and property crime.

Exhibit 9 provides the WDQ for each of the time periods and buffers considered. The exhibit also provides the success measure, or the denominator of the WDQ. If the success measure was positive, crime increased over the period and a search for displacement or diffusion was not warranted. The WDQ was thus not reported for those periods/areas for which the success measure was positive. The exhibit highlights those periods/areas where we found displacement or diffusion to be larger than the direct effects in the target area (that is, they were greater than 1 or less than -1).

In the all crimes category, the success measure was negative, indicating a drop in crime in the target area over the time period of interest, for only one set of time periods studied—the 15-month pre-intervention period and the 15-month intervention period. In that period in the 1,000-foot buffer, the WDQ was positive but less than 1, indicating that diffusion did take place, but it was less than

Exhibit 9

Weighted Displacement Quotient Results, Milwaukee

Pre/Post Length	t ₀ (Pre-Intervention Period)	t ₁ (Intervention or Post-Intervention Period)	Type of Crime	Success Measure	WDQ	
					1,000-Foot Buffer	2,000-Foot Buffer
12 months	September 2002– August 2003	December 2004– November 2005	All	0.203	—	—
			Personal	0.012	—	—
			Property	- 0.189	0.308	1.331
15 months	May 2002– August 2003	December 2004– March 2006	All	0.222	—	—
			Personal	- 0.044	- 0.396	- 1.423
			Property	- 0.129	0.288	1.549
15 months*	May 2002– August 2003	September 2003– November 2004	All	- 0.048	0.124	- 0.680
			Personal	0.036	—	—
			Property	- 0.126	0.090	0.160
18 months	March 2002– August 2003	December 2004– May 2006	All	0.171	—	—
			Personal	- 0.059	0.105	- 0.018
			Property	- 0.167	0.535	1.647

WDQ = *Weighted Displacement Quotient*.

*Searched for displacement during intervention period.

Note: The intervention period was September 2003 through November 2004.

the effect in the redevelopment site. In the 2,000-foot buffer during that time period, however, the WDQ was negative but greater than -1, indicating that a small amount of displacement may have occurred. All success measures for the all crimes category (whether positive or negative) were close to 0, indicating very small changes in crime over the period.

For personal crimes, the success measure was positive in two of the time periods searched. For the 15-month pre- and post-intervention periods, the WDQ was negative in both buffer areas. For the 2,000-foot buffer, it was less than -1, indicating that displacement did occur, and that the increase in personal crime in the 2,000-foot buffer was greater than the decrease in the target area itself. For the 18-month pre- and post-intervention periods, both WDQs were close to 0, indicating that little to no change occurred in either buffer area.

For property crime, the WDQ indicated that a diffusion of benefits from the redevelopment site to the area within 2,000-foot of the site took place, and those benefits were about equal to the direct effects of the redevelopment in the site itself. This finding was true for all but one set of time periods studied: the 15-month pre-intervention period and the 15-month intervention period, for which the WDQ was near 0, indicating little to no change in crime occurred in the buffer area.

To summarize, the WDQ effort in Milwaukee had mixed results, with all crimes and personal crimes showing either no change or some signs of minimal crime displacement. For property crimes, however, this methodology suggested a diffusion of benefits. For all crime types and all sets of time periods analyzed, the results were strongest in the 2,000-foot buffer.

Results: Capitol Gateway, Washington, D.C.

Exhibit 5 includes line graphs of all crime in the four main study areas for the Capitol Gateway site; dotted lines delineate the different study periods. Crime in the site appeared to drop significantly beginning in 2003, and crime in the two buffer zones also decreased, although not to the same degree as in the target area. Crime in the comparison area remained relatively stable until 2007, at which point monthly crime levels started rising.

Exhibit 10 provides crime density maps for 4 selected years in the study period: 2002, 2004, 2006, and 2008. The density maps were created using data covering a 0.5-mile radius around the site and they reveal that the density of crime inside the site appeared to lessen with time. Most of the hot spots disappeared by 2006, but the 2008 map showed a slight resurgence in the crime densities, especially in the 2,000-foot buffer on the Washington, D.C. side. After 2002, however, the target area itself had a very low density of crime.

The initial intervention period that we used was October 2002 through July 2006, which was roughly the period of construction of the senior building and the family units. We calculated the WDQ using several different sets of pre- and post-intervention periods, and looked for displacement during the intervention as well. Exhibit 11 provides the WDQ for each of the time periods and buffers considered. The exhibit also provides the success measure, or the denominator, of the WDQ.

The WDQ results for Capitol Gateway across all types of crime and time periods were more consistent than they were for Milwaukee. All but one success measure was negative, indicating that for the most part, both property and personal crimes decreased in the redevelopment site over the study

Exhibit 10

Density of Crime Over Time, Capitol Gateway, Washington, D.C. (1 of 2)

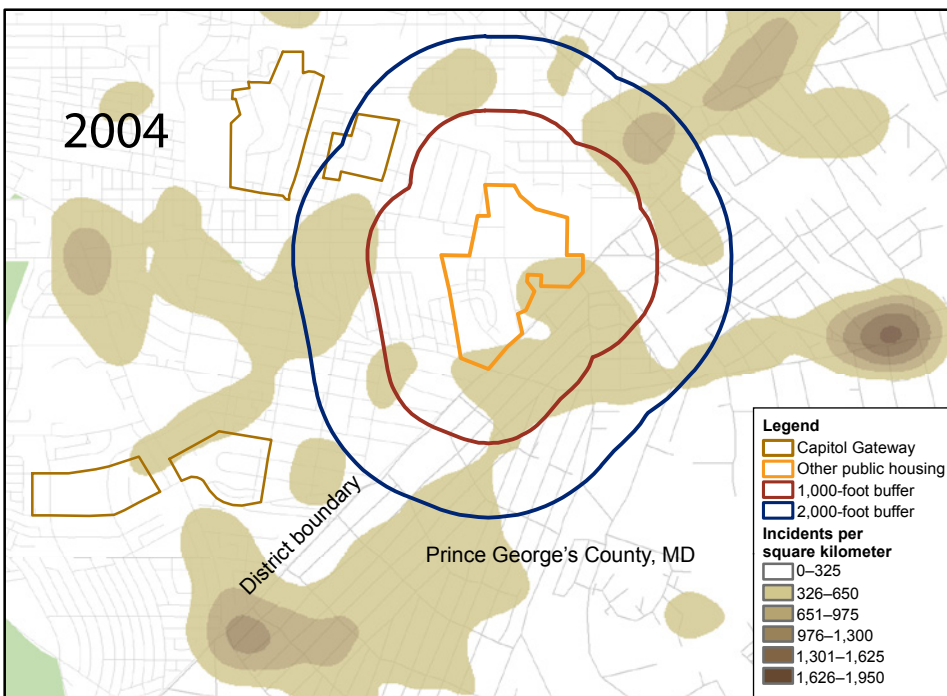
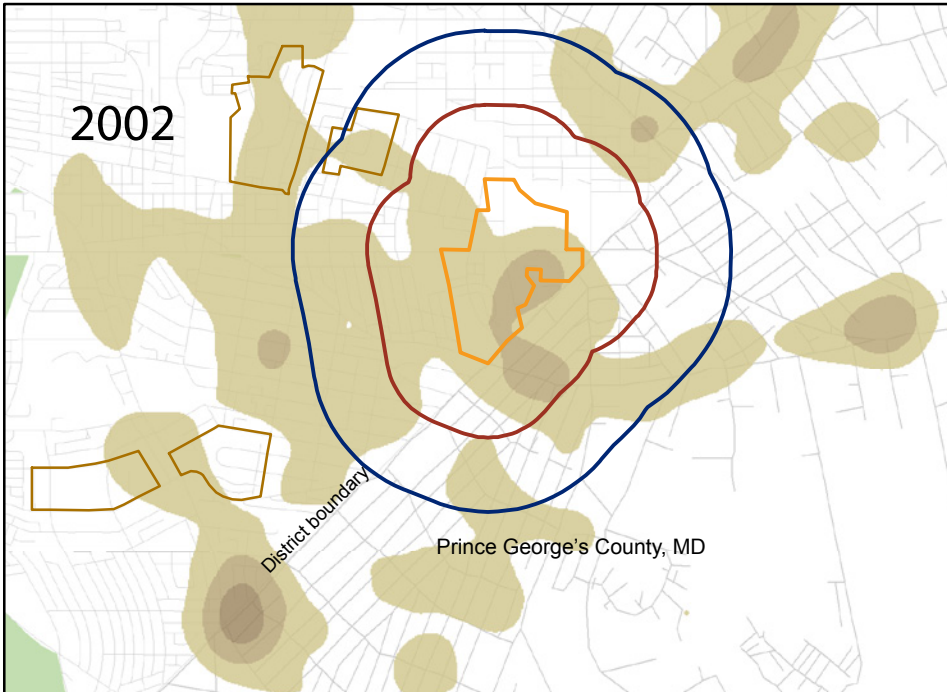


Exhibit 10

Density of Crime Over Time, Capitol Gateway, Washington, D.C. (2 of 2)

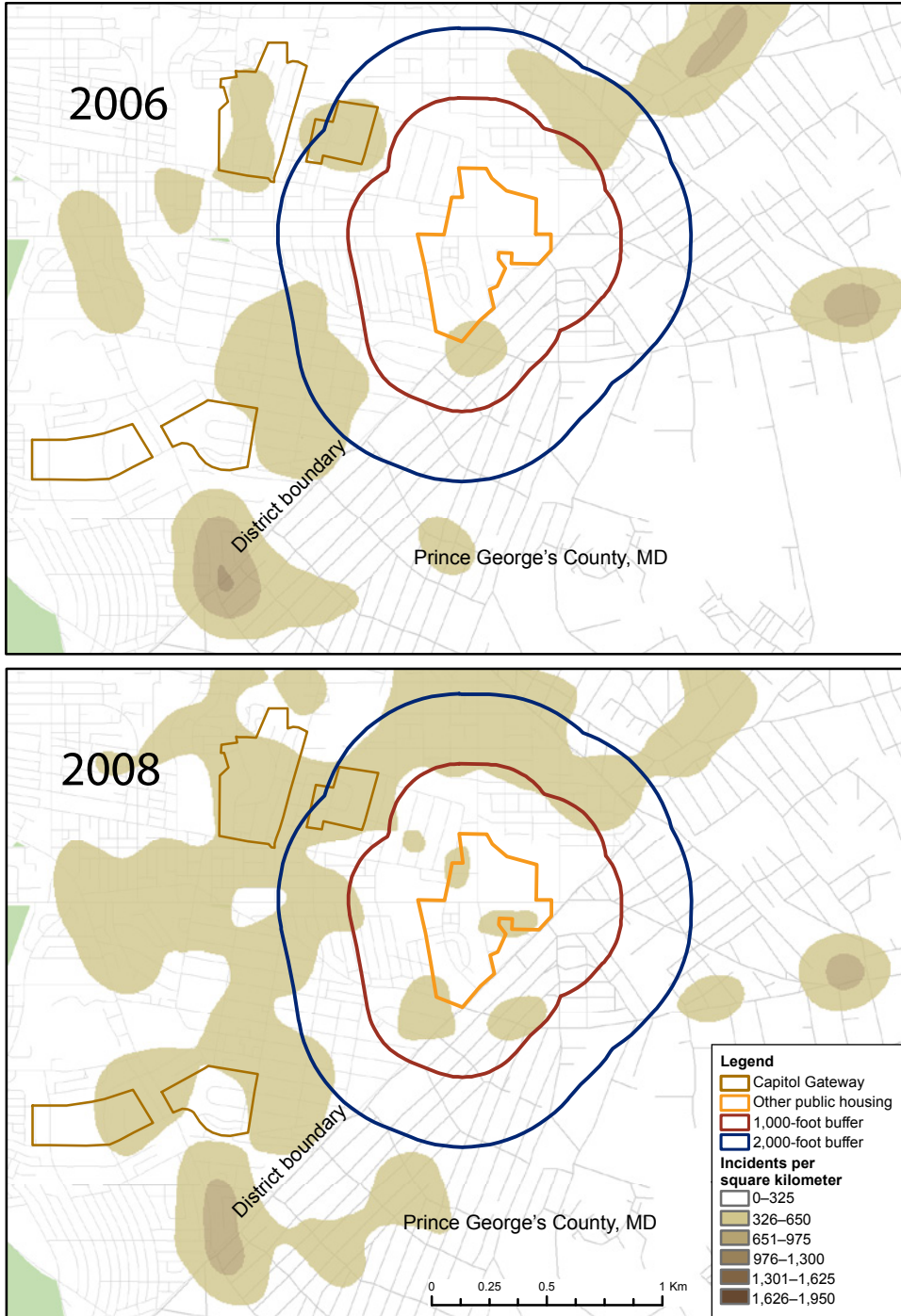


Exhibit 11**Weighted Displacement Quotient Results, Capitol Gateway, Washington, D.C.**

Pre/Post Length	t_0 (Pre-Intervention Period)	t_1 (Intervention or Post-Intervention Period)	Type of Crime	Success Measure	WDQ	
					1,000-Foot Buffer	2,000-Foot Buffer
12 months	October 2001– September 2002	August 2006– July 2007	All	– 1.38	2.92	3.58
			Personal	– 1.07	1.39	1.86
			Property	– 1.79	3.92	4.75
12 months*	October 2001– September 2002	October 2002– September 2003	All	– 0.63	0.91	1.62
			Personal	– 0.80	0.94	1.86
			Property	– 0.03	– 46.00	– 60.00
18 months	April 2001– September 2002	August 2006– January 2008	All	– 1.06	2.81	3.56
			Personal	– 0.88	1.11	1.43
			Property	– 1.36	4.22	5.33
18 months*	April 2001– September 2002	October 2002– March 2004	All	– 0.42	– 0.71	– 1.18
			Personal	– 0.65	0.61	1.39
			Property	0.20	—	—

WDQ = *Weighted Displacement Quotient*.

*Searched for displacement during intervention period.

Note: The intervention period was October 2002 through July 2006.

period. For both types of crime, the 12-month pre- and post-intervention periods produced WDQs that were positive and greater than 1, indicating that a diffusion of benefits took place and that the decreases in crime in the buffer areas were at least as strong as the effects in the target area itself.

When we compared crime levels for the 12 months before and 12 months during the intervention, we found mixed results. For all crime and personal crime, the WDQs were positive and at or greater than 1, indicating that a diffusion of benefits took place immediately after the start of the intervention (while the redevelopment activities were continuing).

For property crimes, the success measure was negative but very near 0. The WDQs for property crimes in both buffer areas were negative and very large. In their presentation of the WDQ, Bowers and Johnson (2003) cautioned that the measure should not be used to quantify the *absolute* amount of displacement that occurred, only the amount relative to the target area; therefore, the large WDQ values should not be alarming.

The 18-month pre- and post-intervention periods yielded positive WDQs, providing additional evidence that a diffusion of benefits from the Capitol Gateway site to nearby areas took place. The results for the 18-month periods for the pre-intervention period and during the intervention, however, revealed that some displacement might have occurred: the all crime category had negative WDQ values less than -1. The personal crime category had small positive WDQ values, and the property crime category actually had a positive success measure, so no WDQs were calculated for that crime category. Taken together with the property crime results discussed above, it appears that any positive effects of the intervention on neighboring areas (that is, diffusion of benefits) lagged behind the actual intervention, possibly for several years. There may have been some crime displacement early on, but that disappeared as the redevelopment progressed. In addition, the values of the WDQ were larger for the 2,000-foot buffer, so the effects did not wash out toward the outer boundaries of the study area.

To summarize, the WDQ effort for Capitol Gateway had strong results indicating a diffusion of benefits for most time periods and areas that was delayed until after the end of the intervention. The exceptions were the 12-month pre- and during-intervention periods for property crime and the 18-month pre- and during-intervention periods for all crime, during which time some displacement of those crimes may have occurred. That effect, however, had disappeared by the end of the redevelopment period, by which point diffusion of benefits was observed.

Results: Capper/Carrollsborg, Washington, D.C.

Exhibit 7 includes line graphs of all crime in the four main study areas (the site, two displacement buffers, and the comparison area—Syphax/Greenleaf Gardens) and dotted lines delineate the different study periods selected by the research team. Crime in the site dropped significantly in mid-2003; in the two buffers, it also dropped starting at the same point, although not to the same degree.

The Capper/Carrollsborg redevelopment had the longest timeline of the three sites under examination. The intervention periods generally center around the July 2003-through-December 2006 period, which is roughly the period of construction of the first senior building. Exhibit 12 provides crime density maps for 4 selected years in the study period: 2002, 2004, 2006, and 2008. The density maps were created using data covering a 0.5-mile radius around the site and reveal that the density of crime inside the site appeared to lessen with time. By 2008, most of the crime hot spots appeared to have moved outside of the 2,000-foot buffer area. After 2002, the target area itself had a very low density of crime, but a stable hot spot existed just to the northwest of the site that remained there throughout the study period.

The WDQ was calculated for four different time periods and in two buffers. Exhibit 13 provides the WDQ for each of the time periods and buffers considered. The exhibit also provides the success measure, or the denominator, of the WDQ. WDQs were only calculated where the success measure was negative.

The WDQ results for the Capper/Carrollsborg site were similar to those observed for Capitol Gateway. All success measures were negative, confirming that crime decreased over the study period. The results consistently indicated that a diffusion of benefits took place from the site, with two exceptions. For personal crimes during the first 12 months after the intervention period, the WDQ was negative. The same was true for the 18-month period following redevelopment for personal crimes. This pattern is similar to that observed for property crimes in Capitol Gateway, where a displacement effect was noted soon after the intervention started, the effect, however, disappeared with time following the intervention. It is unclear why this result occurred, but one thing to note is that in both of these instances, the success measure was very low, which could very well have skewed the results. One other factor to note in interpreting these findings is that other redevelopment projects were taking place in the larger area, and they may have accounted for the apparent diffusion effects noted in this site.

To summarize, the WDQ effort for Capper/Carrollsborg had the strongest, most consistent results of the three sites. The WDQs showed a diffusion of benefits across several different time periods, and in both the 1,000- and 2,000-foot buffers. Contextual knowledge of the greater redevelopment area, however, invites caution in interpreting these findings.

Exhibit 12

Density of Crime Over Time, Capper/Carrollsborg, Washington, D.C. (1 of 2)

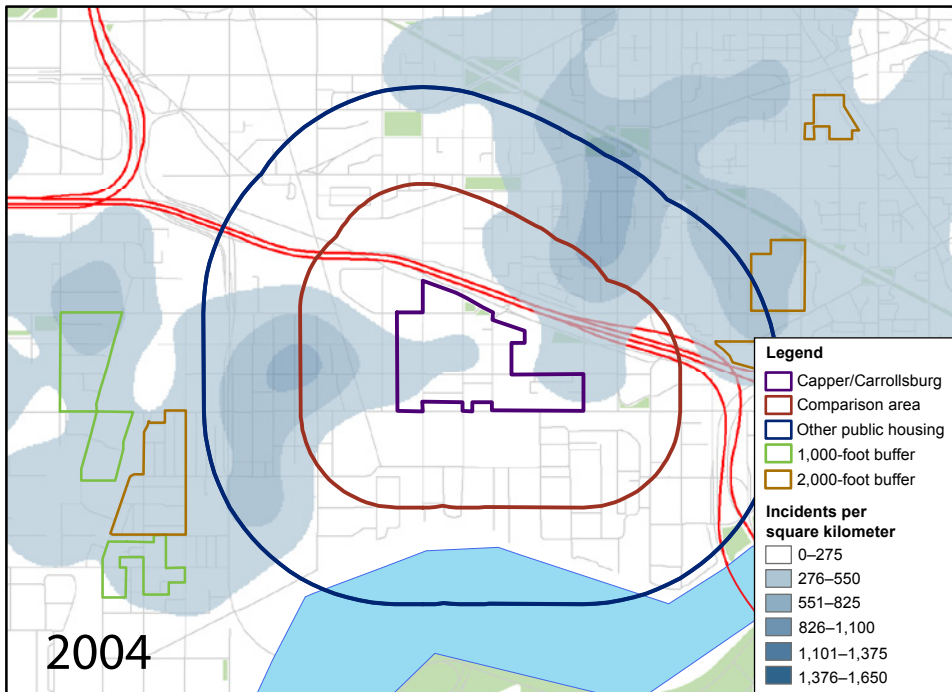
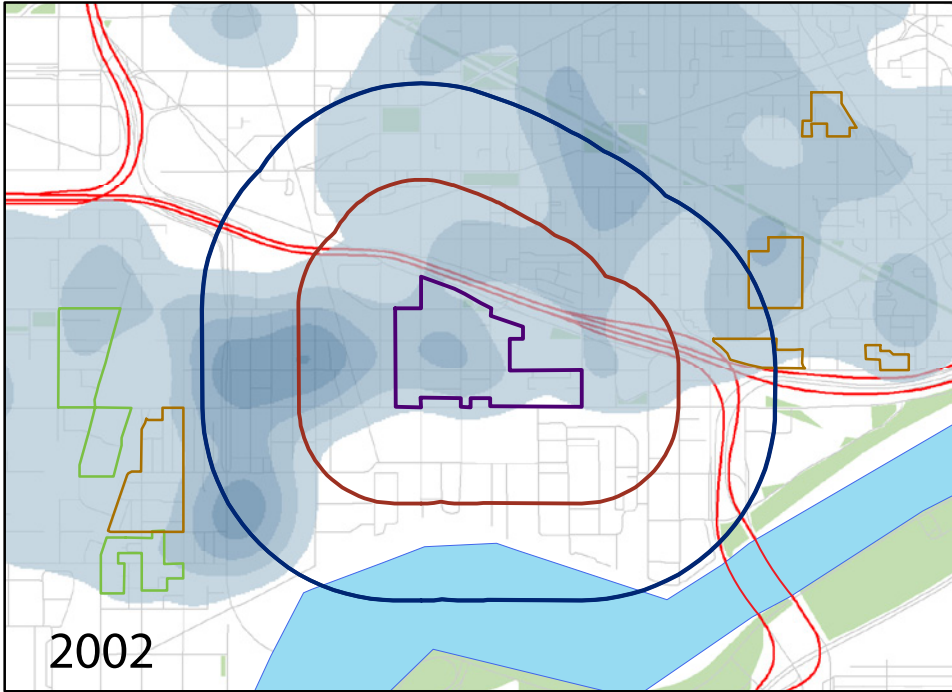


Exhibit 12

Density of Crime Over Time, Capper/Carrollsborg, Washington, D.C. (2 of 2)

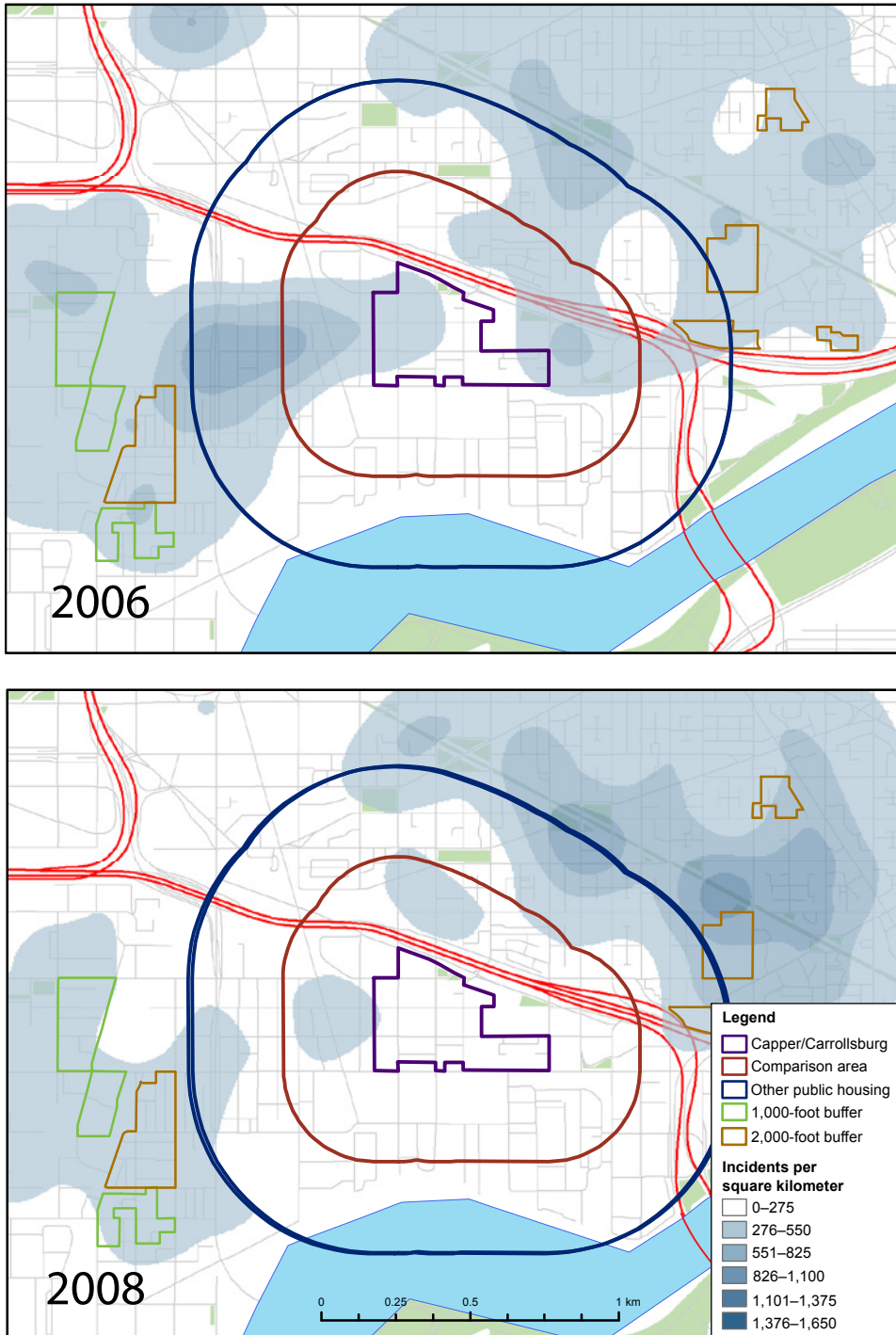


Exhibit 13

Weighted Displacement Quotient Results, Capper/Carrollsborg, Washington, D.C.

Pre/Post Length	t ₀ (Pre-Intervention Period)	t ₁ (Intervention or Post-Intervention Period)	Type of Crime	Success Measure	WDQ	
					1,000-Foot Buffer	2,000-Foot Buffer
12 months	July 2002– June 2003	December 2004– November 2005	All	- 1.072	3.198	3.379
			Personal	- 0.381	0.125	- 3.258
			Property	- 2.488	4.118	5.250
12 months*	July 2002– June 2003	July 2003– June 2004	All	- 0.838	2.004	1.729
			Personal	- 0.451	1.496	1.994
			Property	- 1.711	2.682	2.464
18 months	January 2002– June 2003	March 2005– August 2006	All	- 1.040	3.045	3.100
			Personal	- 0.539	0.765	- 0.739
			Property	- 1.958	4.077	4.880
18 months*	January 2002– June 2003	July 2003– December 2004	All	- 0.843	1.657	0.843
			Personal	- 0.539	1.088	1.402
			Property	- 1.337	2.103	0.701

WDQ = Weighted Displacement Quotient.

*Searched for displacement during intervention period.

Note: The intervention period was July 2003 through February 2005.

Discussion

The results from Milwaukee were the most mixed, with evidence of crime displacement provided by some of the WDQs. The results from Capitol Gateway and Capper/Carrollsborg were much more consistent than those from Milwaukee in that the WDQs for different areas and time periods produced similar results. Exhibit 14 provides a summary of the WDQ values for each site for each buffer (1,000 and 2,000 feet). This exhibit is simply the count of all WDQs that fell into each range (less than -1, -1 to 1, and greater than 1). Numbers smaller than -1 indicate displacement and numbers greater than 1 indicate diffusion of benefits. This exhibit does not differentiate between different types of crime.

Exhibit 14

Summary of Weighted Displacement Quotient Results Across All Sites

	Buffer Distance	< - 1	- 1 to 1	> 1
Milwaukee	1,000 feet	0	7	0
	2,000 feet	1	3	3
Capitol Gateway	1,000 feet	1	4	6
	2,000 feet	2	0	9
Capper/Carrollsborg	1,000 feet	0	2	10
	2,000 feet	1	3	8
Total	1,000 feet	1	13	16
	2,000 feet	4	6	20
	All	5	19	36

Only about one-half of the success measures for the different crime type/buffer/time period combinations studied in Milwaukee were negative, indicating that crime decreased in the target area (see exhibit 8). All of the success measures, however, were near 0, indicating that the effects—whether positive or negative—were minimal. The fact that the success measures were all positive for the 18-month pre- and post-intervention WDQ indicates that the redevelopment's reduction effects on crime grew with time and were stronger later in the study period. The WDQs indicated that some personal crimes were displaced—starting just after the intervention period ended—but that effect got smaller with increased time from the intervention period.

Exhibit 14 indicates that the Capitol Gateway site had more large and positive WDQs than neutral or negative WDQs, indicating that diffusion of benefits occurred. The WDQs indicated that the results varied with type of crime but the success measures were all negative, indicating a drop in crime in the target area. Property crimes in particular showed evidence of displacement early in the redevelopment period, but after the redevelopment period, showed strong evidence of diffusion of benefits. The initial displacement may have been an immediate reaction to the redevelopment activities that dissipated after all residents moved out and the site was empty. The success of the redevelopment efforts is judged more accurately by considering crime at the site when residents move back in, and during that period, the WDQs all pointed to a diffusion of benefits. Results for personal crime and all crime also showed evidence of a diffusion of benefits, and that diffusion started immediately after redevelopment.

In Washington, D.C., more than in Milwaukee, the residents of the redeveloped site were likely different than those who moved out before redevelopment. In all sites, and in HOPE VI in general, criteria to move into a redeveloped or new unit are much stricter than for other public housing. This results in residents who are more likely to be “successful”—at maintaining a housing unit, finding and maintaining employment, or participating in governance of the development (as is required in Milwaukee). Although we were unable to collect any data on residents' characteristics, we assume that with these kinds of stricter resident criteria in all three sites came less criminally inclined residents, and residents who had higher stakes in maintaining the safety and quality of their housing. The results we observed in the Capitol Gateway site, then, where diffusion of benefits increased after residents moved back in, are likely one manifestation of the stricter resident criteria.

All of the success measures calculated as part of the WDQ analysis for Capper/Carrollsborg were negative, indicating that crime did drop in the site during and after redevelopment. Nearly all of the WDQs were positive, indicating a diffusion of benefits took place from the target area to the buffers. Many of those WDQs were also greater than 1, pointing to a large positive effect in the buffer areas (see exhibit 8).

Two important details of the Capper/Carrollsborg site should be kept in mind when interpreting the results. First, the timeline for both of the Washington, D.C. sites, including Capper/Carrollsborg, was much longer than for the Milwaukee site, meaning those sites had a longer time period with fewer residents on site. Given the lack of residents on site, combined with the construction efforts at each site—making the site unattractive in terms of criminal opportunity—it is not surprising that crime dropped more quickly at the Washington, D.C. sites than in Milwaukee, where residents were on site throughout redevelopment.

A second important feature of the Capper/Carrollsbury site, mentioned above, was the large amount of redevelopment not associated with HOPE VI that was going on in the area immediately surrounding the site. These other redevelopment efforts should have served to decrease criminal opportunity at the site, and prevent much displacement from taking place to the buffer zones surrounding the Capper/Carrollsbury site.

Conclusion

Most previous displacement studies have focused on interventions with problem-oriented policing strategies, such as enhanced enforcement in a hot spot or small geographic area. We should not ignore the difficulties with applying the techniques and theories from that type of study to one like this where the intervention is long-term and takes place over a large geographic.

First, identifying the specific period of intervention is difficult—in each site, we did our best to use the redevelopment timeline to make educated decisions about when the most intense changes on the site occurred and used that period as our intervention. Second, choosing the boundaries of the sites proved difficult, especially in Milwaukee, where one redevelopment project bled into another and the redevelopment process for each building or unit was intertwined with the others. We chose a large target site to encompass all redevelopment activities in Milwaukee, but the results indicated that there may have been differential effects from the redevelopment of each portion of the larger site (for example, the effects of changes to Cherry Court may have been different from the effects of changes at Highland Gardens). In Washington, D.C., public housing site definition was more straightforward, but for Capper/Carrollsbury, nearby redevelopment efforts made the actual boundaries of redevelopment efforts difficult to identify.

For practitioners especially, we suggest that the WDQ is one of the most accessible and appropriate methods for studying displacement. It could easily be implemented by a housing authority or other practitioner looking to better understand displacement from public housing in his or her city. The WDQ requires a low level of resource commitment; different parameters can easily be tested by anyone with basic arithmetic aptitude, and extensive data holdings over several years are not necessary. We suggest that the WDQ be used as a useful but descriptive and intermediate tool in studying displacement. The results of the WDQ can be used to inform expectations of more rigorous statistical testing but cannot be relied upon solely for quantifying displacement or diffusion.

Although this research has shown that the HOPE VI effort has significantly positive effects on crime, especially in the target sites themselves, not all credit for the changes in the surrounding areas can be directly attributed to HOPE VI. Statistically, we were unable to control for all other redevelopment efforts that were taking place in the areas surrounding the target sites: in Milwaukee, for instance, the city assembled non-HOPE VI funding for the redevelopment of Cherry Court, which was in the neighborhood of the two HOPE VI sites (Highland Gardens/Homes and the scattered sites); in Washington, D.C., the area surrounding the Capper/Carrollsbury site concurrently underwent significant redevelopment with non-HOPE VI funds. We did not quantify these other efforts, and thus can only suggest that HOPE VI appeared to have a positive effect in the buffer areas. In these cases, however, the HOPE VI efforts can be seen as a catalyst for, or an early stage of, longer horizon redevelopment plans for a neighborhood. In the traditional sense of diffusion

of crime reduction benefits from a site, then, HOPE VI cannot be given direct credit. In the sense that HOPE VI funds allow a city to target the greater neighborhood for additional redevelopment, however, HOPE VI can be credited with a diffusion of benefits to areas outside the site.

To the extent that the three HOPE VI sites in two cities are representative of other actual and possible HOPE VI sites, the results are applicable to other public housing sites undergoing this type of large-scale redevelopment, especially given the comparability of results we found across sites. The consistency with which we found evidence of diffusion from the sites is an indication that redevelopment under HOPE VI does indeed lead to diffusion of crime reduction, whether via changes directly attributable to HOPE VI in the target area or indirectly via encouraging additional investment in the larger neighborhood, leading to additional redevelopment efforts in areas surrounding the HOPE VI site itself. In addition, including the three sites allowed for, at the Milwaukee sites, a purer test of the physical site designs because residents were largely the same before and after redevelopment; at the Capitol Gateway site, an examination of changes in a site where little concurrent redevelopment was taking place outside the site; and, at the Capper/Carrollsbury site, an examination of effects where a massive amount of additional development was taking place. The variety presented by the sites makes the results applicable to a number of other, similar sites. Additional research in this vein that confirms the results of this study would add to the case presented in this article for the positive effects of HOPE VI on target sites and on surrounding neighborhoods.

Despite these challenges, studying displacement from public housing is an important undertaking, and the possibility of displacement should be considered by housing authorities either already undertaking large-scale public housing redevelopment projects or considering whether to start such an effort. Although this research showed that diffusion of benefits is likely from redeveloped public housing, more work of this type—exploring different options for target area boundaries, intervention periods, and displacement areas—can provide more evidence of the best approaches to this type of effort and inform housing authorities of the most efficient ways to include studies of displacement and diffusion in their redevelopment efforts.

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