**Do Housing Choice Voucher Recipients Import Crime?**

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**Introduction**

Given relatively recent policy changes that relax where Housing Choice Vouchers (HCVs) can be used, Housing Choice Voucher Recipients (HCVRs) are broadening the search for and thereby the locations of housing. Despite some evidence that HCVRs moves are influenced by search for greater opportunity broadly defined, many, mostly journalists and other media, have alleged that they import crime in doing so (Rosin, 2008). However, there is little empirical evidence to support this claim in part because there are very few studies that examine this issue. The exceptions are Van Zandt (2013) and Ellen, et al., (2012). They find no evidence that voucher holders are associated with increases in crime. Mask and Wilson (2013) find evidence that HCVRs are associated with crime but questions about the causality of the findings exist. Moreover, all of these studies focus on one or a limited number of cities, and thus their results are not fully generalizable.

This paper is intended to fill this void and examines whether shifts in HCVRs over time are followed by shifts in crime rates in the 100 largest metropolitan areas. The central questions that will guide this research include: Whether and to what extent do HCVRs influence crime rates, both violent and property crime rates; and if so whether the association is influenced by place size, the race of the HCVR, or by specific crime rates. The growth and shift in the residential locations of HCVRs over the recent decade provides an opportunity to examine these questions.

**Data and Methods**

To answer these central questions, we use data from a variety of sources. Data on voucher holders comes from the U.S. Department of Housing and Urban Development’s (HUD) Picture of Subsidized Housing for 2000, 2007 and 2009, and we use it to measure the number of people (and households) using Housing Choice Vouchers (HCVs) by all places in metropolitan areas. In addition, we use 2000 and 2008 Census data to measure housing and demographic place characteristic variables that include the percentage of rental housing that is fair market rental (FMR), population size, and the percentage of residents that are black, Latino, foreign born or poor. Finally, crime data comes from the Uniform Crime Report (UCR) Offenses Known and Cleared by Arrest compiled by the FBI for 2000 and 2008.

HUD’s Picture of Subsidized Housing data is used to describe the characteristics of HUD assisted housing recipients including the type of housing program (HCVR or other), and population characteristics of the assisted households (such as race of recipient) at the census tract level. The main HCV variable is measured as the percentage of the total population that is HCV recipients (HCVRs) in 2000 and 2007.[[1]](#footnote-1) Unlike Van Zandt (2013), Mast and Wilson (2013) and Ellen et. al. (2012), we model crime rates rather than counts because we have accurate census population estimates for 2000 and 2008, although our analysis of HCVR and crime counts (not shown) produced no dissimilar qualitative results.

We measure crime rates using 2000 and 2008 data from the (UCR). The UCR data provide counts of crimes reported to the police for each police agency (referred to as a reporting unit in the UCR data) by month. To calculate crime rates, we aggregated 12 months of crime data to create annual estimates for 2000 and 2008. In all tabulations, crime rates are measured as criminal incidents per 100,000 residents.

We use the UCR data to estimate rates of serious felony crimes. Felony criminal incidents involving victims are officially categorized into the following eight mutually exclusive categories: murder, rape/sexual assault, robbery, simple assault, aggravated assault, burglary, larceny/theft, and motor vehicle theft. For much of the analysis, we aggregate incident types to present findings for two general categories of crime. Conventional aggregations generally group the first five felonies under the banner of violent crime. The latter three felony offenses are commonly referred to as property crimes, since the objective of each is to unlawfully acquire the property of another without physically encountering the victim. In addition, we improve upon previous research by providing results for each of the individual crimes listed above where appropriate.

Note that the voucher data are reported at the census tract level and the crime data at higher levels of geography including places, Minor Civil Divisions, and unincorporated portions of counties. To conduct the analysis, we aggregate census tracts to these larger geographies. For the most part, reporting units/police agencies correspond to places. Places refer to incorporated jurisdictions - such as cities, towns, and villages - as well as census-designated places - unincorporated areas delineated by the U.S. Census Bureau for statistical purposes. For example, the Oakland Police Department is a single reporting unit. In instances where there are multiple police agencies within a place, we aggregate crime data from all reporting units to create a place-level total.[[2]](#footnote-2)

Reporting units may also correspond to a Minor Civil Division (MCD). The Census Bureau uses MCDs to designate the primary governmental and/or administrative divisions of a county, such as a civil township, precinct, or magisterial district. MCDs exist in 28 states and the District of Columbia. For the remaining states, the Census Bureau designates MCD equivalents, called Census County Divisions (CCDs), for statistical purposes.[[3]](#footnote-3) Police agencies covering areas not located within a place but located within an identifiable MCD/CCD are aggregated to the MCD level. Finally, police agencies covering unincorporated areas of counties that lie outside of these two geography types are combined into a balance-of-county aggregate.[[4]](#footnote-4) After matching reporting units to the relevant geography, we identified roughly 5,500 separate geographic units within the 100 largest metropolitan areas that appear in the UCR data.

Finally, we match our community-level crime data to data from the decennial census and the American Community Survey (ACS). Specifically, we employ data from the 2000 Census of Population and Housing Summary File 3, and the 2005- 2009 ACS five-year estimates.[[5]](#footnote-5) We use these data to estimate the proportion of community residents that are black, Latino, foreign-born, or poor in each year. For identifiable census places and MCDs, we match corresponding estimates from the decennial census or ACS directly to the UCR data. Roughly 75 percent of the population of the metropolitan areas included in this study resides within a definable place or MCD. For the unincorporated balance-of-county observations, we assign the county-level average values.[[6]](#footnote-6)

As noted, we include the largest 100 metropolitan areas in the sample; as a result, approximately 5,500 places/units are observed in the data. This facet of the research improves upon previous studies: more metro areas are included than in previous studies and thus a more precise general estimate of the potential impact of HCVR on crime can be estimated. Moreover, the larger sample size of metropolitan areas and places allows us to examine the potential heterogeneity of the influence of HCVRs on crime by place population size, which is important given the observation that crime in general is higher in more populous places (Akerman, 1999; Ousy, 2000).

Table 1 presents basic descriptive statistics of crime rates and HCVR presence in 2000 and 2008. Characteristics of the poor are also shown as a comparison group to HCVRs. Panel A provides un-weighed statistics, while Panel B weights these by the place population. Panel A shows the empirical regularity that property crime is much higher than violent crime in both periods, as well as the expectation that the percentage of people who are poor is greater than those who have HCVs. Over the 2000 to 2008 period, the data show a slight (4 percent) increase in the violent crime rate, while the property crime rate declined over this period by a similar percentage. On the other hand, the fraction of people in these areas with HCVs increased by nearly 2 percentage points, slightly higher than that experience by the poor.

Of course, the unweighted statistics display the average for all approximately 5,500 places in our data and thus treat equally places with population sizes as little as 500 to as large as over 5 million. As a result, these changes in crime and HCV status could be misleading since more populous areas are more likely to have larger crime rates and HCV presence. Panel B weights the data by population size. Doing so reveals that both the violent and crime rates declined over this period across the 100 largest metropolitan areas, by nearly 4 percent for violent crime and nearly 9 percent for property crime. The data are consistent with other studies that show declines in both crime indexes in the U.S. over this period (Kneebone and Raphael, 2011).

On the other hand, weighting the data in this manner shows a larger increase in HCV presence to 2 and a half percentage points, and a slightly lower estimate of the growth in the percentage poor over this period. The increase in voucher use is consistent with previous results driven partly by annual incremental funding increases for additional vouchers and voucher increases to designated populations (such as veterans) by congressional mandate (GAO, 2012). Still, in the in the largest 100 metropolitan areas as a whole, the data indicates crime rates declined while voucher holder presence increased.

Table 2 further probes changes in crime rates and HCV presence over the 2000 to 2008 period by the size of place. To do so, we estimate treciles of place size for the approximately 5,500 places and re-calculate (population weighted) statistics across these categories.[[7]](#footnote-7) The data in Table 2 confirm that places with larger populations drive the results for the largest 100 metropolitan areas. Crime rates fall between 2000 and 20008 in the trecile of places with the largest populations, while the biggest increase in HCV presence occurs there. Alternatively, in the first and second treciles, crime rates and HCV presence increase over this period, suggesting that investigating the potential heterogeneity of the influence of HCV on crime across size of place is warranted.

Identifying a causal relationship between housing choice voucher use and crime is difficult. Many place characteristics that are associated with the presence of voucher households (such as its poverty rate) may also directly influence crime rates. For example, growth in poor populations could influence both the presence of voucher holders and crime, so that the influence of voucher use on crime could be spurious through poverty. Alternatively, high crime rates could lead to less attractive neighborhoods (that leads to lower rents), which in turn could lead to an increase in the presence of voucher holders (through lower rents or increased landlord willingness to rent to voucher holders), which would be consistent with reverse causation. We address these concerns by employing a variety of modeling strategies including first-difference regressions, controlling for observable time-varying covariates that also influence crime rates, adding metropolitan fixed effects, and using lags of crime rates and voucher use, and leads of voucher use, to tease out causality.

We first identify the influence of HCVRs on crime using first difference regression analysis. The advantage of this approach is that the potential influence of fixed place characteristics on crime are controlled. Further, we also include controls for a host of observable time varying place characteristics that are directly related to crime. These include place size, the percentage of the place population that is black (or Latino), and most importantly the poverty rate of the place, variables that are demonstrated to be highly correlated with crime (Ellen, et. al., 2012; Kneebone and Raphael, 2011; Rapahel and Sills, 2005). Moreover, we include the percentage of the place’s rental units that are up to 50 percent of fair market value (FMR) to control for rental housing supply that influences the locational choices of HCVRs. The availability of rental housing has been shown to be one of the biggest factors determining the location decisions of HCVRs (Teater, 2009).

The following equation will be used to estimate the impact of HCVRs on crime rates:

where *i* indexes places and *m* indexes metropolitan areas; *CI* is the violent or property crime index in place *i* in metropolitan area *m*; *%HCVR* is the percentage of the population that is HCVRs; *X* is a vector of housing and demographic controls that include the percentage of rental housing that is FMR, population size, and the percentage of the population that is black, Latino, foreign born, or poor. We lag the measure of voucher users by one year to mitigate potential problems from reverse causality and to allow for more accurate estimates of voucher holders potential influence on crime. Reverse causality is a greater threat when voucher use and crime are measured in the same year since voucher holders are likely to live in higher crime areas (Ellen, 2012). In addition, lagging the measure of voucher use provides time for crime to occur as a result of changes in voucher holders’ presence since the crime data measures crime throughout the entire year and the count of voucher holders in the HUD data captures the number of voucher holders in an area at the end of the year.

To better identify the influence of voucher holders on crime rates, we control for a variety of observable time varying factors that also influence crime rates and the presence of voucher holders discussed above. Finally, in all models, we also include metropolitan area fixed effects (whose coefficients are represented by gamma) to control for metropolitan area specific crime trends occurring over the 2000 to 2008 period that influence within metro area place crime trends. Including these ensures that coefficients are estimated using only the variation in the housing choice voucher and crime rates occurring across communities within each of the metropolitan areas.

Table 3 present unweighted regression results for both violent and property crime rates based on equation (1). The first four columns show these for violent crime, while columns (5) through (8) does so for property crime. The first column displays a simple bi-variate relationship between violent crime and HCV presence. The simple bi-variate correlation between violent crime and voucher use rates within each place is positive and statistically significant (at the .01 level), indicating that a 1 percentage point increase in HCV presence in a place is associated with an increase of violent crime of about 2,000 incidents per 100,000 – that is that places where violent crime grew also saw increase in the rate of voucher use.

In column (2) we include controls for population size of place and the percentage of rental units in the place that fall at or below 50 percent of fair market value. The coefficient estimate of HCV on crime is largely unaffected by their inclusion. In column (3) we add the demographic variables to control for characteristics of places that are associated in the crime. Doing so reduces the coefficient by over half, mostly driven by adjusting for changes in the percentage of the place that is poor or black. This suggests that increases in HCV presence also occurred in those places where the percentage of the population that is black or poor also grew and that changes in these characteristics are strong predictors of crime rate changes.

Finally, we include metropolitan fixed effects in column (4), and doing so eliminates the statistically significance of the HCVR coefficient. This indicates that overall metropolitan area specific crime trends over the 2000 to 2008 period account for the remaining statistically significant association between HCV presence and crime (which cannot be caused by the change in HCVR presence in a specific place).

Columns (5) through (9) repeat these exercises for the property crime rate. The results of these models differ from those for the violent crime rate. The base line regression without controls for population size and housing supply demonstrate no statistically significant relationship between changes in HCV presence and property crime rates. Once controls for demographic changes in the place are taken into account, a negative statistically significant (at the .05 level) association between property crime rates and HCV presence is observed. Inclusion of metropolitan sized effect in column (8) strengthens the negative association.

One concern in these models is that they are not weighted by HCVR size and thus they reflect the average effects across places of HCVR presence on crime rates irrespective of where most HCVRs live. Since most HCVRs live in larger places (observed in the data), the coefficient on HCVR presence does not capture the experience of the typical HCVR. Weighting the regression by the number of HCVRs in a place allows places with larger numbers of HCVRs to have more influence in estimating the relationship, so that it (perhaps appropriately) reflects the effect on crime of places with large numbers of HCVR rather than that of the typical place.

To address this concern, we weight the models in Table 3 by the number of HCVRs across places, and the results are provided in Table 4. The presentation of results is identical to that shown in Table 3. Regarding the violent crime rate, weighting the models by the number of HCVRs results in no significant impacts on the estimates of HCVRs on crime. Thus, places with larger numbers of HCVRs demonstrate no significant relationship between the changes in HCVR presence and changes in the violent crime rate. The effect of weighting these models has virtually no impact on the results regarding the property crime rate. An increase in HCVR presence is associated with a decline in property crime in the fully specified model in column (8), albeit with the magnitude of the negative coefficient about half that found in the unweighted model.

Weighting in this manner, however, introduces another concern; places with a larger number of HCVRs could put undo influence on the estimates of the influence of HCVRs on crime. We explore whether this concern has merit by producing scatter plats of the relationship between crime rates and HCVR presence.

Figures 1a and b present scatterplots of the changes in the violent (and property) crime rate respectively, and changes in the percentage of the population that are HCVRs. They also include a fitted regression line of this relationship (which is equivalent to the estimate in columns (1) and column (4) in Table 3 for the violent and crime rate respectively). Figure 2a and b present similar scatterplots except that places are weighted by the number of HCVRs in the place so that places with larger populations of HCVRs will have larger circles.

If places with larger HCVR populations are putting undo influence in estimating the weighted relationship between crime rates an HCVR presence, we would expect to see bigger circles located nearer to either tail of the scatterplots. Given the unadjusted results of the unweighted regressions for the violent and property crime rates shown in Table 3, we would be concerned if places with more HCVRs would be located in the far upper right area of the plot for violent crime, and the farther lower left area of the plot for the property crime results. The scatterplots in both Figures 2a and b indicate that the places with larger number of HCVRs are located closer to the middle of the fitted line, suggesting that they are not significantly unduly biasing the weighted estimate of the influence of HCVR presence on crime. Thus, the concerns about weighting by the number of HCVRs in places are not warranted, and for the remainder of the analysis all models are weighted by the number of HCVRs.

**Non-Linearities**

The potential influence of HCVRs on crime could be non-linear. If this is true, the previous model specifications prevent us from detecting this. To examine this possibility more carefully, we purse two strategies. First, we square the change in the percentage of the population that is HCVR variable. Second, we split the percentage of the population that is HCVR variable into treciles. We then include these new variables in separate models. The squared voucher variable permits us to examine whether the influence of voucher holders on crime is affected by whether the change in the percentage of voucher holders in a place is higher or lower. Alternatively, the categorization of the changes in voucher holder presence over the 2000 to 2007 period into low, medium, and high (with low as the reference category) changes allows us to examine whether larger changes in the presence of vouchers holders have a bigger influence on crime rate changes, if any.

The results of these different models are presented in Table 5. Columns (1) to (4) explore these for the violent crime rate, while columns (5) to (8) do so for the property crime rate. The first two columns present results with the inclusion of the squared change in HCVR variable. The first column includes no additional controls while the second column includes controls for the housing and demographic variables as well as for metropolitan area fixed effects. The results in the first column indicate that the squared term is positive and statistically significant (at the .05 level), suggesting that the influence of the changing in HCVRs in a place increases the greater the positive change in HCV presence over this period. However, the coefficient magnitude is halved and losses statistical significance with the inclusion of the controls.

Columns (3) and (4) presents results for the trecile categorical variables for the change in HCVR presence over the study period. The results of these additional variables are not statistically significant and thus show no evidence for non-linear influences of HCVR presence on violent crime. Moreover, regarding the results for the property crime rates in columns (5) through (8), we find no evidence of non-linear influences of HCVR presence on property crime since the coefficients for both non-linear specifications are not statistically significant.

**Heterogeneity**

We further explore whether a positive influence of HCVRs on crime is masked in the data. We explore potential heterogeneous effects for specific crimes, by the race of the HCVR and the size of the place. Table 6 provides coefficients estimates of the change in specific crimes from 2000 to 2008. Each column represents a separate model for nine different felony crimes. Each model is estimated using the fully specified model that includes controls for the demographic and housing variables, and metropolitan fixed effects, and is weighted by the number of HCVRs. The results indicate that the change in the presence of HCVRs from 2000 to 20007 is positively and statistically significantly (at the .01 percent level) associated with the change in murder and robbery over this period. Below, we further tease out whether these results are causal. Alternatively, we find negative and statistically significant associations between HCVR presence and rape, simple assault, larceny, and motor vehicle theft over this period.

Table 7 present results of the change in violent and property crime rates by the race of the primary HCV holder.[[8]](#footnote-8) Again, each model is estimated using the fully specified model that includes controls for the demographic and housing variables, and metropolitan fixed effects, and is weighted by the (respective) number of HCVRs (by race). Given that crime rates are positively associated with the percentage of a place that is black, and to the extent that black HCVRs move to primarily black neighborhoods, we might expect that the change in crime rates are positively associated with the change in the presence of black HCVRs in the area. The results in Table 7, however, do not support this expectation. In fact, the change in both violent and property crimes rates from 2000 to 2008 are negatively and statistically significantly associated with the change in the presence of black HCVRs. This is also true in the case of the change in the percent of HCVRs that are Latino. On the other hand, we find a positive and statically significant (at the .01 percent level) association between the changes in violent crime and the changes in the percentage of HCVRs that are white. Below, we further tease out whether this result is causal.

In Table 8, we explore potential heterogeneity of results by population size of place for the relationship between HCVR presence and crime rates. A priori, we have no expectation of the direction and magnitude of the potential effects. On the one hand, as Table 1 demonstrates, HCVR presence grew the most in places with larger population where crime rates declined the most from 2000 to 2008. On the other hand, crime rates are higher in these more populous places.

Table 8 presents the results. For each crime rate, two models are presented, one without any additional controls, and one with the fully specified model that includes controls for the demographic and housing variables, and metropolitan fixed effects. The base change in crime rate variable is entered into each model, and interactions between the change in crime rates and the categorical variable measuring the size of place (based on trecile cutoffs) are also entered. The reference category is the interaction between the change in crime rate and small size place. The results for the violent crime rate indicates that the change in HCVR presence in larger places is statistically significantly (at the .01 percent level) associated with declines in crime rates, while the base effect is positively and statistically significant. These statistically significant results disappear, however, once our controls are entered into the model specification. We find similar results for the change in the property crime rate. They too indicate that the change in HCVR presence in larger places is statistically significantly (at the .01 percent level) and associated with declines in crime rates, but that this significant result disappears once controls are included.

To summarize, our investigation into heterogeneity in the influence of the change in HCVR presence on crime rates indicates positive and statically significant results for murder and rape, and for white HCVRs on violent crime. We further test for whether these positive and statistically significant results are causal by using additional leads and lags of important variables. This strategy permits us to examine whether HCVRs are moving to areas where crime had been growing the previous decade, or whether they are moving to places where crime rates happen to be growing. To the extent that we find limited evidence on either of these two possibilities, we can grant more confidence that the previous positive results are causal.

The first strategy entails lagging our measure of crime rates. Since we also have data on violent and property crime rates for 1990, we lag the change in violent and property crime rates by one decade, and use this as the dependent variable rather than the change in crime rates from 2000 to 2008. Equation (2) below provides the model specification:

where is the decade lagged crime rate change for the violent crime rate. Using this model, we can test whether HCVRs are moving to places between 2000 and 2007 that had higher murder or rape crime rates between 1990 and 2000. We can also test whether white HCVRs are moving to places between 2000 and 2007 where the violent crime rate grew the decade prior.

Following Ellen, et al., (2012), the second strategy estimates a lead measure of HCVR moves, and including this additional variable on the right-hand side. This follows from the observation that HCVRs who have not entered a place cannot be causes of crime in the current period, i.e., 2000 to 2008. We also have data on HCVRs for 2009, and thus we can measure the change in HCVRs presence between 2007 and 2009. Equation (3) below provides the model specification:

(3)

where is the lead change in HCVRs presence between 2007 and 2009. Using this model, we can test whether increases in murder and rape are then followed by increases in HCVRs presence, rather than the reverse. We can also test whether increases in violent crime are followed by increases in white HCVRs presence, rather than the reverse.

Table 9 presents the results based on these specifications, and includes all control variables previously identified, as well as weights for the number of HCVRs. Columns (1) and (2) focus on the positive and statistically significant influence of HCVRs on murder. This first column includes the lag variable of the change in the murder rate as the dependent variable. The result of the change in the percent of HCVRs from 2000 to 2007 is not significant suggesting that HCVRs did not move to areas that had higher murder rates the previous decade.

Column (2) includes the lead HCVR variable into the model specification. Its result is positive and statistically significant between future HCVRs and the murder rate in the immediate past, suggesting that HCVRs presence increases in places where the murder rate rose. Moreover, the magnitude of the coefficient of the current change in HCVRs from 2000 to 2007 declines (compared to the results in column (1), Table 6) when the future change in HCVRs is included. We note however that the future change in HCVR may be absorbing unobserved trends in the place over this period that may also influence crime.[[9]](#footnote-9) Nevertheless, this result suggests that the association between the change in the murder rate and changes in HCVR presence from 2000 to 2008 may be driven by other factors.

In columns (3) and (4), we repeat this exercise for the robbery rate, and find similar results except for one caveat. In column (3), the results indicate that the HCVRs are moving to places that experienced increase in the robbery rate.

In columns (5) and (6) we repeat these for the violent crime rate and white HCVRs. The results indicate that white HCVRs moved to areas where the violent crime rate declined the decade prior. However, the results also show that future white HCVRs are moving to places where the violent crime rate is increasing. Moreover, the magnitude of the coefficient of the current change in HCVRs from 2000 to 2007 declines and loses statistical significance (compared to the results in column (1), Table 7) when the future change in white HCVRs is included. These results again strongly suggest that the observed statistically significant and positive association between the change in the violent crime rate and change in white HCVRs presence from 2000 to 2008 is not causal and instead influenced by other factors.

**Conclusion**

In this paper, we test the hypothesis that HCVRs cause crime, an idea that has entered the public market place through various journalistic and anecdotal stories. To do so, we use voucher data as well as actual crime data from the FBIs Uniform Crime Reports for the 100 largest metropolitan areas in the U.S. in the 2000 decade. We use a variety of modeling strategies to tease out causality of the results, and find little evidence that HCVRs cause crime. We further test for possible non-linearities of the relationship, as well as potential heterogeneity of the results. Our findings support the idea that some HCVRs are moving to areas where certain crimes are increasing independently, or where specific crimes had been increasing in the past. We find little evidence that HCVRs cause crime in areas where the percentage of those holding vouchers has increased.

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| --- | --- | --- | --- | --- |
| Table 1: Crime Rates (per 100,000) and Percentage of Population with Housing Choice Vouchers, 2000 and 2008 | | | | |
|  |  |  |  |  |
| A. Un-weighted |  |  |  |  |
|  | Violent Crime | Property Crime | HCVRs | Poor |
| 2000 | 880 | 2,550 | 0.010 | 0.089 |
| 2008 | 900 | 2,396 | 0.027 | 0.104 |
| Change: 2000 to 2008 | 32 | -116 | 0.017 | 0.014 |
|  |  |  |  |  |
| B. Weighted by Place Population Size |  |  |  |  |
|  | Violent Crime | Property Crime | HCVRs | Poor |
| 2000 | 1,472 | 3,531 | 0.015 | 0.120 |
| 2008 | 1,400 | 3,207 | 0.039 | 0.127 |
| Change: 2000 to 2008 | -58 | -317 | 0.025 | 0.009 |
|  |  |  |  |  |
| Note: Voucher data is for 2000 and 2007 | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Table 2: Crime Rates and Voucher Holders in 2000 and 2008 by Treciles of Place Size | | | |
|  | First Trecile | Second Trecile | Third Trecile |
| Violent Crime |  |  |  |
| 2000 | 631 | 823 | 1,563 |
| 2008 | 721 | 884 | 1,471 |
| Change | 73 | 53 | -73 |
| Property Crime |  |  |  |
| 2000 | 1,731 | 2,196 | 3,719 |
| 2008 | 1,896 | 2,277 | 3,338 |
| Change | 130 | 68 | -368 |
| HCVRs |  |  |  |
| 2000 | 0.009 | 0.011 | 0.015 |
| 2007 | 0.022 | 0.029 | 0.041 |
| Change | 0.015 | 0.019 | 0.026 |
| Poor |  |  |  |
| 2000 | 0.098 | 0.079 | 0.125 |
| 2008 | 0.111 | 0.091 | 0.132 |
| Change | 0.018 | 0.014 | 0.009 |
| Notes: Weighted by population size of place.  Trecile categories: 1st: 0 – 4,516; 2nd : 4,517-17,739; 3rd :17,740-8,345,075. | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table 3: Regression Coefficient Estimates of the Change in Violent and Property Crime Rates, 2000 to 2008 | | | | | | | | |
|  | Violent Crime Rate |  |  |  | Property Crime Rate |  |  |  |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Change in Percent HCVRs, 2000-07 | 2,034\*\*\* | 2,124\*\*\* | 1,362\*\* | 654 | -1,548 | -7,018 | -14,874\*\* | -29,989\*\*\* |
| Pop Size/% Rentals FMR (50%) | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| SES | No | No | Yes | Yes | No | No | Yes | Yes |
| Metro Dummies | No | No | No | Yes | No | No | No | Yes |
| Adj. R-Square | 0.02 | 0.02 | 0.04 | 0.08 | 0.01 | 0.02 | 0.06 | 0.09 |
| N | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 |
| Notes: \*\*\*, \*\*, \* indicates 1, 5 and 10 percent significance level, respectively | | | | | | | | |

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| Table 4: Regression Coefficient Estimates of the Change in Violent and Property Crime Rates, 2000 to 2008  (weighted by HCVR population) | | | | | | | | |
|  | Violent Crime Rate |  |  |  | Property Crime Rate |  |  |  |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Change in Percent HCVRs, 2000-07 | 515 | 1,247\*\* | 500 | -534 | -2,305 | -1,088 | -3,227 | -12,724\*\*\* |
| Pop Size/% Rentals FMR (50%) | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| SES | No | No | Yes | Yes | No | No | Yes | Yes |
| Metro Dummies | No | No | No | Yes | No | No | No | Yes |
| Adj. R-Square | 0.02 | 0.04 | 0.06 | 0.27 | 0.02 | 0.02 | 0.03 | 0.06 |
| N | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 |
| Notes: \*\*\*, \*\*, \* indicates 1, 5 and 10 percent significance level, respectively | | | | | | | | |

Figure 1a: Scatterplot of Change in Violent Crime Rate and Change in Percent Population that are HCVRs, 2000 to 2008



Figure 1b: Scatterplot of Change in Property Crime Rate and Change in Percent Population that are HCVRs, 2000 to 2008



Figure 2a: Scatterplot of Change in Violent Crime Rate and Change in Percent Population that are HCVRs, 2000 to 2008 (Weigted by HCVRs)



Figure 2b: Scatterplot of Change in Property Crime Rate and Change in Percent Population that are HCVRs, 2000 to 2008 (Weighted by HCVRs)



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| Table 5: Regression Coefficient Estimates of the Change in Violent and Property Crime Rates, 2000 to 2008  (Inquiry for Non-Linearitites) | | | | | | | | |
|  | Violent Crime |  |  |  | Property Crime |  |  |  |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Change in Percent HCVRs | -2,704\* | -1,999 | -- | -- | -5,701 | -17,493\*\* | -- | -- |
| Change in Percent HCVRs2 | 29,927\*\* | 12,578 | -- | -- | 31,564 | 40,937 | -- | -- |
| Change in Percent HCVRs-Medium | -- | -- | 177 | 290 | -- | -- | 1,111 | 1,148 |
| Change in Percent HCVRs-High | -- | -- | 1,109 | 980 | -- | -- | -12,940 | -14,351 |
| % Rentals FMR (50%) | No | Yes | No | Yes | No | Yes | No | Yes |
| SES | No | Yes | No | Yes | No | Yes | No | Yes |
| Metro Dummies | No | Yes | No | Yes | No | Yes | No | Yes |
| Adj. R-Square | 0.01 | 0.26 | 0.01 | 0.26 | 0.01 | 0.07 | 0.01 | 0.05 |
| N | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 |
| Notes: \*\*\*, \*\*, \* indicates 1, 5 and 10 percent significance level, respectively.  Trecile categories: 1st: 0 – 4,516; 2nd : 4,517-17,739; 3rd :17,740-8,345,075  All models weighted by HCVR population. | | | | | | | | |

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| Table 6: Regression Coefficient Estimates of the Change in Specific Violent and Property Crime Rates, 2000 to 2008 | | | | | | | | |
|  |  |  |  |  |  |  |  |  |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|  | Violent Crime Rates |  |  |  |  | Property Crime Rates |  |  |
|  | Murder | Rape/Sexual Assault | Robbery | Simple Assault | Aggravated Assault | Burglary | Larceny/  Theft | Motor Vehicle Theft |
| Change in Percent HCVRs | 29\*\*\* | -47\*\* | 479\*\*\* | -1,172\*\*\* | 177 | 228 | -9,880\*\*\* | -2,872\*\*\* |
| Pop Size/% Rentals FMR (50%) | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| SES | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Metro Dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. R-Square | 0.11 | 0.13 | 0.33 | 0.24 | 0.21 | 0.21 | 0.03 | 0.22 |
| N | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 |
| Notes: \*\*\*, \*\*, \* indicates 1, 5 and 10 percent significance level, respectively.  All models weighted by HCVR population. | | | | | | | | |

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| Table 7: Regression Coefficient Estimates of the Change in Violent and Property Crime Rates by Race of HCVR, 2000 to 2008 | | | | | | |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
|  | Violent Crime | Property Crime | Violent Crime | Property Crime | Violent Crime | Property Crime |
| Change in Percent HCVRs – White | 3,557\*\*\* | 5,114 | -- | -- | -- | -- |
| Change in Percent HCVRs – Black | -- | -- | -1,252\*\* | -10,225\*\*\* | -- | -- |
| Change in Percent HCVRs – Latino | -- | -- | -- | -- | -5,429\*\*\* | -50,722\*\*\* |
| Pop Size/% Rentals FMR (50%) | Yes | Yes | Yes | Yes | Yes | Yes |
| SES | Yes | Yes | Yes | Yes | Yes | Yes |
| Metro Dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. R-Square | 0.18 | 0.06 | 0.37 | 0.27 | 0.14 | 0.06 |
| N | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 |
| Notes: \*\*\*, \*\*, \* indicates 1, 5 and 10 percent significance level, respectively. Change in percent HCVRs by race is from 2000 to 2007.  All models weighted by HCVR population. | | | | | | |

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| Table 8: Regression Coefficient Estimates of the Change in Violent and Property Crime Rates – Size of Place, 2000 to 2008 | | | | |
|  | (1) | (2) | (3) | (4) |
|  | Violent Crime |  | Property Crime |  |
| Change in Percent HCVRs | 3,668\*\*\* | -1,525 | 6,243 | -10,718\*\* |
| Change in Percent HCVRs \* Medium Size Place | -177 | 841 | 1,875 | 2,869 |
| Change in Percent HCVRs \* Large Size Place | -4,022\*\*\* | 1,154 | -11,394\*\*\* | -3,561 |
| % Rentals FMR (50%) | No | Yes | No | Yes |
| SES | No | Yes | No | Yes |
| Metro Dummies | No | Yes | No | Yes |
| Adj. R-Square | 0.01 | 0.26 | 0.37 | 0.27 |
| N | 5,565 | 5,565 | 5,565 | 5,565 |
| Notes: \*\*\*, \*\*, \* indicates 1, 5 and 10 percent significance level, respectively.  All models weighted by HCVR population. | | | | |

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| Table 9: Regression Coefficient Estimates of the Change in Crime Rates: Lags and Leads | | | | | | |
|  | (1) Lag | (2) Lead | (3) Lag | (4) Lead | (5) Lag | (6) Lead |
|  | Murder Rate-1990 to 2000 | Murder Rate-2000 to 2008 | Robbery Rate-1990 to 2000 | Robbery Rate – 2000 to 2008 | Violent Crime – 1990 to 2000 | Violent Crime – 2000 to 2008 |
| Change in Percent HCVRs, 2000 to 2007 | -7 | 8\* | 2,942\*\*\* | 739\*\*\* | -- | -- |
| Change in Percent HCVRs, 2007 to 2009 | -- | 21\*\* | -- | 1,278\*\*\* | -- | -- |
| Change in Percent HCVRs – White, 2000 to 2007 | -- | -- | -- | -- | -5,869\*\*\* | 1,862 |
| Change in Percent HCVRs – White, 2007 to 2009 | -- | -- | -- | -- | -- | 128\* |
| Pop Size/% Rentals FMR (50%) | Yes | Yes | Yes | Yes | Yes | Yes |
| SES | Yes | Yes | Yes | Yes | Yes | Yes |
| Metro Dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Adj. R-Square | 0.29 | 0.11 | 0.66 | 0.34 | 0.30 | 0.06 |
| N | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 | 5,565 |
| Notes: \*\*\*, \*\*, \* indicates 1, 5 and 10 percent significance level, respectively.  All models weighted by HCVR population. | | | | | | |

1. This entails counting the number of individuals in a household where the head possess a housing choice voucher and dividing this by the total population in the place (from Census data). Alternatively, we measure the HCVR rate as the percentage of all households in a place (gathered from Census data) where the head possessed a HCV. This alternative measure produced results that were not qualitatively dissimilar. [↑](#footnote-ref-1)
2. For example, many universities have their own police departments. Hence, a city that has within its boundaries a single university with its own department will have two reporting units: one for the city’s police department and one for the university police department. [↑](#footnote-ref-2)
3. 28 states, mostly on the east coast, use the MCD system, while CCSD’s are found mostly on the west coast. [↑](#footnote-ref-3)
4. For all three geography types, we use the 2005 Law Enforcement Agency Identifier Crosswalk to match each police agency in the UCR data to Census Bureau data. [↑](#footnote-ref-4)
5. Post-Census 2000, five-year estimates from the ACS represent the only demographic data source with sample sizes sufficient to produce estimates for geographies with populations under 20,000. [↑](#footnote-ref-5)
6. In the model estimates presented below, we explored the sensitivity of our results to this particular imputation for balance-of-county observations. First, we reran all models omitting these observations. Second, we reran all models including a dummy variable indicating counties with such an imputation. All of the results are robust to these specification changes. [↑](#footnote-ref-6)
7. Of course, the trecile calculations result in very skewed population size distributions. For example, the first trecile contains places with population sizes ranging from 50 to about 4,500 people, while the third trecile ranges from population sizes from about 18,000 to over 8 million people. The use of alternative categorization, such as quintile, however, does not change the results. Moreover, splitting the places sizes into categories using reasonable eyeball approach, the qualitative results are not changed; larger places drive the weighted average crime trends and HCV presence in the same direction. [↑](#footnote-ref-7)
8. Since we weight each model by the number of HCVR for the respective, specific races, we estimate separate models by race. Including variables measuring the percent of HCVR that are of each race (with other as the reference category) and weighting the models by the total number of HCVRs in the place does not produce dissimilar qualitative results. [↑](#footnote-ref-8)
9. We also ran these models with the change in HCVRs from 2000 to 2007 included, and received the same results. The coefficient on the change in the respective crime measure from 2000 to 2008 is never significant in models that also include the change in HCVRs from 2007 to 2009, though the coefficient on this latter variable is significant in all models. [↑](#footnote-ref-9)