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The Effects of Segregation on Crime Rates

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Abstract

In this paper I examine the relationship between segregation (both racial and economic) and crime. In order to control for the potential endogeneity of segregation (of either type) with respect to crime, I instrument for segregation using information regarding the manner in which public housing assistance is allocated in each a city, as well as variables relating to the structure of local public finance in each city. The results of this analysis indicate that greater segregation (of either type) appears to have very different effects across different types of crimes. Specifically, greater segregation appears to have very little impact on basic property crimes such as burglary and larceny, and may even have a negative effect on motor vehicle theft rates. However, the strongest results indicate that greater segregation appears to lead to large and significant increases in the rate of violent crimes such as aggravated assault and robbery.

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1 Introduction

While crime rates have generally been falling throughout the last decade in the United States, crime remains a topic of tremendous concern for Americans. In a 2004 Pew Survey of American adults regarding legislative priorities, individuals ranked reducing crime at or above such issues as providing health insurance to the uninsured, the budget deficit, programs for the poor and the needy, and protecting the environment [Pew, 2004]. Moreover, concerns about crime appear to be particularly acute for those living in poor primarily black neighborhoods. For example, individuals who signed up for the Moving To Opportunity residential relocation subsidy program came from neighborhoods where the average poverty rate was over 30 percent and the average fraction of the neighborhood that were minorities was over 80 percent. Among these individuals, fear of crime and gangs, not a better apartment or higher quality schools, was overwhelmingly cited as the primary reason for wanting to enroll in the program [Kling, Ludwig, and Katz, 2005].

These high rates of criminal participation and victimization in poor black neighborhoods have been described by numerous authors (Wilson, 1987, 1996; Krivo and Peterson, 1996; Kotlowitz, 1991; Patterson, 1991; Messner and Tardiff, 1986, to name just a few). However, there is little direct empirical evidence regarding whether greater racial or economic segregation within a city in and of itself increases, decreases, or has no general effect on the overall amount of criminal activity in the city.

Estimating the degree to which racial and/or economic segregation may impact criminal activity is certainly important for our general scientific understanding criminal behavior and the workings of cities. But moreover, as cities move toward less segregation, through gentrification and through altering how housing assistance is provided to the poor, understanding the relationship between segregation and crime is also likely to be of considerable importance to local policymakers, police departments, shopowners, and even city residents.

In this paper, I use MSA and Census tract level data from the 2000 Census and the FBI's Uniform Crime Reports to examine how greater segregation in a metropolitan area impacts metropolitan area-wide crime rates. While the Census data allows me to control for a wide variety of city characteristics, the primary methodological concern is that segregation is endogenous to crime. In particular, while segregation may or may not have a direct effect crime, it is also quite plausible that crime affects the level of segregation in a city. In order

to control for this potential endogeneity of segregation, I employ two types of instruments. The first uses data regarding the fraction of government housing assistance that is allocated via government owned public housing projects rather than through vouchers or other subsidies to private property owners. The second type of instruments follow from Cutler and Glaeser [1997], and use data regarding the structure of local public finance.

The primary results of this analysis indicate that racial segregation has different effects on different types of crimes. Specifically, greater racial segregation appears to have little direct impact on basic property crimes such as burglary and larceny, but actually may decrease the overall rate of motor vehicle thefts. Alternatively, greater racial segregation appears to lead to large and significant increases in the rate of violent crimes such as robbery and aggravated assault.

As argued in more detail below, the mechanism behind these results may not be related to racial segregation specifically, but rather to the fact that racial segregation may simply be capturing the level of economic segregation within each city. As an attempt to examine this hypothesis I conduct an analogous analysis to that discussed above, but use segregation by poverty status, rather than segregation by race, to measure the degree of economic segregation. The results using this measure of economic segregation are almost identical to those using racial segregation, suggesting that economic segregation certainly cannot be ruled out as being the key mechanism behind the above described relationships between racial segregation and crime rates.

2 Segregation and Crime

As discussed above, crime rates generally appear to be much higher in predominantly black neighborhoods in most U.S. cities than in more racially diverse or primarily white neighborhoods (at least with respect to “street crimes” or non-white collar crimes). However, this does not necessarily mean that greater racial segregation in and of itself has a direct effect on crime. Specifically, it may be the case that individuals’ decisions regarding whether or not to participate in crime are not influenced by who their neighbors are. Rather, poor individuals are simply more prone to committing property crimes than are richer individuals, possibly because poorer individuals place a relatively greater value on the rewards arising from any particular criminal opportunity than do wealthier individuals (which would be true, for example, if individuals incur diminishing



marginal utility in money and consumption). Then, given the strong correlation between race and wealth, the relatively higher rates of crime in black neighborhoods may simply be due to the fact that such neighborhoods have a relatively high fraction of poor individuals.

However, there may be reasons to think that greater segregation may directly influence crime. On the one hand, greater segregation might decrease the aggregate number of crimes. For example, if most potential criminals are relatively poor (due the reasons discussed above), then in a relatively segregated city, potential criminals will generally reside in neighborhoods primarily populated by other poor individuals, meaning they will find a relatively limited supply of valuable things to steal nearby. Alternatively, in a more integrated city, potential criminals will often live in neighborhoods with a significant number of relatively richer people, and therefore will have a relatively large supply of potential things of value to steal in the local vicinity. Hence, it is conceivable that greater segregation may actually decrease aggregate criminal activity with respect to property crimes through decreasing the local supply of things to steal to those most prone to engage in such behavior.¹

On the other hand, greater segregation may lead to an increase in criminal activity, especially with respect to violence. For example, if a person lives in a highly segregated neighborhood, with a high fraction poor individuals, he may expect a substantial fraction of his neighbors to act criminally. Therefore, in order to protect himself and his property, he may choose to engage in violent activity as a way of deterring his neighbors from victimizing him. For example, an individual may choose to assault or rob others in his neighborhood in order to gain a reputation as a violent person, in the hopes that such a reputation will cause others to refrain from victimizing him.² Alternatively, in less segregated neighborhoods an individual may be less worried about the criminal tendencies of his neighbors, causing him to have less of incentive behave aggressively towards them, correspondingly resulting in fewer violent retaliations.

A variety of other explanations have also been put forth linking criminal activity of any type to neighborhood characteristics. For example, an individual's information about payoffs to crime may evolve differently depending on the number of criminals in his neighborhood (see Lochner and Heavner [2002] and Calvo-Armengol and Zenou [2004]). Similarly, role models and peer interactions may increase an individual's criminal proclivity to engage in crime in

¹See Cook [1986] for more comprehensive discussion of this issue.

²See Silverman [2004] for an explicit model of such reputational aspects of violent crime.



poor high crime neighborhoods (see Glaeser, Sacerdote, and Sheinkman [1996], Brock and Durlauf [2001]). Another argument is that greater racial segregation may increase crime by isolating blacks away from jobs, increasing the payoff to criminal activity relative to labor market activity for blacks (Verdier and Zenou [2004]). Finally, greater individual proclivity toward criminal activity in poor black neighborhoods may be exacerbated by the relatively widespread drug use, high-density low quality housing, and the stresses incurred by poor local public services that often coincide with such neighborhoods.

The above arguments suggest that not only is the effect of segregation on crime theoretically ambiguous, but also suggest that it is possible that the effect differs by type of crime. Therefore, in the analysis below, I examine the effects of segregation on crime separately by type of crime.

3 Estimating the Effects of Segregation on Crime

As discussed above, the primary goal of this analysis is to determine whether greater segregation leads to higher aggregate city-wide crime rates. Hence, the analysis will be done at the MSA level. In general, the data I use for this analysis comes from two primary sources—the FBI’s Uniform Crime Reports for 2000 and the 2000 Census. I will talk about each of these data sources, as well as the variables obtained from them, separately.

FBI Uniform Crime Reports

The FBI Uniform Crime Reporting Program is a nationwide program where nearly 17,000 city, county, university, and state law enforcement agencies report the number of crimes of different types that were brought to their attention. The reporting agencies covered roughly 94 percent of the total U.S. population, and 96 percent of the population living in MSAs. The program’s primary objective is to generate a reliable set of criminal statistics to be used by both law enforcement agencies, legislators, the media, and researchers [Federal Bureau of Investigation, 2000].

The Uniform Crime Reports report on nine mutually exclusive types of crime—murder/non-negligent manslaughter, rape, robbery, aggravated assault, burglary, larceny-theft, motor vehicle theft, and arson. Collectively, these are referred to as the Index Crimes. In this analysis, I look at each of these types of crimes separately, with the exception of murder, rape, and arson, which I

exclude from the analysis due to the relatively few number of occurrences of these crimes in many of the MSAs included here.³

For clarity, it is important to precisely describe what is meant by each of these crime categories. The Uniform Crime Reports define Aggravated Assault to be “the unlawful attack by one person upon another,” where the attacker used a weapon, or inflicted “serious or aggravated injury” on the victim. Robbery is defined to be “taking or attempting to take anything of value from the care, custody, or control of a person or persons by force or threat of force or violence and/or by putting the victim in fear.” By contrast, Burglary is defined to be “the unlawful entry of a structure to commit a felony or theft,” while Larceny is defined to be “the unlawful taking, carrying, leading, or riding away of property from the possession or constructive possession of another. It includes crimes such as shoplifting, pocket-picking, purse-snatching, thefts from motor vehicles, thefts of motor vehicle parts and accessories, bicycle thefts, etc., in which no use of force, violence, or fraud occurs.” Finally, motor vehicle thefts are simply the “theft or attempted theft of a motor vehicle” [Federal Bureau of Investigation, 2000].

As the above definitions make clear, a major distinction between these crime categories is that Aggravated Assault and Robbery involve a direct confrontation with the victim, while Burglary, Larceny, and Motor Vehicle Thefts are property crimes that explicitly do not involve a direct confrontation with the victim.⁴ Therefore, I will refer to Aggravated Assault and Robbery as “interpersonal crimes,” and Burglary, Larceny, and Motor Vehicle Thefts as “basic property crimes.”

I also use the FBI Uniform Crime data from 1999 to obtain crime clearance rates for each type of crime in each MSA, where the clearance rate is measured to be the fraction of all reported crimes where at least one person is arrested, charged with the commission of the offense, and turned over to the court for prosecution [Federal Bureau of Investigation, 2000]. This measure will be used as a measure of the efficiency of the police force in each MSA, under the assumption that higher clearance rates in the prior year may have deterrence effects and indicate more effective police forces.

³Note however, if murders and rapes are combined with aggravated assaults under the definition of “violent crimes,” all of the results are essentially identical to those presented here with respect to aggravated assaults.

⁴Car-jacking, or taking an individual’s car by threat or force, is counted as robbery, not a motor vehicle theft.



MSA Population Characteristics

Data regarding MSA population characteristics come for the most part from the 2000 United States Census Summary File 3. This data is compiled from a sample of approximately 19 million housing units (about 1 in 6 households) that received the Census 2000 long-form questionnaire. I use this data to obtain measures of the racial make-up of each MSA, the population of each MSA, the fraction of each MSA that is made up of first generation immigrants, the fraction of adults in the MSA who have a college degree, and a measure of the fraction of the MSA that lived in an “urban area” or “urban cluster”.⁵

I also use the Census data to create overall economic prosperity measures for each MSA. There exists a variety of possible ways to measure economic prosperity in an MSA, including median income, per capita income, poverty rates, and variables capturing the percentage of the city’s residents in different income categories. Each of these measures has drawbacks however. For example, median income, per capita income, and poverty rates all capture only one facet of the income distribution within a city. For example, a city may have a relatively high median income, but still have a relatively high-poverty rate. Similarly, a city might have a low-poverty rate, but have very few wealthy individuals. Using variables to capture the percentage of the city’s residents in different income categories avoids this problem, but comes at the cost of making the results difficult to interpret, as it would be difficult to use such variables to provide a convenient way to describe how crime changes as a city becomes “economically better off.”

In the hopes of minimizing these problems, in this paper I primarily use the area under an MSA’s cumulative distribution function of income (“the integral of the income distribution”) to measure an MSA’s economic prosperity. It is straightforward to show that the greater the size of this variable, the more the MSA-wide income distribution is concentrated at the lower income levels. This measure of an MSA’s economic prosperity is appealing in that it is a single parameter, but is more informative about the overall distribution of income than simply poverty rates or median income, as it describes how the distribution is spread over the range of incomes. Casual observation also suggests it to be a reasonable measure. The richest four MSAs according to this integral measure are Stamford Connecticut, San Jose California, Danbury Connecticut, and Nas-

⁵ “Urban Area” consists of densely settled territory that contains 50,000 or more people. “Urban Cluster” consists of densely settled territory that has at least 2,500 people but fewer than 50,000 people



sau New York. Alternatively, the poorest four MSAs according to this measure are McAllen Texas, Brownsville Texas, Laredo Texas, and Huntington West Virginia. While this is the preferred measure of MSA economic prosperity, the general results with respect to segregation and crime are unaffected if poverty rates, per capita income, median income, or income category percentages are used instead.⁶

In addition to direct income measures, I also use data from the Department of Housing and Urban Development's "A Picture of Subsidized Households - 1998" to determine the total number of households in each MSA that receive housing assistance. This dataset contains data on all subsidized households units for each housing agency in the United States. From this data, I determine the number of all households in each MSA that receive housing subsidies, which I then divide by MSA population to determine the fraction of households in each MSA that receive housing assistance.⁷

Measures of Racial Segregation

While there exist several plausible measures of racial segregation within a community, in this paper I employ the two measures used by Cutler, Glaeser, and Vigdor [1999], both constructed for each MSA using data at the census tract level.⁸ The first measure is referred to as the *dissimilarity index*, originally proposed by Duncan and Duncan [1955] and Taeuber and Taeuber [1965]. This index is high when blacks, for example, disproportionately reside in some areas of the city relative to whites. The actual index is constructed to be

$$\text{Racial Dissimilarity Index} = \frac{1}{2} \sum_{i=1}^N \left| \frac{\text{black}_i}{\text{black}_{total}} - \frac{\text{non-black}_i}{\text{non-black}_{total}} \right|,$$

where black_i is the number of black individuals in census tract i , black_{total} is the total number of black individuals in the whole city, and the non-black terms are analogously defined. As discussed by Cutler, Glaeser, and Vigdor [1999], this index ranges from zero as the lowest level of segregation, to one as the highest level of segregation, and answers the question "what share of the black population would need to change areas for the black and non-black to be evenly

⁶Results available from author upon request.

⁷Since the housing assistance data is from 1998, and the population numbers are from the 2000 Census, this measure is likely subject to some degree of measurement error.

⁸For further discussion of these different measures, see Taeuber and Taeuber [1965], Massey and Denton [1988], and Glaeser and Scheinkman [1997].



distributed within a city?"

The second measure of segregation to be employed in this study is what Cutler, Glaeser, and Vigdor [1999] refer to as an *isolation index*. First proposed by Bell [1954], this index attempts to measure the extent to which individuals of one group are likely to interact with individuals of another group in their neighborhoods. With respect to racial segregation, this index is constructed to be the following

$$\text{Racial Isolation Index} = \frac{\sum_{i=1}^N \left(\frac{\text{black}_i}{\text{black}_{total} \text{ persons}_i} \right) - \left(\frac{\text{black}_{total}}{\text{persons}_{total}} \right)}{\min\left(\frac{\text{black}_{total}}{\text{persons}_\ell}, 1\right) - \left(\frac{\text{black}_{total}}{\text{persons}_{total}}\right)},$$

where persons_ℓ is the number of persons in the census tract with the lowest population within the city and i once again denotes census tract. The first term in the top part of the above equation is the fraction black in the area occupied by the average black individual. From this, we can subtract the percentage black in the city as a whole to eliminate the effect coming from the overall size of the black population. This whole term is then normalized to be between zero and one, with one indicating the city is the most segregated it can possibly be.

In both cases, I use 2000 Census data to create these indices.

Weather Measures

Finally, weather may have an effect on criminal activity (see Jacob, Lefgren, and Moretti, 2004). In particular, cities with a high number of very hot days may have more days where people are out in the street, meaning there will be more potential interactions in which crimes may take place. Alternatively, the opposite will hold true in cities with a high number of very cold days. Moreover, tempers might run higher on very hot days, while the importance of obtaining money quickly may be greater on very cold days (e.g. if it is harder to sleep outside, food and clothing become more important). Therefore, I obtained information on the average number of very hot days (i.e. temperature of 90 degrees or higher) per 100 days for each state, as well as the average number of very cold days (i.e. temperature of 32 degrees or lower) per 100 days for each state. This data comes from the National Climatic Data Center, a U.S. government funded archive of weather data.⁹

⁹Measures are calculated to be the average for all cities for which weather data is reported in each state. The measures for each city are calculated as the average over several years, ranging from 11 years to over 100. Data and further information regarding the NCDC is available at www.ncdc.noaa.gov/oa/ncdc.html.



The sample of MSAs used for this paper were restricted in two ways. First, given racial segregation is only meaningful in cities where there is at least a substantial population of blacks, MSAs with fewer than 1000 blacks were dropped from the analysis. Second, since the FBI UCR crime data is reported at the county level, I determined crime rates by aggregating all crime data for counties that fall within a particular MSA. Since most counties either fall in one MSA or fall in zero MSAs, this generally provided accurate MSA crime level measures. However, several New England counties are divided between two or more different MSAs. Since I could not determine which MSA to assign the crimes that occurred in these counties to, I excluded these New England MSAs that contained shared counties from the analysis. This left a sample of 284 MSAs. Summary statistics from this sample for the variables discussed above are presented in Table 1.

3.1 The Correlation between Racial Segregation and Crime

We can take a first look at the relationship between crime and racial segregation by estimating simple OLS regression specifications of the MSA crime rate, for each type of crime, on an index of the degree of racial segregation in the MSA, as well as a variety of other MSA characteristics that may also influence crime. Table II shows the results of such regressions.

There are two specifications in Table II for each type of crime, where the first specification uses standardized racial dissimilarity index to measure segregation, and the second specification uses the standardized racial isolation index. For each type of crime, the dependant variable is the crime rate per 100,000 residents, standardized to have a mean of zero and standard deviation of one. I use these standardized rates in order to facilitate comparing magnitudes across crimes, as the overall rates per 100,000 residents differ dramatically across crimes (as can be seen in Table I). The other variables I control for include the clearance rate for the dependant crime in question from the previous year (to capture some level of police efficiency), the level of overall economic prosperity (as measured by the integral of the income distribution), the square of this economic prosperity measure, the percent of the households in the MSA that live in an urban environment (to capture relative population density), the log of the MSA population, the percent of the MSA population that are immigrants, the percent of the MSA population that are black, the percent of the MSA population that are Hispanic, the fraction of days that are above 90 degrees (as well as the



square of this measure), the fraction of days that are below freezing (as well as the square of this measure), the fraction of households that receive public housing assistance, and the fraction of adults with college educations.

Looking at the first two rows of Table II, we can see that the correlation between racial segregation and crime rates differs across the different types of crimes. Most notably, there is very little correlation between racial segregation and the rates of the non-confrontational property crimes of burglary, larceny, and motor vehicle theft, using either measure of racial segregation. On the other hand, there appears to be some positive correlation between racial segregation and the interpersonal crimes of robbery and aggravated assault. The coefficients on the other variables generally conform to expectations. For example, greater clearance rates are generally related to lower crime rates. Similarly, MSAs that are less economically prosperous (i.e. greater integral of income distribution), more urban, have relatively greater black and Hispanic populations, and have more hot days, generally have higher crime rates.

3.2 Controlling for the Potential Endogeneity of Segregation

While the results presented in Table II reveal some interesting differences in the correlation between racial segregation and crime across different types of crime, these results are not necessarily very informative about the degree to which racial segregation may *affect* MSA-wide crime rates for these different types of crimes. In particular, the level of racial segregation in an MSA may be endogenous since people generally have substantial choice about where to live within a city. Such selection may bias the causal interpretation of the OLS results for several reasons. To take one example, Cullen and Levitt [1999] show that rising crime rates may lead to flight from central cities, especially by wealthy whites. In other words, any positive relationship between crime and racial segregation arise not because greater racial segregation increases crime, but because greater crime leads to greater racial segregation. Alternatively, as violent crime increases in a city, for example as gangs become more prominent, individuals within the neighborhoods where these gangs operate have a greater incentive to take on the expenses associated with moving, generally to more economically and racially integrated neighborhoods. Indeed, as discussed in the introduction, escaping from gangs and crime was the primary reason participants in the MTO housing relocation program gave for signing up for the program. Hence, it is also



possible that as crime increases, a city becomes somewhat less segregated.

Therefore, in order to obtain plausible estimates of the causal effect of racial segregation on different types of crime rates, we must find some characteristics that vary across Metropolitan areas that affect the level of racial segregation, but can be credibly excluded from having any direct relationship to current levels of criminal activity. Given we can find such instruments that meet this exclusion restriction, we can estimate the effect of racial segregation on the different types of crime using Two-stage Least Squares (2SLS).

The first instrument for segregation that I employ is the fraction of public housing assistance that was allocated in the form of government owned public housing structures as opposed to Section 8 housing vouchers or certificates (or other types of subsidies to non-government property owners). By design, public housing structures group poor individuals together to a greater extent than do housing vouchers which can generally be used anywhere in the city. To the extent that a relatively high fraction of black households are poor and in need of housing assistance, cities that provide a greater fraction of housing assistance via providing space in a public housing project, as opposed to through vouchers or certificates, should have higher levels of racial segregation. Moreover, since public housing projects constitute a stock of facilities that generally have existed for a considerable number of years prior to the year 1998 (the year in which the measures come from for this analysis), it is extremely unlikely that the overall fraction of housing assistance provided via public housing projects in 1998 was directly related to MSA crime conditions in the period around 2000. The data used to create this instrument once again comes from the Department of Housing and Urban Development's "A Picture of Subsidized Households - 1998" described above.

The other two variables I use to act as instruments for racial segregation are taken from Cutler and Glaeser [1997]. The first of these is the number of governments (i.e. municipalities and townships) in an MSA in 1962.¹⁰ As Cutler and Glaeser discuss, a greater number of local governments in an MSA will allow for greater heterogeneity in local public goods and taxes across the MSA, as local politicians can cater to different types of people with different preferences. This can lead to greater gains from Tiebout [1956] style sorting. Hence, this may impose greater costs to moving neighborhoods on poor and/or black families, as different "neighborhoods may have different public goods and

¹⁰Once again, thanks to David Cutler, Edward Glaeser, and Jacob Vigdor for making this data available via Jacob Vigdor's website.

perhaps public goods designed to discourage racial integration.” [Cutler and Glaeser, 1997]. The second instrument I borrow from Cutler and Glaeser is the share of government revenue in an MSA that comes from the state or federal government in 1962. With more money coming from outside sources, there is less of an incentive for individuals within a city to segregate by income, since a smaller fraction of local public goods are funded through local taxes. In general, it cannot be the case that either of these two measures were directly related to MSA crime rates in 2000.

For the above instruments to be a valid method for controlling for potential endogeneity of segregation, it must not only be the case that after controlling for the other MSA characteristics included in the specifications in Table II these instruments can be excluded from having any direct impact on criminal activity in 2000, but also that one or more of these instruments are substantially and significantly related to the level of segregation in an MSA in 2000. Table III shows the results of the first stage regressions of the different measures of segregation on these excluded instruments and the other MSA characteristics included in the original regressions from Table II. As can be seen, these instruments excluded from the crime rate specifications are significantly related to racial segregation (using either measure) in the predicted manner. The p-value on the F-statistic for joint significance of all three instruments (i.e. the excluded variables) is 0.00 with respect to both measures of racial segregation.

Table IV shows the results from the 2SLS specifications instrumenting for the racial segregation indices using the excluded instruments discussed above. As can be seen, the results of this analysis show quite striking differences across the different types of crimes. As with the OLS results, racial segregation appears to have no effect on the basic property crimes of burglary and larceny. With respect to motor vehicle thefts however, if anything, it appears that greater racial segregation decreases the amount of motor vehicle thefts. On the other hand, greater racial segregation appears to lead to much higher rates of interpersonal crimes such as robbery and aggravated assault. Indeed, the point estimates indicate that a one standard deviation increase in racial segregation leads to a 0.23 standard deviation increase in robbery rates and over a 0.3 standard deviation increase in rates of aggravated assault.

As was shown in Table III, the excluded instruments are significantly related to racial segregation even after controlling for the other MSA characteristics. As discussed above, however, the other requirement for these to be valid instruments is that they should not be directly related to crime rates. As argued



previously, this condition seems quite plausible for these instruments in this context. Moreover, given we have more excluded instruments than potentially endogenous variables, we can directly test whether this exclusion condition is justified. In particular, we can take the R-squared that results from regressing the residuals obtained from two-stage least squares regressions on all of the exogenous variables including the excluded instruments, and multiply this value times the number of observations. The resulting statistic will asymptotically have a Chi-squared distribution with 2 degrees of freedom (i.e. the number of excluded instruments minus the number of endogenous regressors) [Wooldridge, 2002]. The excluded instruments can be argued to be invalidly excluded from directly affecting the dependant variable of interest if this test statistic is significantly different from zero. With 2 degrees of freedom, the critical value for significance at even the 10 percent level is 4.605 (with critical values for greater levels of significance obviously much higher). The value of this statistic is less than 2 for all crimes using either the Dissimilarity Index or Isolation Index, well short of any reasonable significance level. Therefore, we certainly cannot reject the hypothesis that the instruments are validly excluded from the crime rate equations.

4 Interpreting the Differing Effects of Segregation Across Crimes

The empirical findings in the previous section suggest that greater racial segregation appears to have very little impact on basic property crimes such as burglary and larceny, and may actually decrease motor vehicle thefts. However, greater racial segregation also appears to substantially increase the overall rate of violent interpersonal crimes such as aggravated assault and robbery.

These findings are consistent with the theoretical stories discussed in Section 2. In particular, the lack of a direct relationship between racial segregation and crimes such as burglary and larceny may be because individuals generally do not commit these types of crimes in their own neighborhoods, or even poor neighbors have things of value to steal, so that neighborhood composition has little effect on the overall rate at which such crimes are committed. On the other hand, motor vehicle thefts may decrease as racial segregation increases because such thefts may often be crimes of opportunity, and hence individuals generally commit such crimes within their own neighborhoods. Given greater racial



segregation generally isolates poorer black individuals from richer white individuals, and since poor individuals may be more prone to committing such crimes than richer individuals, greater racial segregation may diminish the opportunity for potential car thieves to steal cars that are worth stealing. Finally, violent inter-personal crimes such as robbery and aggravated assaults may increase as racial segregation increases due to strategic concerns. Specifically, individuals may expect a greater threat from their neighbors when a high fraction of their neighbors are poor, and hence feel a greater need to act aggressively toward their neighbors as a means of deterrence when they live in an predominantly poor black neighborhood than they would if they lived in a more racially and economically diverse neighborhood.

Note, however, that the above arguments are not related to racial segregation per se, but rather to the economic segregation that generally accompanies racial segregation due to the strong relationship between race and economic resources. This issue has previously been emphasized by Wilson [1987], as well as Krivo and Peterson [1996]. Indeed, in their analysis of neighborhoods in Columbus Ohio, Krivo and Peterson [1996] not only find that very poor neighborhoods have much higher rates of violent crime than those neighborhoods that are better off, but also that this relationship between extreme neighborhood poverty and violent crime are similar in both black and white neighborhoods.

In the context of this analysis, it may be the case that racial segregation is simply acting as an indicator of economic segregation, where it is this economic segregation that is important with respect to motor vehicle theft and violent crime. To assess whether this might be true, we can examine the effects of other measures of economic segregation on crime. For example, instead of using race to create indices of segregation, we can use poverty status. Specifically, we can create a new dissimilarity index for each MSA to be

$$\text{Poverty Dissimilarity Index} = \frac{1}{2} \sum_{i=1}^N \left| \frac{\text{poor}_i}{\text{poor}_{total}} - \frac{\text{non-poor}_i}{\text{non-poor}_{total}} \right|,$$

where once again i denotes a census tract. Similarly, we can create a new isolation index for each MSA (with i denoting a census tract) to be

$$\text{Poverty Isolation Index} = \frac{\sum_{i=1}^N \left(\frac{\text{poor}_i}{\text{poor}_{total}} \frac{\text{poor}_i}{\text{persons}_i} \right) - \left(\frac{\text{poor}_{total}}{\text{persons}_{total}} \right)}{\min\left(\frac{\text{poor}_{total}}{\text{persons}_\ell}, 1\right) - \left(\frac{\text{poor}_{total}}{\text{persons}_{total}}\right)}.$$



Economic segregation measures can also be constructed using other income measures, such as what fraction of individuals in each census tract live in households with income above or below the median, or above or below half the median. The problem with any of these measures using household income, including poverty status, is that it is not necessarily the case that the household income from a particular year for a given individual provides an accurate picture of the economic condition for the individual. Such measurement error could be mitigated if we could use the average household income over several years, or even an individual's household's wealth, to measure an individual's economic condition. However, these options are not possible using Census data. Moreover, unlike race, individuals categorized differently with respect to poverty status (or whether their household income is above or below the median income) may in some cases be almost identical, since income is a continuous variable and the category cutoffs are relatively arbitrary. This issue may be important as it means that the indices of segregation by poverty status will not distinguish between a city where the rich and the poor live in the same neighborhoods, while the near poor and middle class live together in other neighborhoods, and a city where the poor and the near poor live in the same neighborhoods, while the rich and the middle class live in other neighborhoods. However, it certainly could be argued that the latter city is more economically segregated than the former.

Table V shows the results from running OLS regressions similar to those presented in Table II, but using the indexes of segregation by poverty status (i.e. the poverty dissimilarity index and the poverty isolation index) rather than the measures of segregation by race that were used there. Interestingly, these results reveal very little correlation between either of the indices of economic segregation and any of the crime categories. Once again, however, in order to put any interpretation on these results, we must account for the potential endogeneity of economic segregation by instrumenting for the segregation indices using the instruments discussed above that can be excluded from being directly related to crime. The motivation for using these instruments with respect to segregation by poverty status is identical to before with respect to racial segregation.

The results of the first stage regressions of the poverty segregation indices on these instruments (as well as the other exogenous variables) are presented in Table VI. As can be seen, the coefficients on these excluded instruments carry the expected sign. Somewhat surprisingly however, the degree to which they are correlated with the poverty status segregation indices is much smaller in magnitude

than their correlation with the racial segregation indices. Indeed, the variable capturing the share of local revenue coming from the federal government is not even significant anymore with respect to either the poverty dissimilarity index or the poverty isolation index. However, the other two excluded instruments are still statistically significant, and the p-value of the F-statistic for joint significance of the three excluded instruments is still less than 0.00 for both poverty segregation indices.

Table VII presents the 2SLS results using the indices for poverty status segregation. In general, the results are very similar to the results using the indices for racial segregation. In particular, segregation by poverty status does not appear to have any effect on burglary rates or larceny rates. However, there is some indication that greater poverty segregation lowers the rate of motor vehicle theft, although this coefficient is very imprecisely estimated and not statistically significant. Moreover, as with racial segregation, greater segregation by poverty status appears to increase the rate of robberies and aggravated assaults. However, as with motor vehicle thefts, these estimates are quite imprecise and only statistically significant (at the 10 percent level) when the poverty dissimilarity index is used to measure poverty segregation. It is the case though that a hausman test confirms that the coefficients on the both of the economic segregation indices in the 2SLS specifications presented in Table VII are significantly different (at the 10 percent level) than the OLS results presented in Table V for motor vehicle thefts, robbery, and aggravated assault. Moreover, as before, an overidentification test for the validity of exclusion restrictions for these instruments cannot be rejected at any standard level of significance.

While the general pattern of results in Table VII are similar (if not stronger) in magnitude and sign to those in Table IV, clearly they are less precisely estimated. This is obviously due to the weaker first stage relationship between the excluded instruments and measures of poverty segregation than the excluded instruments and the measures of racial segregation. It is hard to know what accounts for this weaker first stage relationship, as the arguments for the correlation between the excluded instruments and segregation are as strong if not stronger with respect to segregation by economic status as they are with respect to segregation by race. In fact, the correlation between these instruments and racial segregation is generally motivated by the relationship between race and economic status. One explanation for why this is the case is that, as alluded to previously, poverty status from a particular year may not actually provide a very accurate way to compare the economic status across individuals. In fact,

it is conceivable that the degree of racial segregation actually provides a more accurate measure of a city's economic segregation than the degree of segregation by each individual's poverty status in a given year.

5 Conclusion

Racial segregation is a concern to many citizens, not only because of its historical relationship with racial intolerance and injustice, but also because it is often associated with a variety of negative societal outcomes. For example, Cutler and Glaeser [1997] find that "in more racially segregated cities, African-Americans have lower high-school graduation rates, are more likely to be idle, earn less income, and are more likely to become teenage mothers." However, little empirical work has formally documented the effects of racial (or economic) segregation on aggregate criminal activity.

This study used MSA and Census tract level data to examine the relationship between segregation and crime. The key methodological constraint to overcome was that not only may segregation affect criminal activity, but that criminal activity might also affect segregation. Hence, in order to obtain plausible estimates for the effects of segregation on criminal activity, I had to find and exploit variation across cities with respect to characteristics that affect segregation, but have no direct relationship with criminal activity. This was done using information regarding the degree to which public housing assistance in each city is allocated via government owned housing projects (as opposed to rental vouchers), as well as information regarding how local public finance was historically structured for each city.

This analysis lead to some interesting results. In particular, the effect of greater racial segregation on crime appears to depend substantially on the type of crime in question. With respect to basic property crimes like burglary and larceny, racial segregation appears to play very little direct role. On the other hand, there is some evidence, albeit somewhat imprecisely estimated, that greater racial segregation actually increases the rate of motor vehicle thefts. The strongest findings, however, are that greater racial segregation appears to substantially increase violent crimes such as robberies and aggravated assaults.

While the exact mechanism or mechanisms that account for these results remains an open question, one plausible possibility is that these findings arise due to the strong relationship between race and economic resources, and there-



fore reflect that greater economic segregation has little effect or even a negative effect the rate of basic property type crimes, but increases the rate of violence. Using another measure of economic segregation within a city, namely the degree of segregation with respect to poverty status, leads to very similar, albeit less precisely estimated empirical results. Namely, greater segregation with respect to poverty status appears to have negligible impact on basic property crimes, a somewhat negative impact on motor vehicle thefts, but a relatively strong positive impact on the rate of violent crimes.

Interestingly, the results from this analysis have important similarities to the findings in Kelly [2000], who analyzes the relationship between county crime rates and county income inequality. In particular, Kelly finds that higher income inequality appears to correspond to greater rates of violent crime, but has little relation to the rates of property crime.¹¹ Given Cutler and Glaeser's [1997] results discussed above, it certainly may be the case that greater racial segregation also leads to greater inequality. Therefore, Kelly's results regarding the relationship between inequality and crime may be a direct byproduct of the relationship between segregation and crime discussed here. This issue is certainly an important topic for further research.

The findings in this paper also arguably bear some similarities to the results coming from the Moving to Opportunity (MTO) demonstration project regarding housing relocation assistance for poor individuals. Eligibility for the MTO project was restricted to low-income families with children living in public or section 8 housing in selected high-poverty neighborhoods in Baltimore, Boston, Chicago, Los Angeles, and New York. The MTO project randomly allocated eligible volunteer families to either a control group or one of two treatments. One of these treatments provided subsidies and relocation assistance to families subject to the restriction that they move to a relatively low poverty census tract. As discussed by Kling, Ludwig, and Katz [2005], the results of this experiment suggest that "moving to lower poverty neighborhoods leads to fewer violent and property crimes for females, and fewer violent but more property crime arrests for males." Though it must be said that they also find that the decrease in violent crime arrests associated with moving for males appears to be much smaller than it is for females, and there is some evidence that this effect

¹¹Also, similar to the results presented here, Kelly [2000] finds that property crime rates have a strong relationship to the overall economic conditions in a county (specifically the poverty rate) as well as police activity. On the other hand, as also found here, Kelly finds that violent crime rates appear to have little relation to these county characteristics.

for males recedes even more over time. However, even if the decrease in violent crime arrests for males were to fully disappear over time, such a finding would not necessarily be contradictory to the findings of this paper, as the sample of youth Kling, Ludwig, and Katz [2005] analyze consists only of youth who moved only during their adolescent or teenage years and the results may be different for males who move from high poverty neighborhoods while still very young or for males who move after their teen years.

In general, the results of this analysis suggest that decreasing segregation will not uniformly lead to lower rates of all crimes. However, given the fear and damage associated with violent crimes such robbery and aggravated assault, any reduction in these crimes that may come from decreasing segregation will likely substantially improve the quality of life not only for those living in poor primarily black neighborhoods, but also for metropolitan area residents in general. Hence, the results of this analysis provide some further justification for efforts to reduce the levels of segregation in American cities, both racially and economically.



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Table I - Descriptive Statistics For Data

Variable	Mean	Standard Deviation
CRIME DATA		
<i>Basic Property Crimes (in 2000)</i>		
Burglaries per 100,000 residents	834	352
Larcenies per 100,000 residents	2,855	939
Motor Vehicle Thefts per 100,000 residents	354	206
<i>Interpersonal Property Crimes (in 2000)</i>		
Robberies per 100,000 residents	124	84
Aggravated Assaults per 100,000 residents	318	174
<i>Clearance Rates per 100 crimes (in 1999)</i>		
Burglary	13	7
Larceny	19	8
Motor Vehicle Theft	21	12
Robbery	31	13
Violent Crimes	57	18
MSA DATA (in 2000)		
Median Household Income	40,786	7,459
Fraction Urban	0.79	0.12
Fraction Black	0.12	0.11
Fraction Hispanic	0.10	0.14
Fraction Immigrant	0.01	0.01
Fraction of Adults with College Degree	0.15	0.04
Population	737,794	1,203,985
Fraction of Households Receiving Housing Asst.	0.02	0.01
fraction of days per 100 above 90 deg.	11.2	8.0
fraction of days per 100 below 32 deg.	22.6	13.4
SEGREGATION DATA (in 2000)		
Dissimilarity Index	0.5	0.14
Isolation Index	0.21	0.17



Table II - OLS Regression Results (Racial Segregation)

Variable	Dependant Variable									
	std. burglary rate		std. larceny rate		std. motor veh. theft rate		std. robbery rate		std. agg. assault rate	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
std. racial dissimilarity index	-0.03		-0.07		0.02		0.19***		0.08	
	[.061]		[.065]		[.057]		[.049]		[.067]	
std. racial isolation index		-0.02		-0.11		0.01		0.21***		0.16**
		[.073]		[.078]		[.068]		[.059]		[.08]
1999 clearance rate (for rel. crime)	-0.04***	-0.04***	-0.03***	-0.04***	-0.02***	-0.02***	-0.01***	-0.01***	-0.01**	-0.01**
	[.007]	[.007]	[.006]	[.006]	[.004]	[.004]	[.003]	[.003]	[.003]	[.003]
integral of income distribution	1.68*	1.69*	2.59**	2.70***	2.88***	2.87***	2.22***	2.04***	1.68	1.5
	[.958]	[.963]	[1.019]	[1.022]	[.886]	[.89]	[.777]	[.782]	[1.042]	[1.041]
sq. of integral of income dist.	-0.07	-0.07	-0.12**	-0.13**	-0.14***	-0.14***	-0.11***	-0.10**	-0.08	-0.07
	[.052]	[.052]	[.055]	[.055]	[.048]	[.048]	[.042]	[.042]	[.056]	[.056]
percent urban	1.81***	1.81***	2.21***	2.31***	2.24***	2.23***	1.94***	1.80***	0.96	0.8
	[.588]	[.595]	[.622]	[.628]	[.549]	[.555]	[.476]	[.483]	[.639]	[.642]
log of population	-0.09	-0.1	-0.12*	-0.12	0.36***	0.36***	0.23***	0.24***	0.06	0.04
	[.069]	[.068]	[.073]	[.073]	[.065]	[.064]	[.056]	[.055]	[.075]	[.074]
percent immigrant	-7.67	-7.34	-9.62	-9.93*	-10.24**	-10.38**	4.7	4.33	-2.43	-1.38
	[5.508]	[5.508]	[5.87]	[5.854]	[5.098]	[5.093]	[4.46]	[4.47]	[5.985]	[5.948]
percent black	4.40***	4.42***	2.80***	3.24***	2.98***	2.95***	4.98***	4.24***	3.17***	2.46***
	[.542]	[.656]	[.577]	[.7]	[.507]	[.61]	[.442]	[.533]	[.591]	[.711]
percent hispanic	0.44	0.5	0.39	0.38	0.46	0.43	1.25***	1.12***	1.84***	1.93***
	[.489]	[.478]	[.52]	[.508]	[.457]	[.448]	[.395]	[.387]	[.532]	[.518]
percent of days above 90 deg.	0.06**	0.06**	0.07**	0.08**	0.03	0.02	0.06**	0.05**	0.09***	0.09***
	[.029]	[.028]	[.031]	[.03]	[.027]	[.026]	[.023]	[.023]	[.031]	[.03]
sq. of percent of days above 90	-0.00*	-0.00*	0	0	0	0	-0.00***	-0.00**	-0.00***	-0.00***
	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]
percent of days below 32 deg.	0.01	0.01	0.05***	0.05***	0.01	0.01	0.04***	0.04***	-0.04***	-0.05***
	[.015]	[.015]	[.016]	[.016]	[.014]	[.014]	[.012]	[.012]	[.017]	[.017]
sq. of percent of days below 32	0	0	-0.00**	-0.00**	0	0	-0.00***	-0.00***	0.00**	0.00***
	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]
percent of households subsidized	-10.01**	-10.08**	-2.56	-2.5	-7.81*	-7.79*	-1.43	-1.43	-3.96	-4.23
	[4.391]	[4.394]	[4.705]	[4.698]	[4.076]	[4.077]	[3.541]	[3.555]	[4.782]	[4.759]
percent with college degree	-0.77	-0.68	3.02*	3.10**	-1.17	-1.22	1.09	0.71	0.99	0.98
	[1.462]	[1.446]	[1.556]	[1.537]	[1.354]	[1.339]	[1.179]	[1.17]	[1.592]	[1.567]
N	284	284	284	284	284	284	284	284	284	284
R - square	0.4857	0.4854	0.3927	0.3943	0.5796	0.5795	0.6752	0.6728	0.3762	0.3825
adj. R - square	0.457	0.457	0.359	0.36	0.556	0.556	0.657	0.654	0.341	0.348

*indicates significance at the 10% level, **indicates significance at the 5% level, ***indicates significance at the 1% level.

Table III - First Stage of 2SLS Regression Results (Racial Segregation)

Variable	Dependant Variable	
	standardized dissimilarity index	standardized isolation index
	(a)	(a)
EXCLUDED VARIABLES		
fraction of housing assistance via public housing	0.79*** [.199]	0.60*** [.162]
log of number of local governments	0.27*** [.043]	0.27*** [.035]
share of local revenue coming from Federal Gov't.	-1.52*** [.424]	-1.24*** [.343]
NON-EXCLUDED CONTROL VARIABLES		
clearance rate for burglaries	0 [.006]	0 [.005]
integral of income distribution	0.33 [.87]	1.12 [.704]
sq. of integral of income dist.	-0.01 [.047]	-0.06 [.038]
percent urban	0.67 [.531]	1.30*** [.43]
log of population	0.26*** [.069]	0.15*** [.056]
percent immigrant	-23.19*** [4.861]	-19.18*** [3.936]
percent black	1.32*** [.514]	4.71*** [.416]
percent hispanic	-2.33*** [.419]	-1.39*** [.34]
percent of days above 90 deg.	-0.11*** [.025]	-0.04** [.02]
sq. of percent of days above 90	0.00*** [.001]	0.00** [.001]
percent of days below 32 deg.	-0.03** [.014]	-0.02 [.012]
sq. of percent of days below 32	0 [0]	0 [0]
percent of households subsidized	3.45 [3.98]	3.19 [3.223]
percent with college degree	-3.51*** [1.298]	-1.34 [1.051]
N	284	284
R - square	0.5955	0.733
adj. R - square	0.57	0.716

indicates significance at the 5% level, *indicates significance at the 1% level.



Table IV - 2SLS Regression Results (Racial Segregation)

Variable	Dependant Variable									
	std. burglary rate		std. larceny rate		std. motor veh. theft rate		std. robbery rate		std. agg. assault rate	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
std. racial dissimilarity index	0.05		-0.01		-0.21		0.23**		0.33**	
	[.14]		[.151]		[.133]		[.113]		[.16]	
std. racial isolation index		0.08		0.01		-0.25*		0.23*		0.36**
		[.149]		[.162]		[.142]		[.121]		[.169]
1999 clearance rate (for rel. crime)	-0.04***	-0.04***	-0.03***	-0.03***	-0.02***	-0.02***	-0.01***	-0.01***	-0.01*	0
	[.007]	[.007]	[.007]	[.007]	[.004]	[.004]	[.003]	[.003]	[.003]	[.003]
integral of income distribution	1.65*	1.57	2.57**	2.56**	2.97***	3.20***	2.21***	2.01**	1.58	1.26
	[.962]	[.98]	[1.021]	[1.039]	[.914]	[.928]	[.779]	[.793]	[1.07]	[1.069]
sq. of integral of income dist.	-0.07	-0.07	-0.12**	-0.12**	-0.15***	-0.16***	-0.11***	-0.10**	-0.07	-0.05
	[.052]	[.053]	[.055]	[.056]	[.049]	[.05]	[.042]	[.043]	[.058]	[.057]
percent urban	1.76***	1.69***	2.17***	2.15***	2.40***	2.57***	1.91***	1.77***	0.8	0.56
	[.597]	[.622]	[.63]	[.657]	[.572]	[.592]	[.482]	[.502]	[.662]	[.676]
log of population	-0.13	-0.14	-0.15	-0.16*	0.47***	0.47***	0.20***	0.23***	-0.07	-0.04
	[.094]	[.086]	[.1]	[.092]	[.09]	[.082]	[.076]	[.07]	[.106]	[.096]
percent immigrant	-6.03	-5.76	-8.44	-8.11	-14.91***	-14.74***	5.61	4.72	2.58	1.72
	[6.092]	[5.943]	[6.45]	[6.286]	[5.794]	[5.625]	[4.918]	[4.796]	[6.77]	[6.465]
percent black	4.25***	3.93***	2.69***	2.62**	3.41***	4.31***	4.90***	4.11***	2.71***	1.45
	[.593]	[.95]	[.634]	[1.032]	[.568]	[.9]	[.48]	[.766]	[.661]	[1.058]
percent hispanic	0.68	0.69	0.57	0.62	-0.21	-0.1	1.38***	1.17***	2.57***	2.30***
	[.615]	[.546]	[.657]	[.584]	[.588]	[.525]	[.495]	[.442]	[.688]	[.598]
percent of days above 90 deg.	0.07**	0.07**	0.08**	0.09***	-0.01	0	0.06**	0.05**	0.12***	0.10***
	[.034]	[.03]	[.037]	[.032]	[.033]	[.029]	[.028]	[.024]	[.039]	[.033]
sq. of percent of days above 90	-0.00*	-0.00**	0	0	0	0	-0.00***	-0.00**	-0.00***	-0.00***
	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]
percent of days below 32 deg.	0.01	0.01	0.05***	0.05***	0.01	0.01	0.04***	0.04***	-0.04**	-0.05***
	[.016]	[.015]	[.016]	[.016]	[.015]	[.015]	[.012]	[.012]	[.017]	[.017]
sq. of percent of days below 32	0	0	-0.00**	-0.00**	0	0	-0.00***	-0.00***	0.00**	0.00**
	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]
percent of households subsidized	-10.35**	-10.44**	-2.77	-2.83	-6.86	-6.83	-1.62	-1.52	-4.98	-4.93
	[4.437]	[4.436]	[4.735]	[4.735]	[4.227]	[4.212]	[3.572]	[3.578]	[4.942]	[4.84]
percent with college degree	-0.42	-0.48	3.29**	3.35**	-2.16	-1.77	1.28	0.76	2.07	1.36
	[1.566]	[1.476]	[1.672]	[1.575]	[1.487]	[1.4]	[1.259]	[1.19]	[1.745]	[1.61]
N	284	284	284	284	284	284	284	284	284	284
R - square	0.4824	0.4822	0.3908	0.3894	0.5544	0.5565	0.6742	0.6726	0.3428	0.3691
adj. R - square	0.453	0.453	0.357	0.355	0.529	0.532	0.656	0.654	0.306	0.334

*indicates significance at the 10% level, **indicates significance at the 5% level, ***indicates significance at the 1% level.

Table V - OLS Regression Results (Income Segregation)

Variable	Dependant Variable									
	std. burglary rate		std. larceny rate		std. motor veh. theft rate		std. robbery rate		std. agg. assault rate	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
std. income dissimilarity index	-0.06 [.076]		0.04 [.081]		0.02 [.07]		0.05 [.063]		-0.06 [.083]	
std. income isolation index		-0.09 [.056]		-0.01 [.06]		0 [.052]		0.01 [.047]		-0.08 [.062]
1999 clearance rate	-0.04*** [.007]	-0.04*** [.007]	-0.03*** [.006]	-0.03*** [.006]	-0.02*** [.004]	-0.02*** [.004]	-0.01*** [.003]	-0.01*** [.003]	-0.01** [.003]	-0.01** [.003]
integral of income distribution	1.86* [.992]	2.05** [.983]	2.43** [1.057]	2.61** [1.052]	2.82*** [.918]	2.90*** [.913]	2.12*** [.823]	2.24*** [.82]	1.91* [1.081]	2.03* [1.073]
sq. of integral of income dist.	-0.08 [.053]	-0.09* [.053]	-0.11** [.057]	-0.12** [.056]	-0.14*** [.049]	-0.15*** [.049]	-0.11** [.044]	-0.11*** [.044]	-0.09 [.058]	-0.09 [.057]
percent urban	1.93*** [.614]	1.96*** [.593]	2.06*** [.651]	2.18*** [.631]	2.21*** [.573]	2.26*** [.556]	1.95*** [.509]	2.05*** [.494]	1.15* [.669]	1.14* [.646]
log of population	-0.1 [.062]	-0.1 [.061]	-0.16** [.066]	-0.16** [.066]	0.37*** [.058]	0.37*** [.058]	0.32*** [.051]	0.32*** [.051]	0.11 [.067]	0.11 [.067]
percent immigrant	-8.14 [5.546]	-8.77 [5.443]	-7.45 [5.931]	-8.41 [5.847]	-10.25** [5.137]	-10.67** [5.061]	1.81 [4.598]	1.1 [4.54]	-5.1 [6.047]	-5.37 [5.939]
percent black	4.51*** [.575]	4.69*** [.569]	2.54*** [.613]	2.70*** [.609]	2.96*** [.537]	3.03*** [.535]	5.18*** [.478]	5.28*** [.477]	3.49*** [.628]	3.61*** [.622]
percent hispanic	0.55 [.456]	0.65 [.459]	0.58 [.485]	0.61 [.491]	0.4 [.427]	0.41 [.432]	0.68* [.377]	0.69* [.382]	1.63*** [.498]	1.71*** [.503]
percent of days above 90 deg.	0.06** [.028]	0.05* [.028]	0.09*** [.03]	0.08*** [.03]	0.02 [.026]	0.02 [.026]	0.03 [.023]	0.03 [.023]	0.07** [.03]	0.07** [.03]
sq. of percent of days above 90	-0.00* [.001]	-0.00* [.001]	0 [.001]	0 [.001]	0 [.001]	0 [.001]	-0.00* [.001]	-0.00* [.001]	-0.00** [.001]	-0.00** [.001]
percent of days below 32 deg.	0.01 [.016]	0.01 [.015]	0.05*** [.017]	0.05*** [.016]	0.01 [.014]	0.01 [.014]	0.04*** [.013]	0.04*** [.013]	-0.04*** [.017]	-0.04*** [.017]
sq. of percent of days below 32	0 [0]	0 [0]	-0.00** [0]	-0.00** [0]	0 [0]	0 [0]	-0.00*** [0]	-0.00*** [0]	0.00** [0]	0.00** [0]
percent of households subsidized	-10.43** [4.398]	-10.98** [4.395]	-2.58 [4.728]	-2.9 [4.745]	-7.64* [4.086]	-7.77* [4.098]	-0.38 [3.64]	-0.53 [3.655]	-3.95 [4.801]	-4.38 [4.809]
percent with college degree	-0.25 [1.531]	0.47 [1.587]	3.04* [1.631]	3.45** [1.698]	-1.38 [1.419]	-1.2 [1.477]	-0.07 [1.27]	0.14 [1.322]	1.07 [1.674]	1.61 [1.741]
N	284	284	284	284	284	284	284	284	284	284
R - square	0.4864	0.4903	0.3907	0.3901	0.5796	0.5795	0.6585	0.6578	0.3742	0.3766
adj. R - square	0.458	0.462	0.357	0.356	0.556	0.556	0.639	0.639	0.339	0.342

*indicates significance at the 10% level, **indicates significance at the 5% level, ***indicates significance at the 1% level.

Table VI - First Stage of 2SLS Regression Results (Income Segregation)

Variable	Dependant Variable	
	standardized dissimilarity index	standardized isolation index
	(a)	(a)
EXCLUDED VARIABLES		
fraction of housing assistance via public housing	0.40** [.174]	0.42* [.236]
log of number of local governments	0.12*** [.038]	0.09* [.051]
share of local revenue coming from Federal Gov't.	-0.47 [.37]	-0.09 [.501]
NON-EXCLUDED CONTROL VARIABLES		
clearance rate for burglaries	0 [.005]	0 [.007]
integral of income distribution	3.37*** [.758]	4.10*** [1.028]
sq. of integral of income dist.	-0.18*** [.041]	-0.19*** [.055]
percent urban	2.42*** [.464]	1.84*** [.629]
log of population	-0.04 [.06]	-0.06 [.081]
percent immigrant	-20.10*** [4.239]	-19.92*** [5.748]
percent black	2.60*** [.448]	3.30*** [.607]
percent hispanic	0.69* [.366]	1.63*** [.496]
percent of days above 90 deg.	-0.05** [.022]	-0.08*** [.03]
sq. of percent of days above 90	0.00** [.001]	0.00** [.001]
percent of days below 32 deg.	0.02 [.012]	0.01 [.017]
sq. of percent of days below 32	0 [0]	0 [0]
percent of households subsidized	-5.78* [3.471]	-10.30** [4.707]
percent with college degree	7.37*** [1.132]	12.53*** [1.535]
N	284	284
R - square	0.5566	0.3773
adj. R - square	0.528	0.338

*indicates significance at 10% level, **indicates significance at 5% level, ***indicates significance at 1% level.



Table VII - 2SLS Regression Results (Income Segregation)

Variable	Dependant Variable									
	std. burglary rate		std. larceny rate		std. motor veh. theft rate		std. robbery rate		std. agg. assault rate	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
std. income dissimilarity index	0.13		0.03		-0.45		0.50*		0.67*	
	[.307]		[.325]		[.301]		[.28]		[.383]	
std. income isolation index		0.14		0.11		-0.43		0.44		0.58
		[.316]		[.335]		[.313]		[.299]		[.433]
1999 clearance rate (for rel. crime)	-0.04***	-0.04***	-0.03***	-0.03***	-0.02***	-0.02***	-0.01**	-0.01**	-0.01	0
	[.007]	[.007]	[.007]	[.007]	[.004]	[.004]	[.003]	[.004]	[.003]	[.004]
integral of income distribution	1.24	1.07	2.47	2.12	4.45***	4.69***	0.63	0.46	-0.59	-0.72
	[1.43]	[1.657]	[1.509]	[1.739]	[1.416]	[1.657]	[1.272]	[1.535]	[1.773]	[2.201]
sq. of integral of income dist.	-0.05	-0.04	-0.12	-0.1	-0.23***	-0.23***	-0.03	-0.03	0.04	0.04
	[.076]	[.082]	[.08]	[.086]	[.075]	[.082]	[.068]	[.076]	[.095]	[.108]
percent urban	1.49	1.54*	2.09**	1.97**	3.34***	3.02***	0.9	1.31*	-0.59	0.03
	[.946]	[.823]	[1.004]	[.863]	[.937]	[.831]	[.843]	[.758]	[1.17]	[1.058]
log of population	-0.11*	-0.11*	-0.16**	-0.17**	0.40***	0.39***	0.29***	0.30***	0.05	0.07
	[.066]	[.066]	[.07]	[.069]	[.066]	[.067]	[.059]	[.061]	[.081]	[.083]
percent immigrant	-4.74	-4.44	-7.69	-6.28	-19.15**	-18.62**	9.95	8.84	8.41	6.27
	[7.898]	[8.041]	[8.327]	[8.402]	[7.831]	[8.081]	[7.021]	[7.413]	[9.741]	[10.364]
percent black	3.97***	3.80***	2.58**	2.26	4.34***	4.63***	3.90***	3.68***	1.36	1.16
	[1.054]	[1.316]	[1.124]	[1.395]	[1.035]	[1.312]	[.936]	[1.221]	[1.303]	[1.759]
percent hispanic	0.48	0.34	0.59	0.46	0.57	0.97	0.51	0.12	1.33**	0.81
	[.475]	[.627]	[.501]	[.659]	[.474]	[.632]	[.424]	[.584]	[.586]	[.838]
percent of days above 90 deg.	0.07**	0.07*	0.09**	0.10**	-0.01	-0.02	0.06**	0.07*	0.11***	0.13**
	[.033]	[.04]	[.036]	[.043]	[.033]	[.04]	[.03]	[.038]	[.041]	[.054]
sq. of percent of days above 90	-0.00*	-0.00*	0	0	0	0	-0.00**	-0.00**	-0.00***	-0.00**
	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.001]	[.002]
percent of days below 32 deg.	0.01	0.01	0.05***	0.05***	0.02	0.01	0.02	0.03**	-0.06***	-0.05***
	[.018]	[.017]	[.019]	[.017]	[.018]	[.017]	[.016]	[.015]	[.022]	[.021]
sq. of percent of days below 32	0	0	-0.00*	-0.00*	0	0	-0.00*	-0.00**	0.00***	0.00**
	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]
percent of households subsidized	-9.50**	-8.82*	-2.65	-1.78	-10.08**	-11.66**	2	3.52	-0.19	1.86
	[4.7]	[5.37]	[5.037]	[5.73]	[4.669]	[5.376]	[4.223]	[5.019]	[5.778]	[7.02]
percent with college degree	-1.52	-2.38	3.14	2.04	1.92	3.94	-3.27	-5.14	-4.04	-6.45
	[2.589]	[4.118]	[2.73]	[4.339]	[2.553]	[4.095]	[2.372]	[3.906]	[3.237]	[5.642]
N	284	284	284	284	284	284	284	284	284	284
R - square	0.4753	0.4576	0.3906	0.3816	0.5086	0.4775	0.593	0.5499	0.1944	0.1155
adj. R - square	0.446	0.427	0.356	0.347	0.481	0.448	0.57	0.525	0.149	0.066

*indicates significance at the 10% level, **indicates significance at the 5% level, ***indicates significance at the 1% level.