Online Appendix to:
Blowing It Up and Knocking It Down: The Local and City-Wide Effects of Demolishing High Concentration Public Housing on Crime

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A Supplemental Background on Public Housing

This section provides background information on the history of public housing in the United States and the political process that determined where large public housing developments wound up being situated in Chicago.

In the United States, federally provided public housing dates back to 1918, when 16,000 units were built for workers during World War I. The passage of the 1937 National Housing Act established the current system of local, independent housing authorities that receive federal money and perform the tasks of building and managing public housing. Under this program, and continuing through World War II, the federal government financed the construction of 365,000 permanent housing units and an even greater number of temporary units. As World War II veterans returned and African-American migration from the rural South to northern cities continued, urban housing was in short supply. In 1949, a new Housing Act was passed, providing loans and subsidies for the construction of about 810,000 units of low-rent housing.[1] While the pace of building and the uptake rate of federal funds varied from city to city, a large number of federally subsidized, low-rent housing units were built over the next fifteen years. However, from the mid-1970's through the early 1990's, conditions in public housing deteriorated significantly. Problems associated with public housing included high crime and low educational and employment outcomes of residents. Furthermore, much of the stock of public housing was in disrepair. Funding had been cut during the 1980's, resulting in deferred maintenance and contributing to the large and growing costs of rehabilitation.[2]

In Chicago, site selection for new public housing units to be constructed during the 1950's was a contentious issue.[3] The Chicago Housing Authority (CHA) initially proposed some sites on vacant land in outlying neighborhoods that were predominantly white and other sites in poor African American neighborhoods closer to the center of the city, which were not vacant but were deemed to be "blighted slums." This classification was meant to indicate areas where housing was not structurally sound and living conditions were deemed to be unsanitary. Many of the city council members whose wards contained the sites that were proposed in the outlying areas organized an opposition which threatened to derail the entire plan of building up to 40,000 new units of housing over a six-year period. In the end, the CHA was denied the use of most of the vacant land sites. Construction of public housing that took place from 1950 to 1964 was either as an extension of an existing development or

[1] Meyerson and Banfield (1955).

[2] Polikoff (2006).

[3] Hunt (2009) provides an excellent history of public housing in Chicago from the 1937 Housing Act through the Chicago Housing Authority's Plan for Transformation.

on a site that was in a poor African-American neighborhood. The public housing buildings built in Chicago during this time were almost all high-rises.[4]

Table A1 provides descriptive statistics comparing 1950 characteristics of the neighborhoods where public housing was proposed and built, or proposed and rejected by either the CHA or the city council. The table displays population weighted means from the 1950 Census of the 8 community areas where high-rise public housing was built, 5 community areas which were proposed but rejected by the CHA, and 9 community areas proposed but rejected by the City Council.[5] The table shows that the sites that were chosen were in neighborhoods with a higher proportion of African American residents, lower median income, higher population density, and that were closer to the Central Business District (CBD) than the sites that were rejected.

Table A2 provides an overview of the location and size of public housing developments in Chicago. The table lists all family (non-senior-citizen) CHA developments, indicates whether the development contains high-rise buildings, the year of construction, and the number of units in the development, broken down by the community area in which the units are located.

Table A3 illustrates the lack of common support across the neighborhoods that had high-rise public housing in 1990 and those that had no public housing in 1990. The table displays the predicted probability of a neighborhood containing high-rise public housing in 1990 based on a probit using only the percentage of African American households and the percentage of households below the poverty line as explanatory variables. The estimate is from the sample of 68 neighborhoods that did not contain low-rise public housing. Seven of the eight neighborhoods with high-rise public housing have the highest propensity scores, illustrating the fact that neighborhoods with high-rise public housing have quite different characteristics than those without high-rise public housing.

B Local Effects on Homicides: Robustness

B.1 Local Effects Model Specification

Here we discuss alternative specifications serving as robustness checks. In this section the specifications are chosen to clarify the precise nature of the local effects of building closures, whether directly in the areas where the buildings once stood, or spilling over to nearby neighborhoods. Recall that we suppose Chicago has I geographic areas. For each geographic area $i \in \{1, \ldots, I\}$, define geographic area $i_1 \in \{1, \ldots, i-1, i+1, \ldots I\}$ as the nearest

[4] Bowly, Jr. (1978).

[5] For a description of Chicago community areas, see `http://en.wikipedia.org/wiki/Community_areas_in_Chicago`.

geographic area containing a public housing high-rise.[6] We first specify crime for geographic area i at time t to be determined as follows:

$$Crime_{i,t} = \alpha_i + \gamma_t + \beta_D H_{i,t} + \zeta_S H_{i_1,t} + \epsilon_{i,t}. \tag{1}$$

Here, as in the main paper, $H_{i,t}$ is the number of units of high-rise public housing that are still open in geographic area i at time t, and this variable is expressed in terms of 100's of units.[7] In areas where closures occur, $H_{i,t}$ will take on a positive value in the beginning of the sample period and decrease (possibly to zero) by the end of the sample period. For all other areas in the city, $H_{i,t}$ will be equal to zero throughout the entire period. α_i and γ_t are geographic area fixed-effects and year-effects, respectively. Finally, $\epsilon_{i,t}$ represents unobserved determinants of $Crime_{i,t}$.

We consider two possible specifications for the term that measures the local spillover effects, represented by the $\zeta_S H_{i_1,t}$ term in Equation 1. We define $d(i, i_1)$ as the distance from geographic area i to geographic area i_1, measured in miles. In the first specification, ζ_S represents an effect from one of four distance bands as follows:

$$\begin{aligned}\zeta_S H_{i_1,t} \equiv\ & \zeta_{S1} H_{i_1,t} \mathbf{1}\{0 < d(i,i_1) \leq 0.25\} + \zeta_{S2} H_{i_1,t} \mathbf{1}\{0.25 < d(i,i_1) \leq 0.5\} \\ & + \zeta_{S3} H_{i_1,t} \mathbf{1}\{0.5 < d(i,i_1) \leq 1.0\} + \zeta_{S4} H_{i_1,t} \mathbf{1}\{1.0 < d(i,i_1) \leq 1.5\}.\end{aligned}$$

In the second specification, we again define $i_1 \in \{1, \ldots, i-1, i+1, \ldots I\}$ as the nearest geographic area to i containing a public housing high-rise, but now we also define i_2 in the same set as the second-nearest geographic area, and i_3 as the third-nearest geographic area containing a public housing high-rise. In this case we can re-specify Equation 1 as:

$$Crime_{i,t} = \alpha_i + \gamma_t + \beta_D H_{i,t} + \beta_S H_{i_1-i_3,t} + \epsilon_{i,t}, \tag{2}$$

where[8]

$$\begin{aligned}\beta_S H_{i_1-i_3,t} \equiv\ & \beta_{S1} H_{i_1,t} ln(d(i,i_1)) \mathbf{1}\{0 < d(i,i_1) < 0.5\} + \\ & \beta_{S2} H_{i_2,t} ln(d(i,i_2)) \mathbf{1}\{0 < d(i,i_2) < 0.5\} + \\ & \beta_{S3} H_{i_3,t} ln(d(i,i_3)) \mathbf{1}\{0 < d(i,i_3) < 0.5\}.\end{aligned}$$

As in the text, we report estimation results not only in terms of regression coefficients,

[6] We define distance as the number of miles between the centroids of geographic areas.

[7] By "open," we mean that they have not yet been closed prior to demolition.

[8] In Section B.2, we show that the log function characterizes the dissipation of the effects with distance well and that the effects are near zero at distances greater than 0.5 miles.

but also in terms of the change in the annual number of homicides in the city associated with the change in the number of high-rise units from the beginning to the end of the sample period. We decompose the local effect of high-rise building closures for the city of Chicago into a direct effect and an analogous spillover effect using the parameters of our model as either:

$$\Lambda^D \equiv \sum_{i=1}^{I} \beta_D (H_{i,T} - H_{i,1})$$
$$\Lambda^S \equiv \sum_{i=1}^{I} \beta_S (H_{i_1,T} - H_{i_1,1})$$

or

$$\Lambda^D \equiv \sum_{i=1}^{I} \beta_D (H_{i,T} - H_{i,1})$$
$$\Lambda^S \equiv \sum_{i=1}^{I} \sum_{j=1}^{3} \beta_{Sj} (H_{i_j,T} - H_{i_j,1}) \mathbf{1}\{0 < d(i, i_j) < 0.5\} ln(d(i, i_j)),$$

depending on the model estimated. These parameters are especially useful for comparing effects using parameter estimates from models estimated under different definitions of geographic area (tract, block group, and block).

In order to give a sense of their magnitudes, we also report the parameters Λ^D and Λ^S normalized by the number of crimes in various geographic areas in year $t = 1$ (the initial year of the sample). For these local specifications the first year is 1991, rather than 1999 as in the specification used in the text, since we are not restricted by the displacement data which begins in 1999. The first normalization we report divides Λ^D and Λ^S by the total number of crimes in the affected areas, which for Λ^D are all geographic areas $k \in \{1, \ldots, K^1\}$ containing high-rises, and for Λ^S are all geographic areas $k \in \{1, \ldots, K^2\}$ within 0.5 miles of a geographic area with a high-rise:

$$\overline{\Lambda}^D_{AA} \equiv \frac{\Lambda^D}{\sum_{k=1}^{K^1} Crime_{it=1}}$$
$$\overline{\Lambda}^S_{AA} \equiv \frac{\Lambda^S}{\sum_{k=1}^{K^2} Crime_{it=1}}$$

We also report Λ^D and Λ^N normalized by the total crime occurring in all geographic areas

$i \in \{1, \ldots, I\}$ city-wide:

$$\overline{\Lambda}^{D}_{CW} \equiv \frac{\Lambda^D}{\sum_{i=1}^{I} Crime_{it=1}}$$
$$\overline{\Lambda}^{S}_{CW} \equiv \frac{\Lambda^S}{\sum_{i=1}^{I} Crime_{it=1}}$$

B.2 Estimation Results for Specifications Focused on Local Effects

The results from estimation of Equation 1 presented in the first column of Table A4 show that, on average, closing high-rise public housing buildings led to large decreases in homicides in areas containing and near those buildings. Table A5 presents the summary measures discussed in the previous sub-section for each specification estimated in Table A4. According to these specifications, the closure of approximately 18,000 units of high-rise public housing from 1990 to 2011 was associated with a drop of about 40 homicides per year in the 30 Census tracts containing high-rise public housing buildings. These closures were also associated with a drop of about 28 homicides per year in the Census tracts within a 1.5-mile radius of the high-rises. These effects are large: The direct effect of the closures represents a decrease in homicides equal to 4.4% of all homicides in Chicago in 1991, and the effect on nearby Census tracts is a decrease equal to 3.0% of city-wide homicides in 1991 (last two rows of Table A5).

With the exception of ζ_{S4}, the magnitudes of the estimates are in line with our expectations. The largest magnitude is on β_D (the direct effect), and the estimates decrease in magnitude as distance to the nearest high-rise area increases. When geographic areas are defined as Census tracts (column (1)), only the direct effect (shown in the first row) is statistically different from zero.

The results presented in column (1) of Table A4 are robust to specifications, like those in the main paper, that use smaller geographic areas than Census tracts. The magnitude of the overall local effect (direct plus spillover) does not change dramatically between the tract specification and the finer block group and block specifications.[9] What does change between these specifications is whether the effect is distributed directly in the geographic area containing the high-rises or spills over to the nearby areas. This implies that some of the effect being attributed to the direct effect in the tract-level specification is actually a spillover effect that can be better measured at the finer block level.

It is also worth noting that the magnitude of the spillover coefficients in column (3) of Table A4 decreases as distance increases for the first three coefficients. The first two

[9] Adding the city-wide direct and spillover effects shown in the bottom panel of Table A5 for columns (1), (2), and (3) yields -7.34%, -8.47%, and -7.76%, respectively.

coefficients, measuring the effects in the nearest half-mile, are both statistically different from zero. However, the last two spillover coefficients are not distinguishable from zero.

Using these estimates as motivation, column (4) of Table A4 presents estimates of the β parameters in Equation 2. This specification replaces the first two distance indicator variables with the log distance (measured in miles) to the nearest high-rise block, still interacted with the number of high-rise units remaining open in that nearest block with high-rise public housing. We also interact this variable with an indicator for being within a half-mile of the nearest high-rise block, motivated by the fact that only the ζ_{S1} and ζ_{S2} coefficients were significant in column (3). The negative sign on the log distance coefficient in the top panel implies that within the first half-mile of a block with a high-rise, the effect of public housing closure on homicides drops as distance to the nearest high-rise block increases. Also (although not shown due to space constraints), the sum of the first two components of the implied change in homicides per year for the local spillover effect for column (3) of Table A5 (-20.3 + -12.3 = -32.6) is very similar to the local spillover effect shown in column (4) (-34.9), revealing that the log specification does a reasonably good job parameterizing the decay of the effect as distance increases within the first half-mile.

In Column (5), we add two more explanatory variables: 1) The log distance to the second-nearest high-rise block interacted with the number of units still open in the second-nearest high-rise block. 2) The log distance to the third-nearest high-rise block interacted with the number of units still open in the third-nearest high-rise block. The idea behind these additional variables is that some blocks are close to multiple high-rise blocks and may be affected by changes in the stock of public housing in more than just the nearest high-rise block. In fact, the coefficients on the nearest and second-nearest are both statistically significant while the third-nearest is not.[10]

When focused entirely on understanding the local impact of high-rise public housing closures, the specification presented in column (5) of Tables A4 and A5 is our preferred specification. It attributes a drop of about 26 homicides per year (row 1, top panel of Table A5) to the local direct effect of high-rise public housing closures. Comparing this to the total of 66 homicides in high-rise blocks in 1991 implies a reduction of about 39% (row 1, middle panel). A similar comparison of the reduction of 47 homicides per year (row 2, top panel) in the nearby blocks to the total 175 homicides in these nearby blocks in 1991 implies a 27% reduction (row 2, middle panel). The bottom panel of Table A5 shows similar calculations except that the reductions are compared to the total number of homicides in Chicago in 1991 (922).

[10]We also tried specifications with up to the five nearest high-rise blocks included, but the first two remained the most important, statistically and economically.

B.3 Estimation Results of Additional Specifications Testing Local Effects Robustness

The results shown in our preferred specification for studying the local (direct and spillover) effects, displayed in column (5) of Table A4, are robust to a number of variations in sample and specification. We experimented with a number of different ways in which to cluster the standard errors. Throughout the paper we take the "conservative" approach and cluster by community area, as the resulting standard errors are slightly larger than with the other clustering options. Our results are also robust to excluding the developments whose tenants were party to lawsuits aimed at halting or slowing demolitions (ABLA, Henry Horner, and Cabrini-Green), excluding the highest-land-value development (Cabrini-Green), excluding the largest development (Robert Taylor). Our estimates do not vary systematically by the occupancy rate of the development (as measured in 1990) or over time. These results are also robust to limiting the sample to blocks within a half-mile of high-rise blocks, or just to high-rise blocks. Finally, the results are robust to using a conditional fixed effect Negative Binomial count data model rather than OLS. We do not use logged crime counts as an outcome, because many block-time observations are zeros.

Table A6 presents a number of robustness specifications regarding the clustering of standard errors for the local effects of high-rise closures on homicide. Column (3) repeats the preferred specification shown in column (5) of Table A4 for ease of comparison. Columns (1) through (6) differ only in the way the standard errors are clustered. Columns (1) through (4) cluster by progressively larger geographical areas: Census block, Census tract, community area, and police precinct. Columns (5) and (6) cluster based on the high-rise block that is nearest and on policy regime, respectively. We define a policy regime to hold as long as the number of high-rise units in the block (or in the nearest high-rise block) remains constant. This corresponds to the level at which the identifying variation occurs. It is important to note that the choice of clustering does not affect our conclusions. Based on this analysis, throughout the main paper we take the "conservative" approach and cluster by community area, as the resulting standard errors are slightly larger than with the other clustering options.

Table A7 shows that the results presented in Table A4 are robust to a large number of variations to the specification, sample, dependent variable normalization, and method of estimation. These robustness checks can be compared to the specification shown in column (5) of Tables A4 and A5. Column (1) shows the results of estimating the preferred specification, except that the sample has been limited to the years 1999 through 2011. The point estimates shown in the second panel are almost exactly the same as those in column (5) of

Table A4. Furthermore, the city-wide direct and nearby effects shown in the bottom panel are also very similar to those in column (5) of Table A5. This implies that the estimated effects are stable whether using the longer sample (1991-2011) available for homicide or the shorter sample (1999-2011) available for other crime types and presented in Section 6 of the main paper.

Column (2) of Table A7 is the same as column (5) of Tables A4 and A5 except that the sample has been limited to only the blocks that contained high-rise public housing in 1990. The coefficient on high-rise units falls slightly but remains statistically different from zero. The implied direct effect of high-rise closures on homicides drops slightly from a 2.8% reduction to a 2.2% reduction in homicides per year.

Column (3) shows the results of a placebo test using only high-rise blocks. For the placebo test, we randomly re-assigned each of the 90 high-rise blocks a time-series of building closures from one of the other high-rise blocks. As we would expect, the point estimate of the coefficient on the number of high-rise units still open (β_D) drops to about zero, both economically and statistically.

Column (4) is the same as column (5) of Tables A4 and A5 except that the dependent variable is homicides per square mile. Specifying the outcome variable as number of homicides per square mile is motivated by Ihlanfeldt and Mayock (2010), who argue that normalizing crime counts by land area is preferable to normalizing by population for geographies smaller than cities, since it provides a better measure of the likelihood of exposure to crime. While the re-scaling changes the magnitudes of the point estimates, it is reassuring that the city-wide direct and nearby effects shown in the bottom panel do not change markedly.

Column (5) varies the preferred specification of column (5) of Tables A4 and A5 by adding controls for the number of units that were occupied in each building in 1990. This is accomplished by adding a variable which is equal to the interaction of this variable and the number of high-rise units that remain open, $H_{i,t}$. Controlling for the number of units that were occupied in each high-rise building in 1990 slightly increases the magnitude of the results compared to those of the preferred specification.

Columns (6) through (8) of Table A7 are the same as the preferred specification except that they exclude particular high-rise developments and any block within a half-mile of those developments. Column (6) excludes the ABLA, Henry Horner, and Cabrini-Green developments, whose tenants were party to lawsuits aimed at halting or slowing demolitions. Excluding these "lawsuit" developments causes the coefficient on the number of high-rise units to rise slightly and has no impact on the other coefficients. It does not appear that these developments, which are possibly more politically organized, are driving the results.

Columns (7) and (8) repeat the same exercise, but drop only the Cabrini-Green and Robert Taylor developments, respectively. Again, the coefficients change only slightly. The results do not appear to be driven by Cabrini-Green (the development that probably has the highest land value) or Robert Taylor (the largest development).

Column (9) of Table A7 shows results of a conditional fixed effect Negative Binomial count data model rather than OLS.[11] Column (10) shows the results of another conditional fixed effects Negative Binomial count data regression, but this time the sample is limited to only the high-rise blocks. Both specifications yield results that are similar to the OLS results, though slightly larger in magnitude.

Column (11) of Table A7 has two differences from column (5) of Tables A4 and A5: It uses tract as the geographic area rather than block, and it uses a sample that goes from 1970 to 2011. Estimates from this longer sample period imply a local direct effect on the total implied change in homicides per year of high-rise public housing closures that is slightly larger (-53 versus -40) than the tract level specification shown in column (1) in Table A5. While the local spillover estimates, Λ^S, are a bit larger in column (11) of Table A7 (-43) than in the other tract-level specification, shown in column (1) in Table A5 (-28), they are quite similar to those shown in the preferred, block-level, specification, shown in column (5) of Table A5 (-47).

B.4 Local Effects: Timing

While the main specification shown in Equations 1 and 2 exploits the timing in public housing building closures to estimate the parameter β_D, the estimate of this parameter represents an average effect of high-rise public housing on crime throughout the sample period. In order to further study the dynamics of the impact of high-rise public housing closures on crime, we estimate the following specification,

$$Crime_{i,t} = \alpha_i + \gamma_t + \sum_{j=a}^{b} \theta_j F_{i,t-j} + \epsilon_{i,t}. \tag{3}$$

where α_i are still block fixed effects, γ_t are city-wide year effects, and $F_{i,t-j}$ are leads and lags of the number of high-rise building closures in year t in block i. In practice, we estimate leads from $j = -9$ through lags of $j = 9$. We omit the lead of two years prior to the high-rise closure; thus all estimates can be interpreted as relative to two years prior to closure. We

[11] Count data models take into account the discrete and non-negative nature of the dependent variable. In contrast to Poisson, Negative Binomial models allow for differences in the mean and variance of the dependent variable.

use two years prior to closure in case the closure process occurred slowly, in which case the year prior to closure would be contaminated by the closure. We also include variables that indicate the maximum number of closures that occurred ten lags or more ago and ten leads or more into the future, as incidental parameters. Since these specifications focus only on the direct effects, we estimate the parameters using a sample of only the high-rise public housing blocks.[12]

The estimates of the θ_j parameters are presented in Figure A1. In this figure, the x-axis labels index j. The dotted lines above and below show the 95% confidence bands. Figure A1 shows that, with the exception of a statistically insignificant spike eight years prior to building closure, the estimates of the θ_j prior to the year of closure are quite close to zero. This provides some assurance that the results in Table A4 are not driven by block-specific trends that existed prior to the year of building closure.

Of further importance is the fact that the estimates appear to be somewhat stable at around -0.1 in all years after the closure. In effect, this means that the β_D parameter estimates presented in Table A4 provide a good summary of a fairly stable average effect of high-rise closure.

C Displacement Effects: Robustness

There are several issues with the displacement specification shown in Equation 1 in the main paper that merit attention. The first issue relates to measurement. $M_{i,t}$ in our data does not truly measure the number of migrants in a geographic area but instead is a five-percent sample. Thus, a one-unit increase in $M_{i,t}$ represents 20 additional people displaced from high-rise public housing, and the estimated coefficients should be interpreted accordingly. Measurement error is also a potential concern under such sampling. The second issue relates to the potential selection of neighborhoods by displaced public housing households on neighborhood-level trends in crime or attributes that could be correlated with crime. A third issue is that policing patterns may change endogenously in response to public housing demolition. We present evidence in support of the robustness of our main results to each of these concerns.

[12]We have also estimated the same specification using the broader sample of all Chicago blocks, and the results are almost exactly the same.

C.1 Measurement Error

To get a sense of how big of a problem measurement error might be, we re-estimate the specification after randomly dropping half of the displaced public housing households in our data (effectively reducing the 5% sample to a 2.5% sample). While the standard errors increase, the point estimates do not change in an economically significant manner. Our impression from this exercise is that increasing our sample size would improve our standard errors, but would not be likely to change the point estimates markedly, and thus our conclusions.

Motivated by Black et al. (2000), we also experimented with instrumenting for the number of displaced public housing residents that had relocated to each block to address the issue of measurement error. Our preferred set of instrumental variables was distance from each block to each of the 18 high-rise public housing developments interacted with the cumulative number of people that had been displaced from the development due to closures interacted with the median block group rent and the proportion of the block that is African American. We excluded any blocks within a half-mile of a development from the instrument, as crime in those blocks is likely to be directly influenced by the high-rise closures rather than through the displacement of residents caused by the closures. The first stage of this regression passes the relevant tests for weak instruments, and the sign of the coefficient of number of displaced residents on predicted number of displaced residents is positive (as one would expect). Instrumenting for displaced residents in this manner still leads us to conclude that the displaced residents have no effect on homicide (the best-measured crime category).[13] This serves to allay our concern regarding bias due to measurement error arising from the 5% sample.[14]

Another measurement-related concern is that this specification ignores the counterfactual flows from displacement geographic areas to the original public housing geographic areas that might have occurred had the high-rise public housing buildings not been closed. However, we believe these flows would have been negligible, due to the long waiting lists to get into public housing, and the low exit rate from it. A final concern is that our main specification assumes that migrants only commit crimes in geographic areas within a half-mile radius of their new residence. This assumption concords with the way we treat the dissipation of the local effects of high-rise public housing closures with distance. Based on sensitivity tests, we believe that this is the extent to which we can detect changes in crime associated with nearby displaced public housing residents.

[13] The point estimate from the instrumental variable estimate of displaced households on homicide was -0.108 (with a standard error of 0.073). In comparison, the OLS estimates shown in column (1) of Table A8 are -0.008 (standard error of 0.010) and -0.009 (standard error of 0.006).

[14] We also investigated the possibility of purchasing the full universe of the credit histories from Equifax for Chicago for our sample period, but this was not feasible.

C.2 Selection of Relocation Neighborhoods

In this subsection, we present results from two alternate specifications aimed at ensuring that the results of our preferred specification for measuring displacement effects are not biased by displaced households selecting the neighborhoods to which they relocate based on pre-existing trends in crime or other variables that are correlated with crime. The motivation for the first alternate specification is that housing markets are very thin at the Census block level. Thus, selecting a particular block within a block group is not necessarily possible at a point in time. We implement this specification by replacing the block fixed effects in our main specification with block group * year effects. The motivation for the second alternate specification is that displaced households might select the block group to which they relocate based on trends in crime or correlates of crime in that block group. We control for those trends by adding linear time trends at the block group-level to our main, block fixed effect, specification.

BFE Specification

We label our preferred specification, shown in Equation 1 of the main paper, the block fixed effect (BFE) specification. Table A8 presents the estimates of this specification (top panel) and the city-wide local and displacement effects (also shown in the bottom panels of Tables 6 and 7 of the main paper).

BRT Specification

Our first alternate specification, which we label the Bayer-Ross-Topa (BRT) specification in reference to Bayer et al. (2008), allows for arbitrary block group * year trends:

$$Y_{i,t} = \alpha_{BG_{i,t}} + \beta_D H_{i,t} + \beta_S H_{i_1 - i_3,t} + \beta_M M_{i,t} + \epsilon_{i,t}. \quad (4)$$

The key assumption in the BRT specification is that individuals displaced from high-rise public housing can choose the block group to which they move, but that the housing market is too thin for them to choose the specific block within that block group. In the BRT specification, β_M will capture the additional effects of migrants on the specific block to which they move relative to the block group to which they move. Any increase in crime in the entire block group will be captured in $\alpha_{BG_{i,t}}$, which is a block group * year effect. Thus, β_M in this specification will not capture the full magnitude of displacement effects.

Tests of Assumptions Required for the BRT Specification

We find support for the assumptions of the BRT specification. Table A9 presents estimates from regressions testing the assumptions of the BRT specification. If housing markets are indeed too thin for households to pick the specific block within a block group to which they move, then observable characteristics of the Census blocks should not be predictive of an increased probability of receiving displaced households relative to the surrounding block group. The dependent variable in each of the 12 different conditional fixed effect logistic regressions in Table A9 is an indicator of whether the Census block received any displaced households from high-rise Census blocks. Each regression conditions on block group fixed effects, and each column features a different explanatory variable listed in the column heading. Additionally, each regression includes the number of housing units in the Census block as a control, since blocks with more housing units should mechanically have a higher probability of receiving displaced households.

Table A9 shows that in the sample of block groups with no low-rise public housing units, Census block characteristics are not predictive of whether the block receives displaced high-rise public housing households above what is predicted by the number of housing units in the block. In contrast, in block groups that have low-rise public housing units, the proportion of housing units that are owner-occupied and the proportion of the population that are African American are both predictive of which block within the block group will receive displaced high-rise public housing residents.[15] In the final column, the explanatory variable is an indicator of whether low-rise public housing is present in the Census block. As expected, the presence of low-rise public housing in the block is predictive of whether displaced high-rise households move to that particular block within the block group.

BRT Estimates

When interpreting the BRT results, it is important to remember that, as shown in Equation 1 of the main paper, we distinguish between those displaced residents who are likely to be using private market vouchers (or are living in private market housing without the aid of vouchers), and those who are likely to have relocated to a low-rise public housing unit. We do so because (as shown above) those who move into a low-rise public housing unit are unlikely to satisfy the identifying assumptions in the BRT specification. When we observe moves to block groups that contain low-rise public housing, it is unlikely that the block picked within the block group is random; it is probably the case that the household is relocating to a public housing unit so they are more likely to end up in the block that has the public housing. If

[15]This is due to the fact that these variables are correlated with the presence of low-rise public housing.

this were a problem, we might expect the estimate of β_{M1} to be quite different from that of β_{M2}. For the the most part, however, these estimates are quite similar. The fact that the BRT specification estimate of displacement direct effect scaled by the city-wide number of crimes in 1999 ($\overline{\Delta}_{CW}^{D}$) does not change by much relative to the total effect estimate in the BFE specification, except, possibly, for drug activity, provides a degree of reassurance that selection of geographic areas by displaced public housing residents on pre-existing geographic area trends is not severely biasing our results.

It is encouraging to note that the estimates of the local direct effects ($\overline{\Lambda}_{CW}^{D}$) in Tables A8 and A10 are, for the most part, quite similar. The biggest differences are for gang activity and drug crimes. For these two crimes, the direct effects measured in Table A10 are actually larger in magnitude. The local spillover effects are also quite similar in Tables A8 and A10. The estimates for burglary, theft, and vandalism become smaller in magnitude in Table A10, while the estimates for shots fired, vice and prostitution, trespassing, disturbance, and truancy and curfew become larger in magnitude in Table A10.

For the most part, the estimated city-wide displacement direct effects shown in the third-to-last row of Table A8 are similar to those shown in the second-to-last row of Table A10. The biggest difference is for drug activity, where the displacement direct effect is not statistically different from zero in Table A8, but is both statistically significant and somewhat large economically in the second-to-last row of Table A10. One possible explanation for the differences in these estimates is that, on average, displaced households moved to blocks where drug activity was trending down, but in fact the effect of their arrival was to increase drug activity; thus the observed combination of the pre-trend and the effect we would like to measure is the zero (0.26%) that is observed. Under this explanation, the BRT specification reveals the true effect of displaced households on drug activity.

Overall, the estimates of the total effects are slightly smaller in magnitude using the BRT specification than they are when using the BFE specification. For most crime types, the conclusions that we draw from the total effect remain unchanged. We still find that, on net, the high-rise demolitions are associated with large reductions in city-level homicides, shots fired, and vice and prostitution. The biggest change is for gang activity, which changes sign from an increase in city-level gang activity as estimated in the BFE specification to a decrease for the BRT specification. However, neither of these estimates are statistically different from zero.

Although we do not present the results, we also estimated a specification that added the log distance to the nearest block in which displaced households from high-rise public housing had moved interacted with the number of displaced households currently living in that block. We did this for blocks within a half-mile of any block where displaced households moved (outside of the high-rise blocks) at any point during the sample period. While the sign on this coefficient was negative for most crime types, indicating that increases in crime correlated with the arrival of displaced households dissipated as distance to the block increased, none of the coefficients were statistically different from zero. The additions to the displacement effects implied by this extra explanatory variable were not economically large, either. In fact, for most crime types, the total effect changed only slightly, while the increases in the standard errors were, in some cases, more pronounced. However, we are concerned that the coefficient on this additional explanatory variable is not particularly well identified, as it must rely on variation coming from blocks within a half-mile but outside of the block group in which block i is located (since block group * year effects are included).

Block Fixed Effects with Block Group Time Trends

Table A11 presents the estimates and city-wide effects of a robustness specification which augments our main block fixed effect (BFE) specification by adding linear time trends at the block group-level. The idea is to control for potential block group specific pre-existing trends in crime so as not to conflate any trend that was already in place with an effect of public housing closure or an effect of displaced public housing residents relocating to the block. Controlling for these time trends at the block group level rather than the block level is motivated by the evidence presented in the previous subsection that while households may be able to chose the block group to which they move, the housing market is quite thin at the block level so that the particular block to which a household moves within a block group appears to be random.[16]

Overall, adding block group time trends to our main, block fixed effect, specification does not markedly change our results and does not alter our conclusions. The total city-wide effects of public housing demolition on homicide, shots fired, assault and battery, burglary, theft, auto theft, vandalism, and disturbance remain about the same as those shown for the BFE specification shown in the last row of Table A8.

In addition, the large but statistically insignificant total effect on gang activity drops from about 6% to about 0%, and the apparent 2% reduction in vice and prostitution in the blocks nearby (within a half-mile of) the displaced blocks drops in magnitude to about a 0% reduction.

Overall, we interpret the similarity of the results presented in Tables A8 and A11 as evidence that the results of our preferred specification are not biased by displaced households selecting the neighborhoods to which they relocate based on pre-existing trends in crime or other factors that are correlated with crime.

[16]Controlling for Census block time trends and Census block fixed effects was not computationally feasible.

C.3 Endogenous Policing Response

When assessing the displacement results, a possible concern is that policing patterns may have changed in response to high-rise closures and the relocation of public housing residents. To assess the degree to which this could influence our results, we re-estimated all but the last column of Table A8, including truancy and curfew on the right-hand side as a control for policing intensity. Truancy and curfew violations are most likely the result of police officers stopping children rather than calls to 911. For this reason, the truancy and curfew measure may serve as a proxy for the presence of police. We find that the coefficient on truancy and curfew is positive and statistically significant for all crime types, but its inclusion has very little effect on our estimates. Thus, we do not believe that our results are primarily driven by changes in policing intensity. However, to the extent that truancy and curfew is an imperfect proxy for policing, our results can be thought of as the effect of the changes in public housing, allowing policing strategy to respond endogenously.

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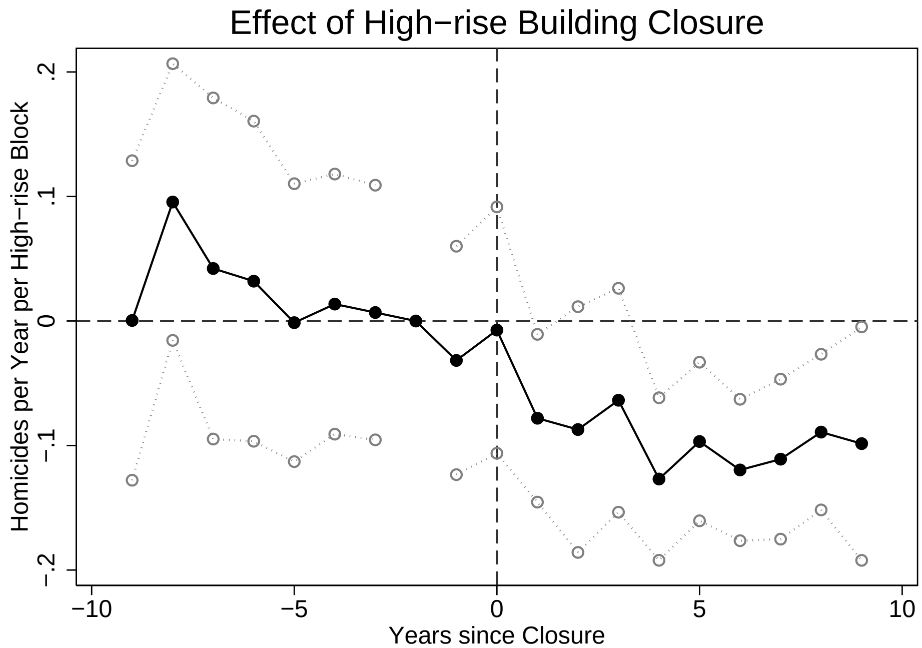

Figure A1: Event Study Coefficients of High-rise Building Closure on Homicide.

Table A1: 1950 Characteristics of Neighborhoods where High-Rise Public Housing was Proposed

	(1) Accepted Sites	(2) Rejected by CHA	(3) Rejected by City Council
% African American	65.6	0.4	4.7
Median Income ($1,000s)	14.5	28.7	24.5
Population per Square Mile (1,000s)	3.03	2.80	1.47
Distance to CBD (miles)	2.82	7.74	8.29

Note: Population weighted community area means are calculated from 1950 Census data. All dollar amounts are in year 2000 dollars. Column (1) includes 8 community areas where high-rise public housing was built: Near North Side, Near West Side, Near South Side, Armour Square, Douglas, Oakland, Grand Boulevard, Washington Park. Column (2) includes 5 North Side community areas containing sites considered for high-rise public housing but ultimately rejected by the CHA due to high cost of obtaining land: Rogers Park, West Ridge, Uptown, Lincoln Square, and North Park. Column (3) includes 9 South Side community areas containing sites considered for high-rise public housing but ultimately rejected due to objections from the City Council: South Chicago, South Deering, East Side, West Pullman, Riverdale, Hegewisch, Garfield Ridge, McKinley Park, New City, Clearing. (Source: Bowly, Jr. (1978) and Brad Hunt's notes from CHA historical archives.)

Table A2: CHA Family Housing Developments

Development Name	High-Rise	Year Completed	Community Area (Number)	Units
ABLA Homes	Yes	1961	Near West Side (28)	3,699
Altgeld-Murray Homes	No	1945/1954	Riverdale (54)	1,996
Bridgeport Homes	No	1943	Bridgeport (60)	141
Cabrini-Green Homes	Yes	1942/1962	Near North Side (8)	3,211
Dearborn Homes	Yes	1950	Armour Square (34)	48
			Douglas (35)	752
Henry Horner Homes	Yes	1957/1961	Near West Side (28)	1,933
Hilliard Homes	Yes	1966	Near South Side (33)	345
Ickes Homes	Yes	1955	Near South Side (33)	803
			Douglas (35)	203
Lakefront Homes	Yes	1963	Oakland (36)	923
Lathrop Homes	No	1937	North Center (5)	408
			Lincoln Park (7)	468
Lawndale Gardens	Yes	1942	North Lawndale (29)	187
			South Lawndale (30)	128
LeClaire Courts	No	1954	Garfield Ridge (56)	612
Lowden Homes	No	1953	Roseland (49)	127
Robert Taylor Homes	Yes	1962	Grand Boulevard (38)	3,312
			Washington Park (40)	1,103
Rockwell Gardens	Yes	1961	Near West Side (28)	1,136
Stateway Gardens	Yes	1958	Armour Square (34)	920
			Douglas (35)	724
Trumball Park Homes	No	1938	South Deering (51)	486
Washington Park Homes	Yes	1962	Grand Boulevard (38)	911
			Washington Park (40)	546
Wells-Darrow-Madden Homes	Yes	1941/1961/1970	Douglas (35)	1,520
			Oakland (36)	1,268
			Grand Boulevard (38)	289
Wentworth Gardens	No	1945	Armour Square (34)	422

Note: Total number of units as of 1990 for each non-scattered-site, non-city-state family development broken down by community area. High-rise indicates whether the development contained any high-rise buildings.

Table A3: Twenty Neighborhoods with the Highest Predicted Probability of Containing High-Rise Public Housing

Neighborhood	(1) High-Rise Public Housing	(2) P-Score	(3) % Under Poverty Line	(4) % African American
Rogers Park	No	0.015	27.5	19.5
Near North Side	Yes	0.023	23.3	20.0
Albany Park	No	0.036	3.4	17.5
Woodlawn	No	0.038	96.0	37.0
Hermosa	No	0.038	2.0	17.4
Avondale	No	0.039	1.3	17.4
Uptown	No	0.074	22.3	24.2
Austin	No	0.085	99.2	40.8
Englewood	No	0.145	99.2	43.2
Humboldt Park	No	0.166	50.5	33.8
Logan Square	No	0.224	6.8	26.4
New City	No	0.245	41.3	34.1
East Garfield Park	No	0.333	98.9	48.1
Lower West Side	No	0.333	1.1	27.8
Fuller Park	No	0.387	98.6	49.2
West Town	No	0.439	10.6	31.9
Douglas	Yes	0.469	91.6	49.4
Armour Square	Yes	0.523	22.2	36.0
Washington Park	Yes	0.805	99.4	58.4
Near West Side	Yes	0.889	67.0	54.5
Near South Side	Yes	0.938	93.5	62.5
Grand Boulevard	Yes	0.952	99.4	64.7
Oakland	Yes	0.996	99.4	72.3

Note: Twenty neighborhoods with the highest predicted probability of containing high-rise public housing estimated by probit using the percentage of households below the poverty line in 1990 and the percentage of African American households in 1990 as explanatory variables on a sample of the 68 community areas that do not contain low-rise public housing. Marginal effects (confidence levels) are 0.321 (0.002) for percent under the poverty line and -0.067 (0.080) for percent African American.

Table A4: Local Effects of Public Housing Demolition on Homicide

	(1)	(2)	(3)	(4)	(5)
High-rise Units (in 100s)					
β_D: $H_{i,t}$	0.234	0.237	0.156	0.156	0.149
	(0.026)	(0.019)	(0.027)	(0.027)	(0.027)
Nearest High-rise within 0.25 miles * High-rise Units (in 100s)					
ζ_{S1}: $\mathbf{1}\{0 < d(i,i_1) \leq 0.25\} * H_{i_1,t}$	0.022	0.011	0.012		
	(0.026)	(0.010)	(0.003)		
Nearest High-rise 0.25-0.5 miles * High-rise Units (in 100s)					
ζ_{S2}: $\mathbf{1}\{0.25 < d(i,i_1) \leq 0.5\} * H_{i_1,t}$	0.017	0.019	0.005		
	(0.012)	(0.006)	(0.002)		
Nearest High-rise 0.5-1 miles * High-rise Units (in 100s)					
ζ_{S3}: $\mathbf{1}\{0.5 < d(i,i_1) \leq 1\} * H_{i_1,t}$	0.006	0.008	0.001		
	(0.010)	(0.005)	(0.002)		
Nearest High-rise 1-1.5 miles * High-rise Units (in 100s)					
ζ_{S4}: $\mathbf{1}\{1 < d(i,i_1) \leq 1.5\} * H_{i_1,t}$	0.033	0.015	0.003		
	(0.021)	(0.008)	(0.003)		
Miles to Nearest High-rise * High-rise Units (in 100s)					
β_{S1}: $ln(d(i,i_1)) * H_{i_1,t} * \mathbf{1}\{0 < d(i,i_1) < 0.5\}$				-0.006	-0.004
				(0.001)	(0.001)
Miles to 2nd Nearest High-rise * High-rise Units (in 100s)					
β_{S2}: $ln(d(i,i_1)) * H_{i_2,t} * \mathbf{1}\{0 < d(i,i_2) < 0.5\}$					-0.004
					(0.002)
Miles to 3rd Nearest High-rise * High-rise Units (in 100s)					
β_{S3}: $ln(d(i,i_1)) * H_{i_3,t} * \mathbf{1}\{0 < d(i,i_3) < 0.5\}$					-0.001
					(0.002)
R^2	0.431	0.230	0.102	0.102	0.102
Observations	18,396	52,059	517,881	517,881	517,881
Geography	Tract	Block Group	Block	Block	Block

Note: $H_{i,t}$ denotes the number of high-rise public housing units (measured in 100s) that remain open in geographical area i in year t. i_1 denotes the nearest geographical area to area i that contains high-rise public housing. i_2 and i_3 denote the second- and third-nearest areas, respectively. $d(i, i_1)$ denotes the distance (in miles) from the centroid of area i to the centroid of area i_1. The specifications in columns (1) - (3) include the number of high-rise units that remain open in the geographical area (row 1) if the area contains high-rise public housing. Rows 2-5 show coefficients on variables that interact the number of high-rise units that remain open in the nearest high-rise area with indicators of whether that area is within 4 distance bands within a 1.5-mile radius. The specifications move from coarser geographies (Census tracts in column 1) to finer geographies (Census blocks in column 3). Columns (4) and (5) continue to use Census blocks. In column (4), the distance bands are replaced by the log of distance to the nearest high-rise block within a half mile, which is also interacted with the number of high-rise units that remain open in that nearest block. Column (5) adds similar variables for the second- and third-nearest high-rise blocks. Standard errors clustered by community area are in parentheses.

Table A5: Cumulative Local Effects of Public Housing Demolition on Homicide

	(1)	(2)	(3)	(4)	(5)
Geography	Tract	Block Group	Block	Block	Block
Total Implied Change in Homicides per Year					
Local Direct	-40.1	-40.7	-26.8	-26.7	-25.6
Λ^D	(4.4)	(3.3)	(4.7)	(4.7)	(4.6)
Local Spillover	-27.6	-37.4	-44.8	-34.9	-46.9
Λ^N	(15.2)	(11.6)	(15.5)	(7.3)	(11.0)
Affected Area					
Local Direct	-34.31%	-38.75%	-41.16%	-41.14%	-39.44%
$\overline{\Lambda}^D_{AA}$	(3.80%)	(3.15%)	(7.19%)	(7.18%)	(7.11%)
Local Spillover	-8.10%	-10.43%	-11.18%	-20.78%	-26.77%
$\overline{\Lambda}^N_{AA}$	(4.44%)	(3.22%)	(3.86%)	(4.35%)	(6.25%)
City-wide					
Local Direct	-4.35%	-4.41%	-2.90%	-2.90%	-2.78%
$\overline{\Lambda}^D_{CW}$	(0.48%)	(0.36%)	(0.51%)	(0.51%)	(0.50%)
Local Spillover	-2.99%	-4.06%	-4.86%	-3.78%	-5.08%
$\overline{\Lambda}^N_{CW}$	(1.64%)	(1.25%)	(1.68%)	(0.79%)	(1.19%)

Note: The top panel of this table presents estimates of the cumulative effect of public housing closures on homicides per year implied by the coefficients estimated in Table A4. The first 2 rows take the change in the variable from 1991 to 2011 multiplied by the estimated coefficient and summed across geographical areas. Row 1 shows the cumulative effect of the estimate in row 1 of Table A4. Row 2 shows the sum of cumulative effects for the nearby estimates shown in rows 2 through 8 of Table A4. The middle panel scales the estimates shown in row 1 and row 2 by the total number of homicides in the high-rise and nearby blocks in 1991, respectively. The bottom panel scales the same estimates by the total number of homicides in the city of Chicago in 1991. Standard errors clustered by community area are in parentheses.

Table A6: Local Effects of Public Housing Demolition on Homicide - Standard Error Clustering

Clustering	(1) Block	(2) Tract	(3) Community Area	(4) Police Precinct	(5) Nearest High -rise Block	(6) Policy Regime
High-rise Units (in 100s)						
β_D: $H_{i,t}$	0.149	0.149	0.149	0.149	0.149	0.149
	(0.020)	(0.021)	(0.027)	(0.009)	(0.020)	(0.016)
Miles to Nearest High-rise * High-rise Units (in 100s)						
β_{S1}: $ln(d(i,i_1)) * H_{i_1,t} * \mathbf{1}\{0 < d(i,i_1) < 0.5\}$	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Miles to 2nd Nearest High-rise * High-rise Units (in 100s)						
β_{S2}: $ln(d(i,i_2)) * H_{i_2,t} * \mathbf{1}\{0 < d(i,i_2) < 0.5\}$	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Miles to 3rd Nearest High-rise * High-rise Units (in 100s)						
β_{S3}: $ln(d(i,i_3)) * H_{i_3,t} * \mathbf{1}\{0 < d(i,i_3) < 0.5\}$	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)

Note: Column (3) repeats the specification shown in column (5) of Table A4. The sample consists of all Chicago Census blocks and runs from 1991 through 2011. The R-squared is 0.102. There are 517,881 observations. Columns (1), (2), (4), and (5) present specifications which vary from column (3) only by the level of clustering of the standard errors.

Table A7: Local Effects of Public Housing Demolition on Homicide - Robustness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Sample	All Blocks	High-rise Blocks	High-rise Blocks	All Blocks	High-rise Blocks	Excluding Lawsuit Developments	Excluding Cabrini-Green	Excluding Robert Taylor	All Blocks	High-rise Blocks	All Tracts
Years	1999-2011	1991-2011	1991-2011	1991-2011	1991-2011	1991-2011	1991-2011	1991-2011	1991-2011	1991-2011	1970-2011
Method	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	Conditional FE Negative Binomial	Conditional FE Negative Binomial	OLS
Note			Placebo	Homicide per Sq. Mile	Controlling for Occ. Units in 1990						
High-rise Units (in 100s)											
β_D: $H_{i,t}$	0.148	0.119	-0.008	15.054	0.193	0.161	0.151	0.137	0.368	0.383	0.294
	(0.036)	(0.034)	(0.022)	(1.821)	(0.048)	(0.032)	(0.029)	(0.018)	(0.064)	(0.077)	(0.030)
Miles to Nearest High-rise * High-rise Units (in 100s)											
β_{S1}: $ln(d(i,i_1)) * H_{i_1,t}$	-0.005			-0.795	-0.004	-0.004	-0.004	-0.004	-0.078		-0.044
$*\mathbf{1}\{0 < d(i,i_1) < 0.5\}$	(0.001)			(0.208)	(0.001)	(0.001)	(0.001)	(0.002)	(0.021)		(0.014)
Miles to 2nd Nearest High-rise * High-rise Units (in 100s)											
β_{S2}: $ln(d(i,i_2)) * H_{i_2,t}$	-0.005			-0.677	-0.004	-0.003	-0.004	-0.006	-0.063		-0.059
$*\mathbf{1}\{0 < d(i,i_2) < 0.5\}$	(0.002)			(0.450)	(0.002)	(0.002)	(0.002)	(0.002)	(0.021)		(0.020)
Miles to 3rd Nearest High-rise * High-rise Units (in 100s)											
β_{S3}: $ln(d(i,i_3)) * H_{i_3,t}$	0.000			-0.106	-0.001	-0.002	-0.001	-0.001	-0.032		0.021
$*\mathbf{1}\{0 < d(i,i_3) < 0.5\}$	(0.003)			(0.173)	(0.001)	(0.001)	(0.002)	(0.002)	(0.027)		(0.014)
R^2	0.110	0.214	0.191	0.075	0.102	0.100	0.102	0.099			0.420
Obs	320,593	1,890	1,890	517,881	517,545	502,236	511,371	511,644	142,548	1,596	36,792
Total Implied Change in Homicides per Year											
Local Direct	-15.1	-20.4	1.3	-2582.7	-33.1	-27.7	-26.0	-23.5	-32.8	-33.7	-53.1
Λ^D	(3.7)	(5.9)	(3.7)	(312.4)	(8.3)	(5.5)	(5.0)	(3.0)	(3.9)	(4.6)	(5.4)
Local Spillover	-30.2			-8332.5	-46.1	-44.8	-47.8	-60.2	-86.3		-43.4
Λ^S	(8.1)			(2224.6)	(11.0)	(12.1)	(11.5)	(12.6)	(6.9)		(11.3)
Affected Area											
Local Direct	-63.10%	-31.45%	2.06%	-38.54%	-50.91%	-42.57%	-39.97%	-36.15%	-50.40%	-51.84%	-61.01%
$\overline{\Lambda}^D_{AA}$	(15.31%)	(9.06%)	(5.71%)	(4.66%)	(12.79%)	(8.51%)	(7.69%)	(4.64%)	(6.04%)	(7.07%)	(6.19%)
Local Spillover	-39.73%			-27.16%	-26.36%	-25.59%	-27.41%	-34.30%	-37.05%		-28.24%
$\overline{\Lambda}^S_{AA}$	(10.61%)			(7.10%)	(6.25%)	(6.92%)	(6.52%)	(7.32%)	(2.98%)		(7.64%)
City-wide											
Local Direct	-2.48%	-2.21%	0.15%	-1.95%	-3.59%	-3.00%	-2.81%	-2.55%	-3.55%	-3.65%	-6.59%
$\overline{\Lambda}^D_{CW}$	(0.60%)	(0.64%)	(0.40%)	(0.24%)	(0.90%)	(0.60%)	(0.54%)	(0.33%)	(0.43%)	(0.50%)	(0.67%)
Local Spillover	-4.94%			-6.30%	-4.99%	-4.85%	-5.18%	-6.52%	-9.35%		-5.39%
$\overline{\Lambda}^S_{CW}$	(1.33%)			(1.68%)	(1.19%)	(1.32%)	(1.24%)	(1.37%)	(0.75%)		(1.41%)

Note: $H_{i,t}$ denotes the number of high-rise public housing units (measured in 100s) that remain open in geographical area i in year t. i_1 denotes the nearest geographical area to area i that contains high-rise public housing. i_2 and i_3 denote the second- and third-nearest areas, respectively. $d(i,i_1)$ denotes the distance (in miles) from the centroid of area i to the centroid of area i_1. Standard errors clustered by community area in parentheses in all specifications except no clustering on Conditional FE Negative Binomial specifications. See Section B for a description of the specifications.

Table A8: Total Effect of Public Housing Demolition on All Crimes - 1999-2011 - Block FE

	Homicide	Shots Fired	Assault and Battery	Gang Activity	Drugs	Vice and Prostitution	Burglary	Theft	Auto Theft	Vandalism	Trespassing	Disturbance	Truancy and Curfew
High-rise Units (in 100s)													
β_D: $H_{i,t}$	0.148	29.466	77.525	2.976	13.350	17.832	4.813	4.925	1.864	6.878	5.679	35.338	1.849
	(0.036)	(3.650)	(8.252)	(0.410)	(1.378)	(0.701)	(0.464)	(0.767)	(0.128)	(0.924)	(0.228)	(1.472)	(0.332)
Miles to Nearest High-rise * High-rise Units (in 100s)													
β_{S1}: $ln(d(i,i_1)) * H_{i_1,t}$	-0.005	0.098	-0.456	0.010	-0.011	-0.268	-0.053	-0.125	0.002	-0.047	-0.010	-0.246	-0.023
$*\mathbf{1}\{0 < d(i,i_1) < 0.5\}$	(0.001)	(0.157)	(0.258)	(0.129)	(0.118)	(0.113)	(0.035)	(0.059)	(0.025)	(0.024)	(0.027)	(0.153)	(0.016)
Miles to 2nd Nearest High-rise * High-rise Units (in 100s)													
β_{S2}: $ln(d(i,i_1)) * H_{i_2,t}$	-0.005	-0.828	-1.327	-0.181	-0.324	-0.306	-0.150	-0.099	0.000	-0.158	-0.121	-0.982	-0.009
$*\mathbf{1}\{0 < d(i,i_2) < 0.5\}$	(0.002)	(0.355)	(0.529)	(0.099)	(0.190)	(0.114)	(0.036)	(0.073)	(0.025)	(0.076)	(0.038)	(0.296)	(0.016)
Miles to 3rd Nearest High-rise * High-rise Units (in 100s)													
β_{S3}: $ln(d(i,i_1)) * H_{i_3,t}$	0.000	0.097	0.120	0.302	0.824	-0.072	-0.091	-0.166	0.010	-0.013	-0.022	0.065	0.021
$*\mathbf{1}\{0 < d(i,i_3) < 0.5\}$	(0.003)	(0.207)	(0.402)	(0.281)	(0.449)	(0.102)	(0.046)	(0.078)	(0.020)	(0.046)	(0.070)	(0.477)	(0.013)
Displaced Households in non-Public Housing Blocks													
β_{M1}: $M_{i,t}$	-0.008	0.945	5.630	1.593	-1.155	-0.588	1.060	0.099	-0.157	0.148	0.927	1.119	0.012
$*\mathbf{1}\{\text{no ph in nbd } i\}$	(0.010)	(0.635)	(0.855)	(1.016)	(1.627)	(0.417)	(0.374)	(0.158)	(0.086)	(0.131)	(0.176)	(1.008)	(0.066)
Displaced Households in Low-rise Public Housing Blocks													
β_{M2}: $M_{i,t}$	-0.009	0.129	2.544	2.265	3.970	0.355	-0.041	0.353	0.010	0.083	0.654	4.365	-0.006
$*\mathbf{1}\{\text{low-rise ph in nbd } i\}$	(0.006)	(0.239)	(0.783)	(0.677)	(1.135)	(0.411)	(0.123)	(0.120)	(0.075)	(0.112)	(0.182)	(0.962)	(0.084)
Miles to Nearest Displaced Household * Displaced Households													
β_{M3}: $\ln(d(i,j_1)) * M_{j_1,t}$	0.000	-0.114	-0.501	-0.158	-0.003	0.117	-0.128	-0.045	-0.017	-0.017	-0.057	-0.033	0.003
$*\mathbf{1}\{0 < d(i,j_1) \leq 0.5\}$	(0.001)	(0.106)	(0.176)	(0.092)	(0.107)	(0.035)	(0.040)	(0.027)	(0.011)	(0.015)	(0.031)	(0.084)	(0.009)
R^2	0.110	0.612	0.825	0.388	0.577	0.576	0.572	0.737	0.533	0.587	0.421	0.750	0.430
City-wide													
Local Direct	-2.48%	-3.97%	-2.65%	-0.92%	-1.51%	-3.47%	-0.82%	-0.47%	-0.45%	-1.11%	-3.88%	-0.95%	-3.01%
$\overline{\Lambda}^D_{CW}$	(0.60%)	(0.49%)	(0.28%)	(0.13%)	(0.16%)	(0.14%)	(0.08%)	(0.07%)	(0.03%)	(0.15%)	(0.16%)	(0.04%)	(0.54%)
Local Spillover	-4.89%	-2.54%	-1.71%	0.70%	1.13%	-3.69%	-1.41%	-1.02%	0.07%	-1.04%	-3.00%	-0.94%	-0.74%
$\overline{\Lambda}^S_{CW}$	(1.33%)	(1.02%)	(0.49%)	(1.68%)	(0.80%)	(0.83%)	(0.27%)	(0.25%)	(0.19%)	(0.37%)	(0.99%)	(0.32%)	(1.53%)
Displacement Direct	-0.43%	0.25%	0.45%	1.70%	0.26%	-0.13%	0.33%	0.05%	-0.07%	0.06%	1.68%	0.19%	0.02%
$\overline{\Delta}^D_{CW}$	(0.32%)	(0.16%)	(0.07%)	(0.63%)	(0.39%)	(0.19%)	(0.12%)	(0.03%)	(0.05%)	(0.04%)	(0.28%)	(0.06%)	(0.27%)
Displacement Spillover	-0.71%	1.46%	1.63%	4.65%	0.03%	-2.17%	2.08%	0.41%	0.39%	0.26%	3.73%	0.08%	-0.41%
$\overline{\Delta}^S_{CW}$	(0.88%)	(1.35%)	(0.57%)	(2.71%)	(1.16%)	(0.65%)	(0.65%)	(0.25%)	(0.24%)	(0.24%)	(2.01%)	(0.21%)	(1.36%)
Total	-8.50%	-4.79%	-2.28%	6.13%	-0.09%	-9.46%	0.18%	-1.02%	-0.05%	-1.83%	-1.47%	-1.62%	-4.13%
	(1.92%)	(1.61%)	(0.71%)	(3.44%)	(1.89%)	(1.22%)	(0.71%)	(0.39%)	(0.31%)	(0.49%)	(2.67%)	(0.39%)	(2.81%)

Note: This table repeats the specifications presented in Tables 6 and 7 of the main paper for ease of comparison with Tables A10 and A11. It displays the point estimates (which are not shown in Tables 6 and 7 of the main paper) but does not show the affected area summary measures. The table presents results of OLS regressions of number of crimes per Census block per year on explanatory variables. Explanatory variables include: number of high-rise public housing units still open, log distance (in miles) to nearest high-rise block interacted with number of high-rise units still open in the block, similar variables for the second- and third-nearest high-rise blocks, the number of displaced households measure in the CCP that have relocated to any non-high-rise block, log distance (in miles) to the nearest non-high-rise block with displaced households interacted with the number of displaced households. Block fixed effect and year dummies are included as controls. The number of households in the blocks * year as measured by the CCP is included to control for changes in population. The sample runs from 1999 through 2011. Observations are at the Census block * year level. All blocks in the City of Chicago are included. All specifications have 320,593 observations. Standard errors clustered by community area are shown in parentheses.

Table A9: Prediction of Relocation Blocks

Explanatory Variable	Population Density	Vacancy Rate	Fraction Units Owner-Occupied	Fraction African American	Fraction Hispanic	Distance to CBD (miles)	Low-rise in Block
Relocation Block Groups	0.76	0.13	-0.45	0.95	0.05	0.49	
- No Public Housing	(0.40)	(0.43)	(0.33)	(0.59)	(0.81)	(0.58)	
Relocation Block Groups	0.03	-0.62	-1.43	2.73	-1.17	0.86	0.54
- With Low-rise Public Housing	(0.58)	(0.66)	(0.58)	(1.20)	(1.40)	(0.94)	(0.20)

Note: Conditional fixed effect logit with block group fixed effects. Each table cell is its own regression. The sample in the top row is all block groups with at least one relocated household and no public housing. The sample in the bottom row is all block groups with at least one relocated household and with low-rise public housing. High-rise blocks are excluded from the sample. The outcome is whether the block receives any households displaced from high-rises. The number of housing units in the block is included as a control (significant at the 1% level in all regressions). Population density is divided by 100,000.

Table A10: Total Effect of Public Housing Demolition on All Crimes - 1999-2011 - Block Group * Year FE

	Homicide	Shots Fired	Assault and Battery	Gang Activity	Drugs	Vice and Prostitution	Burglary	Theft	Auto Theft	Vandalism	Trespassing	Disturbance	Truancy and Curfew
High-rise Units (in 100s)													
β_D: $H_{i,t}$	0.120	26.713	69.205	15.560	24.988	18.260	3.844	4.209	1.468	5.342	6.210	35.893	2.120
	(0.022)	(5.073)	(10.767)	(8.575)	(7.533)	(0.932)	(0.347)	(0.817)	(0.189)	(1.165)	(0.510)	(2.259)	(0.521)
Miles to Nearest High-rise * High-rise Units (in 100s)													
β_{S1}: $ln(d(i,i_1)) * H_{i_1,t}$	-0.002	-0.289	-1.036	-0.034	-0.085	-0.298	-0.040	-0.131	-0.037	-0.073	-0.052	-0.867	-0.048
$*\mathbf{1}\{0 < d(i,i_1) < 0.5\}$	(0.002)	(0.110)	(0.416)	(0.093)	(0.090)	(0.124)	(0.030)	(0.115)	(0.035)	(0.040)	(0.026)	(0.446)	(0.025)
Miles to 2nd Nearest High-rise * High-rise Units (in 100s)													
β_{S2}: $ln(d(i,i_1)) * H_{i_2,t}$	-0.006	-0.527	-0.396	0.057	0.033	-0.162	0.047	0.017	0.016	-0.076	-0.066	-0.579	-0.013
$*\mathbf{1}\{0 < d(i,i_2) < 0.5\}$	(0.004)	(0.319)	(0.753)	(0.180)	(0.223)	(0.123)	(0.061)	(0.118)	(0.060)	(0.081)	(0.066)	(1.063)	(0.031)
Miles to 3rd Nearest High-rise * High-rise Units (in 100s)													
β_{S3}: $ln(d(i,i_1)) * H_{i_3,t}$	0.002	-0.042	0.027	-0.054	-0.159	-0.283	0.009	0.037	-0.011	0.027	-0.103	-0.354	-0.031
$*\mathbf{1}\{0 < d(i,i_3) < 0.5\}$	(0.003)	(0.315)	(0.487)	(0.187)	(0.217)	(0.171)	(0.054)	(0.185)	(0.050)	(0.076)	(0.093)	(0.690)	(0.019)
Displaced Households in non-Public Housing Blocks													
β_{M1}: $M_{i,t}$	0.001	2.439	9.594	1.562	4.427	1.282	1.659	0.470	0.379	1.041	1.002	4.819	0.141
$*\mathbf{1}\{$no ph in nbd $i\}$	(0.008)	(0.453)	(1.675)	(0.758)	(1.700)	(0.295)	(0.436)	(0.361)	(0.132)	(0.245)	(0.151)	(2.075)	(0.055)
Displaced Households in Low-rise Public Housing Blocks													
β_{M2}: $M_{i,t}$	-0.002	1.614	7.513	1.449	5.365	1.259	0.757	0.790	0.295	0.907	0.926	9.923	0.089
$*\mathbf{1}\{$low-rise ph in nbd $i\}$	(0.007)	(0.649)	(2.327)	(1.155)	(2.031)	(0.247)	(0.551)	(0.360)	(0.167)	(0.381)	(0.319)	(3.153)	(0.034)
R^2	0.148	0.484	0.529	0.334	0.449	0.417	0.450	0.341	0.304	0.402	0.311	0.407	0.310
City-wide													
Local Direct	-2.01%	-3.60%	-2.36%	-4.81%	-2.83%	-3.55%	-0.66%	-0.40%	-0.35%	-0.87%	-4.24%	-0.97%	-3.45%
$\overline{\Lambda}^D_{CW}$	(0.37%)	(0.68%)	(0.37%)	(2.65%)	(0.85%)	(0.18%)	(0.06%)	(0.08%)	(0.05%)	(0.19%)	(0.35%)	(0.06%)	(0.85%)
Local Spillover	-3.09%	-3.42%	-1.47%	-0.21%	-0.62%	-4.04%	0.06%	-0.25%	-0.23%	-0.62%	-4.11%	-1.41%	-4.24%
$\overline{\Lambda}^S_{CW}$	(1.84%)	(1.39%)	(1.00%)	(3.45%)	(1.40%)	(1.04%)	(0.41%)	(0.61%)	(0.52%)	(0.65%)	(2.67%)	(1.13%)	(2.24%)
Displacement Direct	-0.02%	0.85%	0.89%	1.40%	1.61%	0.74%	0.67%	0.17%	0.25%	0.48%	1.98%	0.54%	0.59%
$\overline{\Delta}^D_{CW}$	(0.29%)	(0.14%)	(0.15%)	(0.57%)	(0.46%)	(0.13%)	(0.18%)	(0.07%)	(0.08%)	(0.11%)	(0.34%)	(0.14%)	(0.17%)
Total	-5.12%	-6.16%	-2.93%	-3.63%	-1.84%	-6.86%	0.07%	-0.48%	-0.33%	-1.01%	-6.38%	-1.84%	-7.10%
	(1.91%)	(1.84%)	(1.26%)	(1.85%)	(0.90%)	(1.11%)	(0.49%)	(0.66%)	(0.56%)	(0.79%)	(3.00%)	(1.21%)	(2.88%)

Note: This table presents results of OLS regressions of number of crimes per Census block per year on explanatory variables. Explanatory variables include: number of high-rise public housing units still open, log distance to nearest high-rise block interacted with number of high-rise units still open in the block, similar variables for the second- and third-nearest high-rise blocks, the number of displaced households measure in the CCP that have relocated to any non-high-rise block, log distance to the nearest non-high-rise block with displaced households interacted with the number of displaced households. Block group * year effects are included as controls. The number of households in the blocks * year as measured by the CCP is included to control for changes in population. Sample runs from 1999 through 2011. Observations are at the Census block * year level. All blocks in the city of Chicago are included. All specifications have 320,593 observations. Standard errors clustered by community area are in parentheses.

Table A11: Total Effect of Public Housing Demolition on All Crimes - 1999-2011 - Block FE, Block Group Time Trends

	Homicide	Shots Fired	Assault and Battery	Gang Activity	Drugs	Vice and Prostitution	Burglary	Theft	Auto Theft	Vandalism	Trespassing	Disturbance	Truancy and Curfew
High-rise Units (in 100s)													
β_D: $H_{i,t}$	0.137	27.549	73.452	3.301	12.816	16.059	4.556	4.629	1.772	6.553	5.308	34.261	1.778
	(0.033)	(2.442)	(4.734)	(3.696)	(4.611)	(1.707)	(0.428)	(0.332)	(0.150)	(0.434)	(0.464)	(2.819)	(0.181)
Miles to Nearest High-rise * High-rise Units (in 100s)													
β_{S1}: $ln(d(i,i_1)) * H_{i_1,t}$	-0.005	0.082	-0.250	-0.072	-0.196	-0.168	0.030	-0.052	0.011	-0.036	0.015	-0.440	-0.019
$*\mathbf{1}\{0 < d(i,i_1) < 0.5\}$	(0.002)	(0.061)	(0.141)	(0.079)	(0.092)	(0.061)	(0.021)	(0.030)	(0.012)	(0.019)	(0.019)	(0.144)	(0.008)
Miles to 2nd Nearest High-rise * High-rise Units (in 100s)													
β_{S2}: $ln(d(i,i_1)) * H_{i_2,t}$	-0.005	-0.713	-0.810	-0.187	-0.461	-0.281	-0.030	-0.036	0.002	-0.117	-0.073	-1.051	-0.010
$*\mathbf{1}\{0 < d(i,i_2) < 0.5\}$	(0.002)	(0.310)	(0.298)	(0.127)	(0.167)	(0.082)	(0.031)	(0.041)	(0.015)	(0.038)	(0.028)	(0.195)	(0.012)
Miles to 3rd Nearest High-rise * High-rise Units (in 100s)													
β_{S3}: $ln(d(i,i_1)) * H_{i_3,t}$	-0.001	0.322	0.730	0.276	0.477	-0.061	0.011	-0.087	-0.004	0.002	0.026	-0.027	0.023
$*\mathbf{1}\{0 < d(i,i_3) < 0.5\}$	(0.002)	(0.222)	(0.351)	(0.128)	(0.169)	(0.110)	(0.034)	(0.050)	(0.018)	(0.039)	(0.037)	(0.236)	(0.016)
Displaced Households in non-Public Housing Blocks													
β_{M1}: $M_{i,t}$	-0.004	-0.167	2.576	0.920	-1.920	-0.129	0.241	-0.210	-0.233	0.100	0.501	0.943	0.057
$*\mathbf{1}\{\text{no ph in nbd } i\}$	(0.009)	(0.331)	(0.639)	(0.565)	(1.192)	(0.208)	(0.191)	(0.143)	(0.079)	(0.135)	(0.115)	(0.732)	(0.043)
Displaced Households in Low-rise Public Housing Blocks													
β_{M2}: $M_{i,t}$	-0.009	0.100	1.441	1.324	3.225	0.927	-0.208	0.276	0.051	0.096	0.537	4.464	0.007
$*\mathbf{1}\{\text{low-rise ph in nbd } i\}$	(0.007)	(0.239)	(0.510)	(1.072)	(0.871)	(0.231)	(0.131)	(0.125)	(0.055)	(0.101)	(0.167)	(0.675)	(0.054)
Miles to Nearest Displaced Household * Displaced Households													
β_{M3}: $\ln(d(i,j_1)) * M_{j_1,t}$	0.000	-0.004	-0.059	-0.024	0.069	0.011	-0.007	0.017	-0.007	-0.011	0.011	-0.067	-0.005
$*\mathbf{1}\{0 < d(i,j_1) \leq 0.5\}$	(0.001)	(0.044)	(0.062)	(0.053)	(0.084)	(0.027)	(0.014)	(0.015)	(0.007)	(0.012)	(0.014)	(0.073)	(0.003)
R^2	0.121	0.636	0.838	0.430	0.599	0.607	0.591	0.748	0.549	0.599	0.444	0.763	0.452
City-wide													
Local Direct	-2.29%	-3.71%	-2.51%	-1.02%	-1.45%	-3.12%	-0.78%	-0.44%	-0.43%	-1.06%	-3.63%	-0.92%	-2.89%
$\overline{\Lambda}^D_{CW}$	(0.55%)	(0.33%)	(0.16%)	(1.14%)	(0.52%)	(0.33%)	(0.07%)	(0.03%)	(0.04%)	(0.07%)	(0.32%)	(0.08%)	(0.29%)
Local Spillover	-5.40%	-1.42%	-0.47%	-0.33%	-0.92%	-2.90%	0.05%	-0.45%	0.07%	-0.73%	-0.71%	-1.22%	-0.51%
$\overline{\Lambda}^S_{CW}$	(1.48%)	(0.83%)	(0.35%)	(1.50%)	(0.70%)	(0.73%)	(0.19%)	(0.16%)	(0.15%)	(0.19%)	(0.76%)	(0.22%)	(0.83%)
Displacement Direct	-0.28%	-0.03%	0.22%	0.99%	0.01%	0.16%	0.04%	-0.01%	-0.09%	0.05%	1.05%	0.18%	0.19%
$\overline{\Delta}^D_{CW}$	(0.31%)	(0.09%)	(0.04%)	(0.50%)	(0.27%)	(0.09%)	(0.07%)	(0.03%)	(0.04%)	(0.04%)	(0.19%)	(0.04%)	(0.16%)
Displacement Spillover	-0.46%	0.05%	0.19%	0.70%	-0.74%	-0.19%	0.11%	-0.16%	0.17%	0.16%	-0.70%	0.17%	0.79%
$\overline{\Delta}^S_{CW}$	(1.21%)	(0.56%)	(0.20%)	(1.54%)	(0.90%)	(0.49%)	(0.23%)	(0.13%)	(0.16%)	(0.18%)	(0.91%)	(0.19%)	(0.52%)
Total	-8.43%	-5.11%	-2.57%	0.34%	-3.11%	-6.06%	-0.58%	-1.05%	-0.27%	-1.58%	-3.99%	-1.79%	-2.42%
	(2.02%)	(1.16%)	(0.43%)	(2.35%)	(1.16%)	(0.90%)	(0.31%)	(0.21%)	(0.22%)	(0.28%)	(1.27%)	(0.29%)	(1.07%)

Note: The table presents results of OLS regressions of number of crimes per Census block per year on explanatory variables. Explanatory variables include: number of high-rise public housing units still open, log distance to nearest high-rise block interacted with number of high-rise units still open in the block, similar variables for the second and third nearest high-rise blocks, the number of displaced households measure in the CCP that have relocated to any non-high-rise block, log distance to the nearest non-high-rise block with displaced households interacted with the number of displaced households. Block fixed effect, block group linear time trends, and year dummies are included as controls. The number of households in the blocks * year as measured by the CCP is included to control for changes in population. Sample runs from 1999 through 2011. Observations are at the Census block * year level. All blocks in the city of Chicago are included. All specifications have 320,593 observations. Standard errors clustered by community area are in parentheses.