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TRANSFER PROGRAMS AND CRIME

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I. INTRODUCTION

Growing concern in 1820s Paris about the "apparent failure of French penal strategies" prompted calls to focus more attention on the "root causes" of crime, such as poverty and income inequality (Beirne, 1987, p. 1143). In the 1930s, the "Chicago School" of Sociology added to this list of potential root causes the geographic concentration of poverty, which was thought to contribute to a loss of informal social control (Shaw and McKay, 1942). Similar concerns about the effectiveness of mass incarceration relative to its alternatives are now common in modern-day America as well. This concern has been prompted in part by the 700% growth in America's prison population between 1970 and 2005 (Pew Charitable Trusts, 2007), which has largely been due to changes in sentencing and parole policies (Raphael, 2007).

In this chapter, we review what is known about how transfer programs affect crime in modern American society. As in 19th century France, criminal offending and victimization rates in America are very disproportionately concentrated among disadvantaged people living in distressed areas. For example, the 2003 homicide rate in Hyde Park – the racially and economically mixed neighborhood that houses the University of Chicago – was 3 per 100,000. The homicide rate in nearby Englewood, where nearly half of residents are poor and 99 percent are African-American, was 15 times as high (45 per 100,000). The 1996 homicide victimization rate for high school dropouts was 50 percent higher than for high school graduates, while the homicide rate for black men was 15 times as high as the rate for white men (Cook and Ludwig, 2000, p. 22).

Our focus in this chapter is mainly on transfer programs intended to improve the resources and material well-being of families. While these policies are not primarily designed to reduce crime, many people believe they may have the secondary benefit of reducing the incentives for people to commit crime to meet their material needs and desires. In addition, poverty is strongly correlated with a range of child outcomes such as cognitive, socio-emotional and behavioral skills that previous research has found to be predictive of future criminal involvement. As a result, transfer programs could also

potentially reduce crime by improving the developmental environments and hence outcomes of poor children. The possibility that crime might be influenced by the geographic concentration of poverty, not just the overall level of poverty in a society, suggests that means-tested housing programs might be particularly relevant for crime. These programs represent a sizable share of America's safety net: Federal spending in 2006 on housing assistance for the poor was around $40 billion, substantially more than the $28 billion spent on TANF.[1]

The disproportionate concentration of crime among poor people in high-poverty areas need not imply, however, that crime rates will decline as a result of social policies designed to change either individual or neighborhood poverty. Observed correlations between criminal behavior and either family- or neighborhood-level disadvantage may simply reflect the influences of other family attributes that directly affect both youth crime and how much income families have or where they choose to live. Of course at extreme levels, poverty itself must surely matter. No one can believe that starvation, disease and homelessness can be anything but harmful for children's developmental and criminal outcomes and lead to desperate acts by teens and adults. At the same time, the behavioral effects of additional family income presumably must decline as family income increases. The relevant question for public policy, then, is about the impacts on crime from incremental changes to transfer programs that affect the level or concentration of poverty within the ranges that we observe in modern America.

Our reading of the available research suggests there is now sufficiently strong empirical evidence to accept the idea that changes in family income and neighborhood disadvantage generated by some contemporary policy options in the U.S. do have a causal effect on crime. For example, it seems to us likely that the overall volume of crime, particularly violent crime, could be reduced by

1 The U.S. House of Representatives Ways and Means Committee "Green Book" for 2008 reports that a total of $42.2 billion was spent on housing programs by the U.S. Department of Housing and Urban Development, although part of the $7 billion spent on block grant programs by HUD may go to non-housing activities such as crime prevention or child care under the Community Development Block Grant program. The U.S. Department of Education also spends around a half-billion dollars per year on rental assistance to rural families in the Section 521 program; see http://www.obpa.usda.gov/budsum/FY10budsum.pdf. Some low-income homeowners may also receive a tax subsidy through the mortgage interest deduction if they itemize.

offering housing vouchers to families currently living in distressed public housing projects. Most housing economists believe that the direct financial costs to the government of this policy shift would be zero or even negative. However there are limits to the amount of crime reduction that can be achieved by trying to de-concentrate poverty in America because of limits in what we know about how to de-concentrate poverty. Giving housing vouchers to public housing families enables them to move to lower-poverty areas, but just a small share of families in America live in public housing. In contrast, giving vouchers to families who are already living in private-market housing causes remarkably little change in the types of neighborhoods in which these families live.

Another policy lever that seems capable of reducing crime involves increasing the material well-being of poor families by increasing the generosity or enrollment rates of existing transfer programs such as housing vouchers, food stamps, Medicaid or the Earned Income Tax Credit (EITC). Our reading of the available empirical evidence suggests that among very low-income families, a 50 percent increase in income leads to a decline in youth arrests of around 20 percent, with a similarly sized proportional decline in violent crimes specifically. The available data suggest this income-crime link could be due in part to an income effect on "labor supply" to illegal activities, and is probably not due to the effects of increased income on academic outcomes. Unfortunately the data are too limited to be informative about whether impacts on socio-emotional and behavioral skills of youth is an important mechanism of action behind the income-crime link. Whatever the underlying mechanism, recent research seems to provide reasonably strong support for the long-standing hypothesis that individual poverty contributes to crime. What is more difficult to determine at present is whether transfer programs are the most cost-effective way to reduce crime compared to alternative strategies.

The remainder of the chapter proceeds as follows. The next section provides some background, contrasting the dramatic increase in America's incarceration rate over the past several decades with the relatively meager improvements (and perhaps even decline) in economic well-being for people at the bottom rung of American society. We also note that neither time-series trends in aggregate measures

nor cross-country comparisons provide any clear evidence about the potential importance of root causes for the prevalence of crime. More careful empirical analysis is required to isolate the effects of the level or geographic concentration of poverty on crime. The third section discusses the various pathways through which poverty, income inequality or concentrated disadvantage might affect crime. The fourth section turns to the empirical evidence on a variety of social policies, including monetary transfers via earnings supplements and housing vouchers designed to mitigate the geographic concentration of poverty. The final section of the chapter discusses the implications of the research reviewed here for the most cost-effective ways to reduce crime in America.

II. DESCRIPTIVE PATTERNS IN POVERTY AND CRIME

Aggregate time-series data for the United States makes clear that "root causes" can at best provide only partial explanations for why people engage in crime. Crime rates dramatic oscillations over time that are not closely matched by the overall poverty rate, measures of the geographic concentration of poverty, or spending levels on different types of transfer programs. This point is reinforced by looking across countries as well: countries that either spend relatively more on social programs or have lower poverty rates or both do not consistently have relatively lower crime rates.

Figure 1 shows that despite major changes in anti-poverty policies since the 1970s, the overall poverty rate has held fairly steady at around 13 percent over this time period. Figure 1 also shows that over this same time period, income inequality, measured as the ratio of incomes for households at the 90^{th} percentile of the distribution divided by the income of households at the 10^{th} percentile of the distribution (the "90/10 ratio"), has increased substantially (see also Autor, Katz and Kearney, 2008).

Income segregation across neighborhoods has also been increasing steadily since the 1970s. This can be seen in Figure 2, which shows steady increase in what Watson (2009) terms the Centile Gap Index (CGI). The CGI measures how far the average family income within a neighborhood (Census tract) deviates in percentile terms from the median tract family income, compared to how far it would deviate under perfect integration. The figure also shows some increase over time in a different

measure of isolation, the exposure of the bottom quintile of the income distribution to itself.

Over this same time period, total spending on social programs increased substantially, from $59 billion in 1968 (2002 dollars) to $373 billion by 2002. Spending on medical benefits increased most sharply over this time period (Figure 3), but spending on cash aid has also increased substantially. While spending on means-tested housing programs specifically has stagnated since the mid-1970s, the total number of homeowners and renters receiving housing assistance has increased (Figure 4). Nevertheless, even now only around 28 percent of income-eligible households receive means-tested housing assistance (Olsen, 2003). Also relevant for present purposes is the fact that the mix of means-tested housing programs has changed over time (Quigley, 2000, Olsen, 2003). Over the past several decades, an increasingly large share of housing assistance is delivered in the form of housing vouchers, which provide households with a subsidy to lease a unit of their own choosing in the private housing market, rather than public housing or other forms of project-based housing. Given long wait-lists for housing assistance in most cities, vouchers essentially offer families a "take-it-or-leave-it" offer to live in a given unit in a given location. As we discuss further below, families with housing vouchers live in lower-poverty areas compared to those in public or project-based housing (see also Olsen, 2003).

While it might be tempting to conclude from the discussion so far that substantial increases in social spending have had little impact on social problems, it is important to recall that the official poverty definition in the U.S. excludes the value of many of the benefits that poor families receive from the government (see for example Citro and Michael, 1995). It also seems to be the case that a disproportionate share of social spending went to the non-poor (Scholz, Moffit and Cowan, 2009).

At the very least, the condition of blacks in America has improved over the past several decades on some measures. Figure 1 above shows that since the early 1990s, the poverty rate among blacks has declined by nearly a third (from 33 to 24 percent). Figure 5 shows that since 1970, the amount of neighborhood racial segregation in America has declined in U.S. metropolitan areas. This figure, taken from Glaeser and Vigdor (2003), shows the dissimilarity index, defined as the proportion

of blacks who would need to change census tracts in order to achieve perfect integration (so that the share of each tract that was black exactly equaled the share that was black of the overall metropolitan area). These encouraging social trends for blacks are potentially important given the very disproportionate involvement of blacks in crime as both victims and offenders.

Crime rates have been much more cyclical over the past several decades (Figure 6) than either the overall share of Americans living in poverty or the different measures of neighborhood segregation shown in Figures 2 and 5. Our data on crime trends come from the FBI's Uniform Crime Report (UCR) system for homicides, all serious (Part 1) violent crimes (homicide, rape, robbery, aggravated assault), and all serious property crimes (motor vehicle theft, burglary, and larceny), as well as survey reports on crime victimizations from the National Crime Victimization Survey (NCVS). To the extent to which there is any visible evidence of an association between changes in social conditions and crime it is limited to the concurrent drop over the 1990s in both crime rates (Figure 6) and the poverty rate for blacks (Figure 1), although this pattern falls far short of definitive proof of a causal relationship since both measures could be declining over this period for some other reason.

Another place one might look for prima facie evidence that root causes contribute to crime is comparisons across countries. Compared to most other developed nations, the U.S. spends a much lower share of its GDP on social programs for the non-elderly, and has a much larger proportion of its population with incomes below 50 percent of the median.[2] Deriving comparable measures of crime rates across countries is more difficult because of differences in how countries define different crimes and the willingness of citizens to report crime to police or on victimization surveys. But with this

2 Data from the Luxembourg Income Study (LIS) shows the proportion with incomes below 50 percent of median for selected countries are: U.S.: 17% Mexico, 20%; Ireland, 16.5%; Australia, 13%; Italy, 13%; U.K., 12%; Canada, 11%; Germany, 8%; France, 7%; Sweden, 6.5%. The overall average across the LIS is 10.8% (Burtless and Smeeding, 2007). Three percent of U.S. GDP goes to non-elderly social programs, compared to 6 percent in other Anglo-Saxon countries and 12+ percent in Northern European or Scandinavian countries (Burtless and Smeeding, 2007).

qualification in mind, data assembled by the United Nations suggests that crime rates in the U.S. are not substantially different from what we see in other developed nations.[3]

III. CONCEPTUAL FRAMEWORK

Popular impressions of how poverty contributes to crime seem to focus mostly on the direct, immediate financial benefits of crime. But poverty and its geographic concentration might also affect the developmental trajectories of children in ways that affect their later proclivity towards crime. Understanding what mechanisms are responsible for the association between poverty and crime is critical to determining the most cost-effective policy response.

A. The Potential Effects of Family Poverty

When most people think of the root causes of crime, they probably imagine that the lack of some minimum level of material resources necessary for survival could cause desperation-driven crime (see Figure 7). This common-sense view has led many people over the past several centuries to argue for increased income transfers as an important element of any crime-prevention strategy.

A different way in which poverty might create crime is by affecting the environments that shape the development of children's cognitive, socio-emotional and behavioral skills. Previous research suggests, for example, that the IQ scores of criminal offenders tend to be between one-half and two-thirds of a standard deviation lower than that of the general population (for some reason, these disparities tend to be somewhat larger for verbal than non-verbal intelligence), that more serious offenders have yet lower IQ scores still, and that IQ might be most malleable early in life (Herrnstein, 1995, pp. 49-50). Measures of intelligence may predict criminality because people with higher scores are likely to have better labor market prospects. The link between cognitive and labor market outcomes

3 For example in 1999 the overall rate per 100,000 inhabitants of crimes reported in official police statistics was 8,517 in the U.S. compared to 10,061 in England and Wales. The total number of recorded assaults in 1999 per 100,000 inhabitants was 805 in the U.S. compared to 833 in England and Wales (United Nations Seventh Survey on Crime Trends and the Operations of Criminal Justice Systems, 1998-2000; http://www.unodc.org/pdf/crime/seventh_survey/7pv.pdf). The one crime for which the U.S. is clearly an outlier compared to most other developed nations is homicide, which is probably due to the relatively greater involvement of guns in violent crime in the U.S. (see Zimring and Hawkins, 1998).

may be mediated in part through a positive relationship between cognitive ability and schooling attainment, which has been shown to be causally related to criminal behavior (Lochner and Moretti, 2004). Alternatively, people with relatively higher scores on intelligence measures may also better appreciate the consequences of their actions. They may also have higher levels of what psychologists and neuro-scientists call executive functioning, which is related to self-regulation skills such as "inhibitory control, strategies of problem solving, memory, and self-monitoring" (Posner and Rothbart, 2007, p. 80). Previous research has shown that a range of socio-emotional and behavioral skills related to aggression, self-control, self-efficacy, moral reasoning, attribution of blame, and emotional coping, in some cases even when measured fairly early in life, are predictive of crime and related behaviors (Agnew, 1992, Herrnstein, 1995, Heckman, Stixrud and Urzua, 2006).

One common argument is that additional income may allow parents to make more developmentally productive investments in their children, which could improve these kinds of skills. Of course, since even parents who care deeply about their children's developmental outcomes do not care exclusively about those outcomes, parents who receive additional income are likely to spend at least part of this extra money on what economists call "normal goods" (any good whose consumption increases when income increases) that are not necessarily developmentally productive. In this case, only some fraction of each dollar transferred would be expected to improve child outcomes. Mayer (1997) confirms this idea. She finds that when low-income parents get additional income, they tend to spend it largely on additional housing expenditures, transportation, and food consumed away from home – not the physical inputs that seem most related to child well-being, such as books or activities like museum visits. Moreover, she notes that the goods which appear to be most developmentally productive for children do not require much money, raising questions about the degree to which parents understand the child development "production function."

We should note, though, that even goods that may not be developmentally productive *per se* could reduce the risk of criminal offending or victimization by changing how and where they spend

their time – what criminologists call the "routine activities" that affect the likelihood potential victims and offenders will meet each other in situations without the kind of supervision that would prevent crime (Cohen and Felson, 1979). One can imagine, for example, that additional spending on private transportation (i.e., a car) might not boost a child's achievement test scores, but could reduce the risk that the child is victimized by a gang while walking to school, or even feels the need to join a gang for protection along that walk.

Alternatively, increased income could reduce the risk of crime by reducing stress and related mental health problems among parents, potentially affecting the quality of parenting and supervision that children experience. Previous research does seem to suggest that poverty status is positively correlated with the likelihood of suffering from depression and other mental health disorders.[4]

But whether across-the-board increases in the generosity of transfer programs would reduce the overall volume of crime in practice is actually quite difficult to predict on the basis of social science theory alone. For example, dating back at least to the 1930s, sociologists have argued that criminal behavior is more strongly affected by relative poverty than absolute poverty. "Strain theory" and its variants suggest that people become frustrated when they are unable to achieve goals like wealth and status, particularly when faced with others who are more successful (Merton, 1938, Agnew, 1992). Whether increased social policy spending on the poor would increase crime in this case depends in part on who the poor use as their reference point, since an across-the-board increase in for example the Earned Income Tax Credit (EITC) would raise the incomes of the poor compared to the non-poor, but

4 Moore et al. (2006) find that 10.4 percent of children in families under 200 percent of the poverty line have mothers with depressive symptoms; for families over 400 percent of the poverty line, the proportion drops to 2.3 percent. Data from the National Comorbidity Survey – Replication (NCS-R) suggests that minorities and people with fewer years of schooling attainment are if anything somewhat less likely than others to have had a mental health disorder over their lifetime, but are somewhat more likely to have a disorder in the past 12 months (Kessler et al., 2003, 2005). One explanation for this pattern is that more disadvantaged populations seem less likely than others to either receive mental health treatment or to receive treatment from a mental health specialist (Wang et al., 2005). Frank and Meara (2009) use data from the NLSY79 and find that maternal mental health is strongly correlated with negative child outcomes, even when analyses are done that compare siblings within the same families.

might not do very much to re-order people in the bottom quartile or half of the income distribution.[5]

Another reason why increased income transfers need not reduce crime is that at least part of this additional income may be spent on goods that increase the risk of criminal offending or victimization, such as drugs and alcohol. We see this pattern when macroeconomic conditions affect income. For example, research suggests that alcohol consumption (and homicides) decrease during economic downturns (Ruhm, 1995; Ruhm and Black, 2002; see also Evans and Moore, 2009). A more subtle issue arises from the recognition that there is essentially a "demand" as well as a "supply" side in the "market" for crime (Ehrlich, 1981, Cook, 1986).[6] That is, the overall level of crime in an area is a function of the behavior of potential victims as well as potential criminals. Increased transfer payments might reduce how crime-prone potential offenders are, all else equal, but will also make potential victims more attractive targets for crime as they spend some of these resources on new televisions, cars, clothes, jewelry and so forth.

B. Effects of Concentrated Poverty

Dating back at least to the work of the Chicago School of Sociology in the 1930s, many social scientists have argued that it is the geographic concentration of poverty, not a family's own poverty status *per se*, that may be most important in determining the risk of criminal behavior. Poor families are obviously at greatly elevated risk of living in disadvantaged and dangerous neighborhoods. For example, Mayer (1997, pp. 102-3) shows that families in the bottom income quintile are about 16 percentage points more likely than those in the third quintile to report living in a neighborhood that has a "crime problem."

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5 If universal cultural goals like wealth and status are most relevant, we would suspect that the more overall income inequality that exists in a society as a whole, the more the poor should be inclined towards crime. On the other hand, if the success of individuals with whom a person has the most contact is what creates strain, we may think that income disparities within a community are more relevant than country-wide income inequality. There is empirical evidence supporting both views (Brush, 2007; Fajnzylber, Lederman and Loayza, 2002; Kelly, 2000; Kuegler, 2009).

6 The "quantity" in this case is the crime rate, and the "price" is the net returns to crime, that is, the benefits to crime (loot plus non-monetary rewards to crime) minus expected punishment and other costs of participating in criminal behavior. The supply-of-offense schedule slopes up as in the standard Becker (1968) economic model of crime. Previous research suggests that the "demand-for-offense" schedule is downward sloping because prevention activities by potential victims tend to increase with the crime rate (Ehrlich and Becker, 1972, Clotfelter, 1978, Philipson and Posner, 1996).

Perhaps the most obvious way in which neighborhood environments could affect children's developmental outcomes and criminal behavior is by affecting the quality of local public institutions, including schools and police protection (Jencks and Mayer, 1990; see also our Figure 8 below).Alternatively, the behavior or characteristics of the adults who live within a neighborhood could affect the likelihood that youth engage in crime through informal social control, or the willingness of local adults to help enforce shared pro-social norms (Sampson, Raudenbush and Earls, 1997). Neighborhood adults might serve as positive role models who help illustrate the value of schooling and work in the (legal) labor market (Connell et al., 1995; Crane, 1991; Wilson, 1987; Sampson and Groves, 1989; Sampson, 1993). Local adults and their norms about behavior might also help shape parent's attitudes towards parenting itself. For example, Annette Lareau (2002, 2003) finds that the middle-class families she studies tend view parenting as an effort in "concerted cultivation," while many poor and working-class families in her sample view child development as the "accomplishment of natural growth," something that just happens. The contrast in parenting practices across class is particularly stark in the realm of language use. Hart and Risley (1995) find that by age three, children in professional families speak more per hour and have bigger vocabularies than the parents of children in families on welfare. Social norms might also vary across neighborhoods regarding the value of schooling and work, as in the "culture of poverty" arguments from Oscar Lewis (1959, 1966).

It is also possible that the attitudes and behaviors of one's peers, rather than of the local community adults, might be relevant in affecting either child development or criminality directly. Neighborhoods with more affluent or academically proficient children might be more developmentally supportive by providing children with more productive study-group opportunities, stronger social support for learning, or classroom learning environments where there are fewer disruptions and the teacher is better able to target instruction. Peer influences could also affect the social returns to crime, or even the actual returns. If, for example, police resources are fixed within a neighborhood, at least in

the short term, increased criminal activity by one's peers may reduce the police resources available per crime in what Kleiman (1993) terms "enforcement swamping" (see also Cook and Goss, 1996).

Although these theories seem to imply that moving children into less disadvantaged and distressed areas would be beneficial, it is possible that such a move could, in principle, have adverse effects on their developmental outcomes or criminality. In schools, the competition for grades or other pro-social rewards may be more intense in more affluent areas, as under relative deprivation or competition models (Jencks and Mayer, 1990). Outside of schools, putting a high-risk person in a wealthier neighborhood may, in fact, increase crime by increasing criminal opportunities (i.e., the additional availability of valuable theft opportunities in relatively more affluent areas).

Additionally, it is not entirely clear how moving large numbers of poor families out of poor neighborhoods and into wealthy ones would affect both the previous and new neighborhoods. These general equilibrium effects are complicated and not well understood, and raise the possibility that re-sorting families across neighborhoods could simply move crime around across neighborhoods, rather than reduce the overall level of criminal offending.

IV. EMPIRICAL EVIDENCE REGARDING SOCIAL POLICIES AND CRIME

Neither social science theory nor aggregate crime patterns provide a clear picture of how we should expect poverty or its geographic concentration to affect crime. This section reviews the empirical evidence on whether crime can be reduced through social programs designed to alleviate either individual poverty or concentrated neighborhood poverty.

Based on our conceptual framework of how poverty can negatively affect individuals, we begin with evidence on whether programs that were designed to transfer money to low-income families can reduce crime. Where direct evidence on crime is not available, we turn to measures of cognitive and non-cognitive child outcomes, both of which have been shown to be predictive of future criminal behavior. We then discuss policies designed to help low-income families move out of poor neighborhoods. In both cases, large bodies of observational evidence have clearly established that

individual and neighborhood income levels are negatively correlated with crime, and positively correlated with a variety of cognitive and socio-emotional and behavioral skills that themselves appear to be predictive of criminal behavior (Bjerk, 2008; Duncan & Brooks-Gunn, 1997; Duncan, Kalil & Ziol-Guest, forthcoming; Sampson, Morenoff & Gannon-Rowley, 2002).

Yet the fact that family income and neighborhood attributes are correlated with crime, even after conditioning on all observable attributes, is not conclusive evidence that these risk factors contribute causally to criminal behavior. It may be that other omitted variables actually drive both poverty and crime. Distinguishing between the causal effects of poverty or its geographic concentration and other factors is crucial for public policy purposes. If poverty is a byproduct of some other individual- or family-level characteristics that also lead to criminal behavior, providing additional income or re-sorting families across different types of neighborhoods may not have much impact on crime. In our review of the evidence, we try to focus on studies that attempt to overcome the selection bias problem by exploiting variation in family income or neighborhood conditions that is unrelated to individual or family choices.

A. **Effects of Resource Transfers to Reduce Poverty**

Several studies have tried to overcome omitted variable concerns by taking advantage of variation in family incomes over time, for example by comparing the outcomes of siblings who experienced different levels of family incomes as they were growing up. These types of studies generally provide supportive evidence for a strong protective association between family income and various developmental outcomes of children that seem to be predictive of future criminality (Duncan et al., 1998, Levy and Duncan, 1999, Blau, 1999). However one must necessarily wonder whether whatever underlying factors are generating changes in family incomes over time might also have independent effects on children's outcomes. If so, the results of these studies would not isolate the causal effects of income per se. Some studies try to overcome this concern by focusing more narrowly on income changes caused by local plant closings (Oreopolous, Page and Stevens, 2005), although it is

possible that the non-monetary effects of parental job loss (family stress, disruptive moves) in addition to the income changes themselves might be affecting children's outcomes.

Other studies have tried to overcome this omitted variables bias concern by relying on policy-induced variation in family income. For example, Mayer (1997) finds that the gap in outcomes for children living in single-parent versus two-parent households does not appear to be much different in states with generous versus less-generous AFDC benefits, which is not consistent with the hypothesis that incremental differences in family income itself causally affect children's outcomes. Dahl and Lochner (2005) take advantage of the fact that the EITC became substantially more generous over the 1990s, and that these EITC expansions generated larger changes in family income for some families than others as defined by baseline characteristics like mother's age, race, and educational attainment. They find that each $1,000 increase in family income is associated with increased children's test scores of .021 standard deviations in math and .036 standard deviations in reading. The effects are larger for minority children, equal to .036 and .048 standard deviations for math and reading, respectively. Their study, however, assumes that the only reason children in families with different observable characteristics like mother's age, race and education experience different trends over the 1990s in test scores is because some families gain more from the EITC expansions than others. One might worry then about confounding from other changes in policy or social factors that are disproportionately relevant for lower-SES families.[7]

The strongest evidence on this question combines random assignment with policy-induced variation in family resources. The Manpower Demonstration Research Corporation (MDRC) carried out 13 different employment-based welfare and anti-poverty programs that randomly assigned families

7 For example, families who would have benefited most from increases in the EITC over the 1990s may also have benefited more from the tripling over this period in federal Head Start spending (Haskins, 2003) or from the fact that over this decade the violent crime rate declined by nearly 30% and the homicide rate declined by nearly 40% (US Statistical Abstracts, 2001). Additionally, the fraction of American children covered by Medicaid increased by perhaps as much as two thirds during that period (Mann et al., 2003), and the welfare caseload declined by around one half (Sawhill et al., 2002).

into three different groups: a control group with average earnings of $11,845; mandatory employment, which was associated with a statistically insignificant increase in annual income of $230; or mandatory employment plus supplementary earnings, which increased income by $1,700. Morris, Gennetian and Duncan (2005) find that only programs with generous earnings supplements have any effect on child outcomes; programs that increase work without supplementary income produce no statistically significant changes. The failure of work-only programs provides some evidence against William Julius Wilson's argument that parental work itself may improve child outcomes by imposing discipline and regularity (Wilson, 1996). Morris, Duncan and Rodrigues (2004) show that the variation across studies in impacts imply that each $1,000 increase in family income achievement test scores for children who were 2-5 years old at baseline by .06 standard deviations, has no detectable impacts on children 6-9, and may have *deleterious* impacts on children 10-15 years of age on the order of up to .11 standard deviations (see also Gennetian et al., 2002).

Importantly, much of the beneficial impact of family income on the young children in these welfare-to-work experiments seems to come from increased utilization of center-based care among families that experience higher income (Gennetian et al. 2006). This finding helps explain why the benefits of increased family income are concentrated among pre-school age children, who are in a position to benefit from utilization of center-based care services. Whether increased income would improve outcomes for preschool children in cases where the income transfers are *not* associated with increased maternal work is not clear, since Mayer (1997) suggests that, in general, families spend their extra income on things like better housing or eating out, which seem to be less developmentally productive uses of money compared to enrollment in center-based child care (Blau and Currie, 2004).

Some evidence that children's cognitive outcomes may not be affected by increases in income absent changes in maternal employment comes from the study of Chicago's housing voucher program by Jacob and Ludwig (2010). In 1997, the firm running the city's voucher program, the Chicago Housing Authority Corporation, Inc. (CHAC), opened the program's waiting list for the first time in a

dozen years. Because more than 82,000 income-eligible families applied, far more families than there were vouchers available, CHAC randomly assigned applicants to the program wait-list. More than 90 percent of the voucher applicants were living in private-market housing at baseline. These families receive a voucher subsidy (on average around $8,265 per year per family), of which they take around half in the form of reductions in out-of-pocket spending on housing (i.e. increased spending on all other goods) while the rest of the subsidy is consumed in the form of more housing. Reeder (1985) estimates the ratio of mean benefit to mean subsidy for housing vouchers to be on the order of .83, so that the average equivalent variation of a housing voucher for this sample is around $6,860 per year. Interestingly, families living in private-market housing spend almost all of the extra housing consumption on unit quality, rather than neighborhood quality – vouchers generate almost no detectable changes in neighborhood environments for these families. Put differently, for these previously-unsubsidized families, the voucher "treatment" is essentially a large resource transfer, rather than a neighborhood mobility intervention.

For private-market recipients, housing vouchers have no detectable impacts on children's cognitive outcomes, but do have beneficial impacts on non-cognitive outcomes like school persistence and avoidance of criminal activity (Jacob and Ludwig, 2010). Given the study's large sample, the zero impacts on achievement test scores are fairly precisely estimated: the 95 percent confidence intervals around these point estimates suggest the effect of a subsidy with equivalent variation of $6,860 on ITBS reading and math scores is no larger than .04 and .07 of a standard deviation, respectively – quite small considering that the welfare-to-work experiments found about a .06 standard deviation increase from only a $1000 transfer. In contrast, for older youth, voucher receipt increases the probability that male youth graduate from high school by 16 to 24 percent, and reduces arrests for male youth by about 20 percent (with similarly sized declines in violent-crime arrests specifically). Some evidence about at least one potential mechanism for this decline in arrests comes from suggestive data indicating that these male youth may also reduce their involvement in legal-market (UI-covered) employment as well.

B. Effects of Changing the Concentration of Poverty

As with individual-level poverty, the interpretation of observed correlations between the concentration of poverty and crime is complicated by the fact that most families have at least some degree of choice about where they live. Observational studies might confound the causal effects of neighborhood environments with those of hard-to-measure individual and family characteristics associated with neighborhood selection.

Perhaps the best observational study of "neighborhood effects" on crime and related developmental outcomes is the Project on Human Development in Chicago Neighborhoods (PHDCN). The PHDCN is a longitudinal study of approximately 3,000 children who were ages 0 to 18 in 1997, which includes a great deal of information about child and parent outcomes as well as the neighborhood, school and family context that these children experience over a 7 year study period. The rich set of covariate information available for the PHDCN study sample, together with the dataset's longitudinal structure, helps control for many potential confounders. Sampson, Raudenbush and Earls (1997) find that the willingness of local adults to work together to enforce shared pro-social norms, or "collective efficacy," is one of the strongest neighborhood-level predictors of violent crime. Sampson, Morenoff and Raudenbush (2005) find that differences between blacks and whites in neighborhood attributes, particularly share of the neighborhood that is immigrant and the proportion that works in professional or managerial jobs, may explain a large portion of the black-white difference in self-reported violent behavior.[8] The PHDCN data also suggest that children who witness gun violence are more likely to be involved in violent crime later on (Bingenheimer et al., 2005). Of course, as with any

8 Although we might worry that PHDCN data are self-reported, the findings are corroborated by more reliable data. After linking the PHDCN youth data to official arrest records, Kirk (2008) also finds that neighborhood characteristics have a significant impact on the probability of arrest. In this case, concentrated disadvantage is the only significant neighborhood-level predictor, both before and after controlling for self-reported offending (Kirk 2008). Unlike Sampson, Morenoff and Raudenbush (2005), however, Kirk does not control for the concentration of professionals; it is unclear if measures of disadvantage would still significantly predict arrests if he had.

observational study, the role of omitted variables that confound efforts to isolate the causal effects of neighborhood environments themselves necessarily remains a question.

Given concerns about identification in the observational literature, a great deal of policy attention has been devoted to the quasi-experimental Gautreaux mobility program in Chicago, which resulted from a 1966 racial discrimination lawsuit against the Chicago Housing Authority (CHA) filed by a public housing resident named Dorothy Gautreaux. As a result of a U.S. Supreme Court decision, the CHA began providing public housing families with housing vouchers that could be used only in neighborhoods in the city or suburbs that were less than 30 percent Black. Most families are thought to have accepted the first available apartment (Kaufman and Rosenbaum 1992). Gautreaux families who wound up moving to the suburbs experienced dramatically different neighborhood environments from those moving to other parts of the city, both with respect to socio-demographic characteristics like racial composition (an average of 96 percent white versus 99 percent black) and neighborhood safety. Relative to city movers, Gautreaux suburban movers were much less likely to consider their neighborhood dangerous at night (31 versus 71 percent, respectively), and only two percent of suburban movers reported that their new neighborhood was unsafe during the day, compared to 44 percent of city movers (Rubinowitz and Rosenbaum 2000).

While crime outcomes have not been directly examined for the Gautreaux sample, a comparison of a survey sample of 342 families in Gautreaux found that suburban movers were 75 percent less likely than city movers to have dropped out of school (20 percent versus 5 percent), more likely to be in a college track in high school (24 versus 40 percent), twice as likely to attend any college (21 percent versus 54 percent), and almost seven times as likely to attend a four-year college (4 percent versus 27 percent). The only educational attainment measure for which the suburban students did not appear to be doing significantly better than the city students was their grade point average, which could simply reflect higher grading standards in suburban schools (Rubinowitz and Rosenbaum 2000: 134-6). If we use Lochner and Moretti's (2004) estimates for the effects of schooling on crime,

these suburban-city differences in schooling outcomes suggest that arrest rates would be around 7 to 10 percent lower for suburban movers for all crimes and up to 20 or 30 percent lower for violent crimes. The Gautreaux study, however, was not a true randomized experiment. Families did have some choice in whether or not they accepted the first apartment offered, and there is some evidence that the families who ended up in the suburbs were systematically different from those who ended up in the city (Votruba and Kling, 2009).

Fortunately, the Gautreaux results helped motivate the U.S. Department of Housing and Urban Development (HUD) to carry out a large-scale randomized mobility experiment known as Moving to Opportunity (MTO). Since 1994, a total of 4600 low-income families with young children, living in public housing in five cities (Baltimore, Boston, Chicago, Los Angeles and New York) were randomly assigned into three different groups: the experimental group (offered housing vouchers to move which could only be used in census tracts with 1990 poverty rates below 10 percent), Section 8-only group (unrestricted vouchers), and a control group that did not receive any additional services under MTO but did not lose access to other social services to which they were otherwise entitled. Around 41 percent of families assigned to the experimental group relocated through the program, as did 55 percent of those assigned to the Section 8-only group.

Compared to control group families, 5 years after baseline those families assigned to the MTO experimental group lived in census tracts with 2000 poverty rates 8 percentage points lower than controls (who lived in tracts with 39 percent poor on average), with smaller impacts on share minority (nearly 5 points compared to a control mean of around 88 percent). Experimental families also lived in areas with higher levels of "collective efficacy," where, for example, experimental group families were 11 percentage points more likely than controls to say that neighbors were likely to do something if they saw local youth creating graffiti (compared to a control mean of 54 percent) (Ludwig et al., 2009).

Follow-up data measured around 5 years after baseline found that parents and children who moved through MTO felt safer than controls and experienced household victimization rates that were

around 20 percent lower than the control group's victimization rate (Orr et al., 2003). Through the first two years after random assignment, the offer of a housing voucher affected youth criminal behavior in the direction predicted by prevalent theories of social interactions: both male and female youth in the experimental group experience fewer violent-crime arrests compared with those in the control group, with intent-to-treat effects on the order of one-third of the control mean. Females are also arrested less often for other crimes as well. However, by three or four years after random assignment, the treatment effects for male and female youth diverge in a way not easily captured by the standard theories for neighborhood effects. Although the beneficial effects on most crime types persist for female youth, property crime arrests and self-reported rates of other anti-social or risky behaviors become more common for experimental than control group males (Kling, Ludwig and Katz, 2005, Kling, Liebman and Katz, 2007). Because social harm is so much more severe with violent than property crime, the net effect of MTO moves is to substantially reduce the social costs of criminal behavior by MTO youth.

Ludwig and Kling (2007) find that the largest treatment effects on violent-crime arrests (the most important outcomes for social welfare) are evident in the cities in which the MTO experimental group experienced the largest changes in percent minority. Based on the post-move survey of MTO participants, Ludwig and Kling hypothesize that this is due to the increased presence of drug markets, and the violence that accompanies them, in neighborhoods with a high concentration of minorities.

Qualitatively similar findings come from Ludwig et al.'s (2010) study of the Chicago CHAC housing voucher lottery described above. Unlike with families who are living in private-market housing at baseline, for whom voucher receipt generates a large change in household consumption but almost no change in neighborhood environments, voucher receipt for families who live in public housing at baseline generates changes in census tract characteristics of a similar magnitude to MTO. For youth who were ages 12 to 18 at baseline, the intent-to-treat effect from being offered a voucher reduces violent-crime arrests by around 24 percent, while the effect of actually leasing up with a voucher (the effects of treatment on the treated) was a 55 percent arrest reduction from the control

complier mean. In the Chicago CHAC voucher study, the results are driven by males, and there is no sign that these results dissipate over time. Importantly, there is no evidence of any increase in property-crime arrests for males at any point during the post-lottery period.

These MTO and CHAC findings are also consistent with studies of randomized lotteries for public schools of choice, which suggest that moving to lower poverty schools with higher achieving peers and better quality teachers reduces arrests, particularly for high-risk groups (Cullen, Jacob and Levitt, 2006; Deming, 2009). Our best guess is that changes in peer environments, not just school quality alone, must contribute to observed declines in criminal behavior by youth. This conclusion stems from the fact that in the CHAC data voucher receipt also leads to reduced rates of violent-crime arrest among young household heads (18-30 at baseline), who are obviously not directly affected by any changes in school quality that result from changing neighborhoods.[9]

V. POLICY IMPLICATIONS

The concern about the effect of root causes on crime goes back decades, although deriving convincing empirical evidence on this point has been quite difficult given concerns about selection bias with observational data. We believe that the empirical evidence that is now available, particularly studies that rely on policy-induced variation in social conditions, supports the idea that poverty and its geographic concentration both contribute to criminal behavior.

Much of this evidence comes from studies of housing vouchers, for which there is substantial excess demand since means-tested housing assistance is not an entitlement in the U.S. This excess demand, combined with the use of random lotteries to ration benefits, allows for the compelling analysis of several key determinants of crime. Providing housing vouchers to families already living in

9 Jacob (2004) uses variation in neighborhood environments among Chicago public housing families generated by plausibly random variation in the timing of when their housing projects were demolished by the Chicago Housing Authority. Jacob's study finds no statistically significant impact on achievement test scores, although this finding may not be inconsistent with the studies reported above, since Jacob did not directly examine criminal behavior. After all, the randomized MTO study found declines in violent-crime arrests for male and female youth, as well as declines in all other types of offenses for female youth, without detectable changes in children's achievement test scores. Note also that the studies described above all focus on examining "neighborhood effects" on families who volunteered to move, which stands in contrast to Jacob's sample of families who were all compelled to move when their housing project was demolished.

private-market housing, for example, leads to large changes in household consumption of housing and all other goods, although it does not lead to substantial changes in neighborhood quality. Providing housing vouchers to families living in public housing, on the other hand, leads to sizable changes in neighborhood socio-economic composition though it does not directly affect the family's financial resources. Adolescents in both private-market and public housing become less involved in crime when their families are offered housing vouchers, which is in large part the basis for our conclusion that both individual poverty and its geographic concentration contribute to criminal behavior.

Unfortunately, it is difficult to determine the relative importance of various potential mechanisms with the data that are available to date. In terms of the link between individual poverty and crime, suggestive evidence that short-term financial incentives may be at least part of the story comes from the fact that adolescents in households that are already living in private-market housing when they receive a housing voucher may reduce their supply of labor to the legal labor market. This pattern raises the possibility that the same sort of income effect could contribute to a decline in labor supply to illegal activity as well. The fact that we see no detectable impacts on children's achievement test scores from large voucher-induced changes in household resources would seem to rule out impacts on cognitive skills as one important developmental pathway through which income might affect crime. On the other hand previous research shows a sizable correlation between adult mental health and family income (and its correlates), and several quasi-experimental studies have found that plant closings and the opening of Indian gaming facilities are associated with changes in adult mental health (Costello et al., 2003, Dew et al., 1987, Kessler et al. 1987). A link between poverty and parent mental health, and so presumably the quality of parenting children receive, would provide one candidate developmental pathway through which poverty might affect crime.

Similarly, studies of "neighborhood effects" on crime have found that moving to a less distressed area reduces the involvement of both male and female youth in violent crime, but may increase the involvement of male youth in property offenses. This pattern seems to suggest at least

some role for the short-term financial incentives for criminal behavior, since there is likely to be more to steal in relatively more affluent neighborhoods. It is more difficult (though not impossible) to imagine a developmental story that would lead to different types of impacts for male youth on violent versus property offending. As with the effects of family resources on crime, there is also at least the possibility of developmental pathways through which neighborhoods might affect criminal behavior, since moving to a less distressed neighborhood leads to very pronounced gains in parents mental health (Kling, Liebman and Katz, 2007).

The ambiguity of precisely how income transfers or neighborhood mobility reduce crime makes policy development more difficult. If we could target the mechanisms that matter, it would likely increase the cost-effectiveness of each dollar spent. As it stands, it is not clear whether income transfers are the most cost-effective policy available to reduce crime. For example, Carlson et al.'s (2009) benefit-cost analysis of the housing voucher program and all of its impacts (not just on criminal behavior) suggest that while the benefit-cost ratio of vouchers is probably greater than 1, this ratio is unlikely to be much in excess of around 1.5. It is somewhat difficult to say how this compares to the cost-effectiveness of mass incarceration, in part because there remains considerable uncertainty about the benefits and costs to society from incarcerating the marginal prisoner (Donohue, 2007).

What does seem clear is that much higher benefit-cost ratios tend to be found with interventions that reduce crime by directly improving the developmental environments of young children (Garces et al., 2002, Schweinhart et al. 2005, Belfield et al. 2006, Campbell et al. 2002, Ludwig and Phillips 2007, Deming, 2009). This is not just because these early childhood interventions generate many other benefits to society beyond crime prevention. For example the famous Perry Preschool early childhood intervention is estimated to have a benefit-cost ratio of nearly 13 to 1, with fully 60 to 70 percent of the monetized benefits coming from reductions in criminal behavior among program participants. Moreover cost-effective skill-building programs are not just limited to those that target young children. Given the skepticism within economics about the ability to change outcomes for

high-risk adolescents, it is intriguing that research within psychology claims to find very favorable benefit-cost ratios for interventions designed to improve the socio-emotional and behavioral skills of youth as well (see for example Lipsey, Landenberger and Wilson, 2007; Pearson et al., 2002; Wilson, Bouffard and MacKenzie, 2005; and the chapter by Brent Roberts in this volume).

What probably would enjoy similarly high benefit-cost ratios are policy efforts to reduce the concentration of disadvantage in America. We feel reasonably confident that moving high-risk youth into less disadvantaged social settings can reduce their criminal behavior, since we see such impacts from school- as well as housing-mobility studies that exploit random assignment of youth to social settings (Kling, Ludwig and Katz, 2005, Cullen, Jacob and Levitt, 2006, Deming, 2009, Ludwig et al., 2009). The main concern with these types of mobility policies has to do with their potential non-monetary costs, and in particular their general equilibrium effects. In principle, the gains to the movers could be offset in part or whole by adverse impacts on people living in the baseline or destination neighborhoods. While the available systems-level evidence is limited, studies that examine the consequences of court-ordered school desegregation find that re-sorting African-American children across schools reduces black dropout rates with no detectable changes for whites (Guryan, 2004, Lutz, 2005), and may reduce the overall volume of violent crime as well (Weiner, Lutz and Ludwig, 2009).

Note that our reading of the "neighborhood effects" literature is basically the opposite of what is claimed by Hanna Rosin in her article "American Murder Mystery" in the summer 2008 issue of the *Atlantic* magazine, in which she argues that the dispersion of poor families with housing vouchers has contributed to the overall increase in violent crime in recent years in many cities around the U.S.[10] In any case learning more about the general equilibrium effects of re-sorting policies should be a top priority for research, with the recognition that the identification challenges associated with systems-level analysis are much more daunting than those associated with identifying the causal effects of moving on the movers.

10 http://www.theatlantic.com/doc/200807/memphis-crime

However the amount of crime reduction that could be achieved by de-concentrating disadvantage in America is limited by the limits on our ability to de-concentrate disadvantage. One obvious way to reduce the concentration of neighborhood poverty in the U.S. is to provide families living in public housing and other project-based housing units with housing vouchers instead. Because public housing residents live in the very poorest neighborhoods, replacing public housing with vouchers is a way to target the areas with the most concentrated poverty. It would also cost the government the same, or even less than running the current public housing system, and so the benefit-cost ratio here seems quite favorable. However, only 1 percent of all people living in metropolitan areas are in public housing, so the impact of such a policy may have a minimal effect on the overall concentration of poverty (Quillian, 2005) and hence on crime.

Very little is currently known about whether or how to get families who are already living in private-market housing to move into lower-poverty areas. Data from the Chicago voucher study described above (Jacob and Ludwig, 2009), as well as from the Experimental Housing Allowance Program of the 1970s (Struyk and Bendick, 1981) suggest that providing even massive housing voucher subsidies has little detectable impact on neighborhood environments – that is, families seem to spend almost all of their increased housing expenditures on improved unit quality rather than neighborhood quality. Part of the issue could be that the maximum voucher subsidy amount is the same for a family no matter where they move within a metropolitan area, which means that families have to trade off housing unit quality against neighborhood quality. It is possible that families searching for housing either have a difficult time assessing neighborhood quality, or do not fully appreciate the potential developmental consequences of neighborhood environments. One potential solution is to set voucher subsidy amounts at a much smaller geographic level than the metropolitan area, to allow families to afford essentially equivalent housing units in different areas. It might also be the case that social networks create a substantial amount of path dependence in people's residential choices. If true, this would suggest the potential value of mobility programs that support groups of

families to move together, rather than like in the current situation where long wait lists for housing subsidies mean just a small subset of families win the voucher lottery and have the chance to move.

Public school choice would seem to be the most feasible option for re-sorting high-risk children across social settings. However one would worry very large-scale school choice policies might induce private responses that could undo at least part of the policy-induced gains in re-sorting high-risk children into less disadvantaged social settings. There is evidence that even small changes in neighborhood composition can have disproportionate and unexpected effects. The “tipping” literature suggests once the proportion of minorities passes a certain threshold, whites may leave the area in large numbers (Schelling, 1971; Becker and Murphy, 2000; Card, Mas and Rothstein, 2008).

In sum, we believe that family and neighborhood poverty probably has a direct causal effect on crime, although evidence on the exact mechanisms at work is inconclusive. Although this conclusion is potentially exciting insofar as it implies decreasing poverty or its geographic concentration may decrease crime, beyond offering housing vouchers to families living in some of the nation’s most distressed public housing projects it is not clear that anti-poverty programs are as cost-effective as interventions designed to directly improve the developmental outcomes of disadvantaged children and adolescents. At the very least what seems clear is that mass incarceration is most definitely not the only policy option for controlling crime in America.

References

Agnew, Robert (1992). “Foundation for a general strain theory of crime and delinquency.” *Criminology*, 30(1): 47-87.

Autor, David, Lawrence F. Katz, and Melissa S. Kearney (2008) "Trends in U.S. Wage Inequality: Revising the Revisionists," *Review of Economics and Statistics* 90 (May): 300-23.

Becker, Gary (1968) "Crime and Punishment: An Economic Approach". *The Journal of Political Economy*. 76.

Becker, Gary and Kevin M. Murphy (2000). *Social Economics: Market Behavior in a Social Environment.* Cambridge, MA: Harvard University Press/Belknap.

Beirne, Piers (1987) “Adolphe Quetelt and the origins of positivist criminology.” *American Journal of Sociology*. 92(5): 1140-1169.

Belfield, Clive R., Milagros Nores, Steve Barnett, and Lawrence Schweinhart (2006) “The High/Scope Perry Preschool Program: Cost-Benefit Analysis Using Data from the Age-40 Followup.” *Journal of Human Resources*. 41(1): 162-190.

Bingenheimer, Jeffrey B., Robert T. Brennan and Felton J. Earls (2005). “Firearm violence exposure and serious violent behavior.” *Science*, 308(5726): 1323-1326.

Bjerk, David (2008). Thieves, Thugs, and Neighborhood Poverty. Robert Day School of Economics and Finance Research Paper No. 2008-17.

Blau, David (1999) “The effect of income on child development.” *Review of Economics and Statistics*. 81(2): 261-276.

Blau, David and Janet Currie (2004). "Preschool, day care, and afterschool care: Who's minding the kids?" NBER Working Paper 10670.

Burtless, Gary and Timothy M. Smeeding (2007) Poverty, Work and Policy: The United States in Comparative Perspective. Testimony prepared for the Subcommittee on Income Security and and Family Support, House Committee on Ways and Means.

Card, David, Alexandre Mas and Jesse Rothstein (2008). “Tipping and the dynamics of segregation.” *The Quarterly Journal of Economics*. 123(1): 177-218.

Carlson, Deven, Robert Haveman, Thomas Kaplan and Barbara Wolfe (2009). “The benefits and costs of the Section 8 housing subsidy program: A framework and first-year estimates.” La Follette School Working Paper No. 2009-025.

Citro, Constance F. and Robert T. Michael (editors) (1995), *Measuring Poverty: A New Approach*, Washington, D.C., National Academy Press.

Clotfelter, Charles T. (1978) “Private security and the public safety.” *Journal of Urban Economics*. 5(3): 388-402.

Cohen, Lawrence E., and Marcus Felson (1979). "Social Change and Crime Rate Trends: A Routine Activity Approach." American Sociological Review 44.4: 588-608.

Cook, Philip J. Cook and K.A. Goss, *A Selective Review of the Social-Contagion Literature* (1996), Terry Sanford Instiute Working Paper, Duke University

Cook, Philip J. (1986) "The Demand and Supply of Criminal Opportunities." *Crime and Justice*. Michael Tonry, Editor. The University of Chicago. pp. 1-27.

Cook, Philip J. and Jens Ludwig (2006) *Assigning Deviant Youth to Minimize Total Harm*. Deviant Peer Contagion, Ed. by Kenneth Dodge, Joan McCord and Tom Dishion

Costello, E. J., Compton, S. N., Keeler, G., Angold, A. (2003). "Relationships between poverty and psychopathology: a natural experiment." *Journal of the American Medical Association* 290, 2023-2029.

Crane, Jonathan. 1991. "The Epidemic Theory of Ghettos and Neighborhood Effects on Dropping out and Teenage Childbearing." American Journal of Sociology 96:1226–59.

Cullen, Julie Berry, Brian A. Jacob and Steven Levitt (2006). "The effect of school choice on participants: Evidence from randomized lotteries." *Econometrica*, 74(5): 1191-1230.

Dahl, Gordon B. and Lance Lochner (2005) "The Impact of Family Income on Child Achievement." Cambridge, MA: NBER Working Paper 11279.

Deming, David (2009). "Better schools, less crime?" Unpublished job market paper.

Dew, M. A., Bromet, E. J., Schulberg, H. C. (1987). "A comparative analysis of two community stressors' long-term mental health effects." *American Journal of Community Psychology* 15, 167-184.

Drake, Elizabeth K., Steve Aos, and Marna G. Miller (2009) "Evidence-based public policy options to reduce crime and criminal justice costs: Implications in Washington State." *Victims and Offenders*. 4: 170-196.

Duncan, Greg J. and Jeanne Brooks-Gunn (1997) *Consequences of Growing Up Poor*. New York: Russell Sage Foundation.

Duncan, G., Kathleen Ziol-Guest, K. & Ariel Kalil (forthcoming). Early childhood poverty and adult attainment, behavior, and health. *Child Development*.

Duncan, Greg J., W. Yeung, Jeanne Brooks-Gunn and J. Smith (1998) "How much does childhood poverty affect the life chances of children?" *American Sociological Review*. 63: 406-23.

Ehrlich, Isaac (1981) "On the usefulness of controlling individuals: An economic analysis of rehabilitation, incapacitation, and deterrence." *American Economic Review*. 71(3): 307-322.

Ehrlich, Isaac and Gary S. Becker (1972) "Market insurance, self-insurance, and self protection." *Journal of Political Economy*. 80: 623-648.

Evans, William N. and Timothy J. Moore (2009) “The short-term mortality consequences of income receipt.” Working Paper, Department of Economics and Econometrics, University of Notre Dame.

FBI Uniform Crime Report (2008). Arrests by Age Table, http://www.fbi.gov/ucr/cius2008/data/table_38.html.

Frank, Richard G. and Ellen Meara (2009). “The effect of maternal depression and substance abuse on child human capital development.” NBER Working Paper 15314.

Gennetian, Lisa A., Danielle Crosby, Chantelle Dowsett, Aletha Huston, and Desiree Principe (2006) “Maternal Employment, Early Care Settings and the Achievement of Low-Income Children.” MDRC Working Paper.

Gennetian, Lisa A., Greg J. Duncan, Virginia W. Knox, Wanda G. Vargas, Elizabeth Clark-Kauffman, and Andrew S. London (2002). How welfare and work policies for parents affect adolescents: A synthesis of research. MDRC Report.

Glaeser, Edward L. and Jacob Vigdor (2003) “Racial Segregation: Promising News.” In Bruce Katz and Robert E. Lang, eds., *Redefining Urban and Suburban America: Evidence from Census 2000, Volume 1*. Washington: Brookings Institution Press.

Guryan, Jonathan (2004). “Desegregation and Black Dropout Rates.” *American Economic Review*, 94(4): 919-943.

Hart, Betty and Todd Risley. 1995. *Meaningful Differences in the Everyday Experience of Young American Children*. Baltimore, MD: Paul Brooks.

Heckman, James J., Jora Stixrud, and Sergio Urzua (2006). “The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior. *Journal of Labor Economics*, 24(3): 411-482.

Herrnstein, Richard J. (1995) “Criminogenic traits.” In *Crime*, Edited by James Q. Wilson and Joan Petersilia. San Francisco, CA: Institute for Contemporary Studies Press.

Jacob, Brian A. (2004) “Public Housing, Housing Vouchers, and Student Achievement: Evidence from Public Housing Demolitions in Chicago.” *American Economic Review* 94: 233-258.

Jacob, Brian A. and Jens Ludwig (2010) “The Effects of Family Resources on Children’s Outcomes.” Working Paper, University of Michigan.

Jencks, Christopher, and Susan E. Mayer (1990) "The Social Consequences of Growing Up in a Poor Neighborhood." In *Inner-City Poverty in the United States*. Edited by L.E. Lynn, Jr. and M.G.H. McGeary. Washington, DC: National Academy Press. pp. 111-186.

Kaufman, Julie E. and James E. Rosenbaum (1992). “The Education and Employment of Low-Income Black Youth in White Suburbs.” *Educational Evaluation and Policy Analysis*, 14(3): 229-40.

Kessler, R. C., House, J. S, Turner, J. B. (1987). “Unemployment and health in a community sample.” Journal of Health and Social Behavior 28, 51-59.

Kessler, Ronald C., Patricia Berglund, Olga Demler, Robert Jin, Doreen Koretz, Kathleen R. Merikangas, A. John Rush, Ellen E. Walters and Philip S. Wang (2003) "The epidemiology of major depressive disorder: Results from the National Comorbidity Survey Replication (NCS-R)." Journal of the American Medical Association. 289(23): 3095-3105.

Kessler, Ronald C., Patricia Berglund, Olga Demler, Robert Jim, Kathleen R. Merikangas and Ellen E. Walters (2005) "Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication." Archives of General Psychiatry. 62: 593-602.

Kleiman, Mark (1993) "Enforcement swamping: A positive-feedback mechanism in rates of illicit activity." *Mathematical and Computer Modeling*. 17(2): 65-75.

Kling, Jeffrey R., Jeffrey Liebman, and Lawrence Katz, (2007) "Experimental Analysis of Neighborhood Effects," *Econometrica*, 75.

Kling, Jeffrey R., Jens Ludwig, and Lawrence F. Katz (2005) "Neighborhood Effects on Crime for Female and Male Youth: Evidence from a Randomized Housing Voucher Experiment," *Quarterly Journal of Economics*. 120(1). 87-130.

Kuegler, Alice (2009). "A curse of comparison? Evidence on reference groups for relative income concerns." World Bank Policy Research Working Paper Series 4820.

Lareau, Annette (2002). "Social class and child rearing in Black families and White families." *American Sociological Review*, 67(5): 747-776

Lareau, Annette (2003). *Unequal Childhoods: Class, Race, and Family Life*. Berkeley: University of California Press.

Levy, Dan and Greg J. Duncan (1999) "Using sibling samples to assess the effect of childhood family income on completed schooling." Working Paper, Northwestern University.

Lewis, Oscar (1959). *Five Families: Mexican Case Studies in the Culture of Poverty*. New American Library.

Lipsey, Mark W., Nana A. Landenberger, & Sandra J. Wilson (2007). Effects of cognitive-behavioral programs for criminal offenders. The Campbell Collaboration Library (http://www.campbellcollaboration.org/doc-pdf/lipsey_CBT_finalreview.pdf).

Lochner, Lance and Enrico Moretti (2004). "The effect of education on crime: Evidence from prison inmates, arrests, and self-reports." *American Economic Review*, 94(1):155-189.

Ludwig, Jens and Jeffrey Kling (2007) Is Crime Contagious? Journal of Law and Economics. 50(3): 491-518

Ludwig, Jens and Deborah A. Phillips (2007). "The benefits and costs of Head Start." NBER Working Paper 12973.

Mayer, Susan E. (1997) *What Money Can't Buy: Family Income and Children's Life Chances*.

Cambridge, MA: Harvard University Press.

Merton, Robert K. (1938). "Social structure and anomie." *American Sociological Review,* 3: 672-82.

Moore, Kristin Anderson, Elizabeth C. Hair, Sharon Vandivere, Cameron B. McPhee, Michelle McNamara, and Thomson Ling (2006). "Depression Among Moms: Prevalence, Predictors, and Acting Out Among Third Grade Children." Child Trends Research in Brief #2006-19.

Morris, Pamela, Greg J. Duncan, and Christopher Rodrigues (2004) "Does Money Really Matter? Estimating Impacts of Family Income on Children's Achievement with Data from Random-Assignment Experiments." MDRC Working Paper.

Morris, Pamela A., Lisa A. Gennetian, and Greg J. Duncan (2005). "Effects of Welfare and Employment Policies on Young Children: New Findings on Policy Experiments Conducted in the Early 1990s." MDRC Social Policy Report Volume XIX, No.2.

Olsen, Edgar O (2003). "Housing programs for low-income households." In *Means-Tested Transfer Programs in the United States.* Ed. Robert A. Moffit. Chicago: University of Chicago Press, 365-442.

Oreopolous, Philip, Marianne Page, Ann Huff Stevens (2005) "The Intergenerational Effects of Worker Displacement." Cambridge, MA: NBER Working Paper 11587.

Orr, Larry, Judith D. Feins, Robin Jacob, Erik Beecroft, Lisa Sanbonmatsu, Lawrence F. Katz, Jeffrey B. Liebman, and Jeffrey R. Kling (2003). Moving to Opportunity: Interim Impacts Evaluation. Washington, DC: U.S. Department of Housing and Urban Development.

Pew Charitable Trusts (2007). "Public safety, public spending: Forecasting America's prison population 2007-2011.

Philipson, Tomas J. and Richard A. Posner (1996) "The economic epidemiology of crime." *Journal of Law and Economics*. 39(2): 405-433.

Posner, Michael I. and Mary K. Rothbart (2007) *Educating the Human Brain*. Washington, DC: American Psychological Association.

Quillian, Lincoln (2005). "Public housing and the spatial concentration of poverty." Paper for 2005 Population Association of America Meeting.

Raphael, Steven (2007). Understanding the Causes and Labor Market Consequences of the Steep Increase in U.S. Incarceration Rates. Paper for the *New Labor Market Institutions and the Public Policy Response: A Symposium to Honor Lloyd Ulman* conference, October 27th, 2007, University of California, Berkeley.

Reeder, William J. (1985) "The Benefits and Costs of the Section 8 Existing Housing Program." Journal of Public Economics. 26: 349-377.

Rubinowitz, Leonard S. and James E. Rosenbaum (2000). *Crossing the Class and Color Lines: From Public Housing to White Suburbia.* Chicago: University of Chicago Press.

Ruhm, C.J. (1995). “Economic conditions and alcohol problems.” *Journal of Health Economics.* 14(5): 583–603.

Ruhm, C.J. & William E. Black (2002). “Does drinking really decrease in bad times?” *Journal of Health Economics*. 21: 659–678

Sampson, Robert and W. Byron Groves (1989). “Community Structure and Crime: Testing Social Disorganization Theory.” *American Journal of Sociology* 94: 774-802.

Sampson, Robert J., Stephen Raudenbush, and Felton Earls (1997). “Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy.” *Science* 277: 918-24.

Schelling, Thomas C. (1971). “Dynamic models of segregation.” *Journal of Mathematical Sociology*, 1:143-186.

Scholz, John Karl, Robert Moffitt, and Benjamin Cowan (2009). “Trends in income support.” *Focus*, 26(2): 43-49.

Shaw, Clifford R. and Henry D. McKay (1942) *Juvenile delinquency and urban areas*. Chicago: University of Chicago Press.

Struyk, Raymond J. and Mark Bendick, Jr., Eds. (1981). *Housing Vouchers for the Poor: Lessons from a National Experiment*. Washington: Urban Institute Press.

Votruba, Mark and Jeffrey Kling (2004). “Effect of neighborhood characteristics on the mortality of male black youth: Evidence from Gautreaux.” Princeton University Industrial Relations Section Working Paper #491.

Wang, Philip S., Michael Lane, Mark Olfson, Harold A. Pincus, Kenneth B. Wells, and Ronald C. Kessler (2005) “Twelve-month use of mental health services in the United States.” Archives of General Psychiatry. 62: 629-640.

Watson, Tara. (2006) “Metropolitan Growth, Inequality, and Neighborhood Segregation by Income.” Williams College manuscript.

Watson, Tara (2009) “Inequality and the measurement of residential segregation by income in American neighborhoods.” Cambridge, MA: NBER Working Paper 14908.

Weiner, David A., Byron F. Lutz, Jens Ludwig (2009). The effects of school desegregation on crime. NBER Working Paper 15380.

Wilson, James Q. (1983) “Thinking about crime: The debate over deterrence.” *The Atlantic Monthly*. September 1983.

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

Wilson, William Julius (1996). *When Work Disappears: The World of the New Urban Poor.* New York: Alfred A. Knopf.

Wilson, D. B., Bouffard, L. A., & MacKenzie, D. L. (2005). “A quantitative review of structured, group-oriented, cognitive-behavioral programs for offenders.” *Criminal Justice and Behavior, 32*(2), 172-204.

Zimring, Franklin E. and Gordon Hawkins (1997) *Crime Is Not the Problem*. New York: Oxford University Press.

Figure 1: Trends in Income Poverty and Inequality

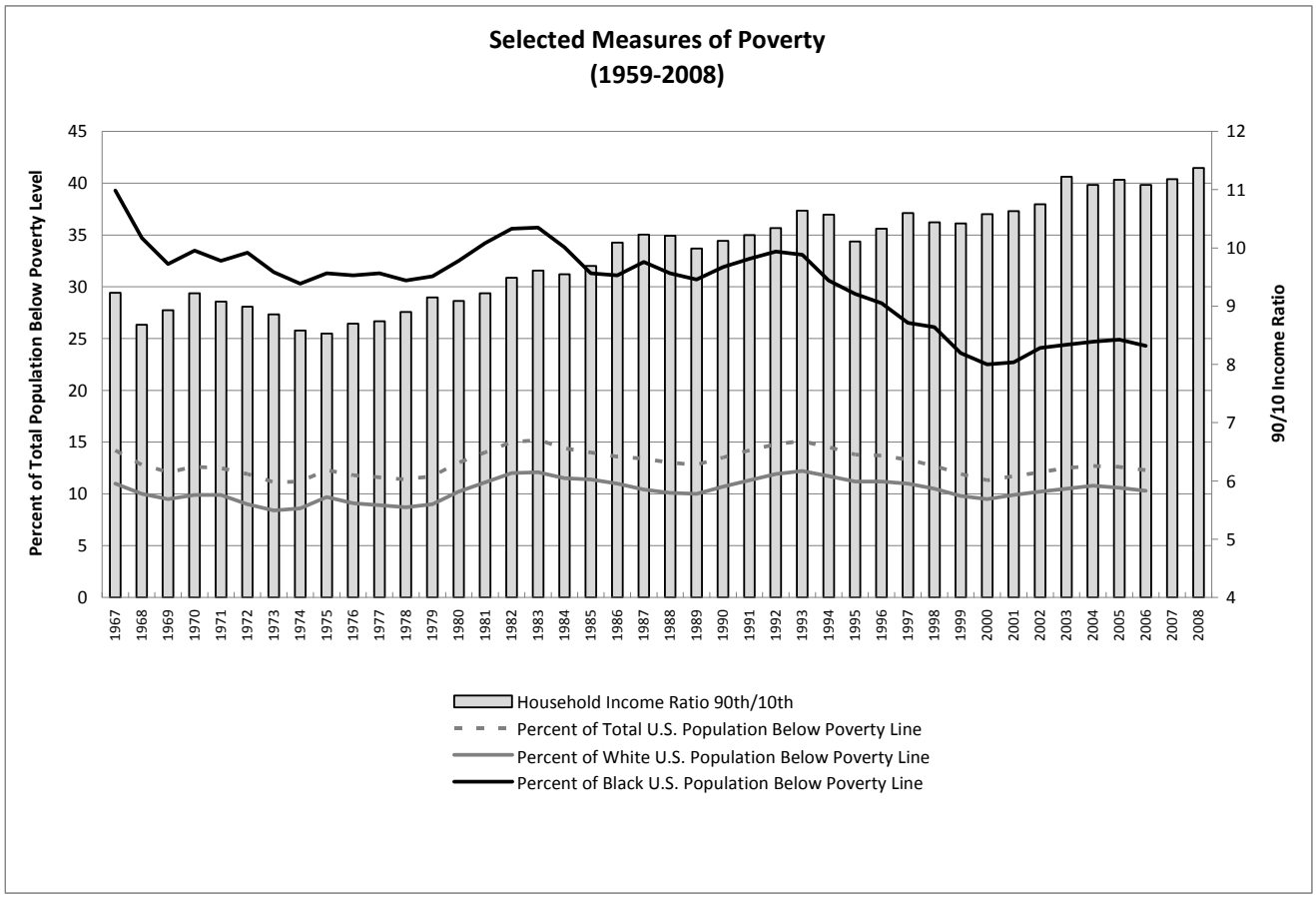


Figure 2: Trends in Measures of Income Segregation from Watson (2009)

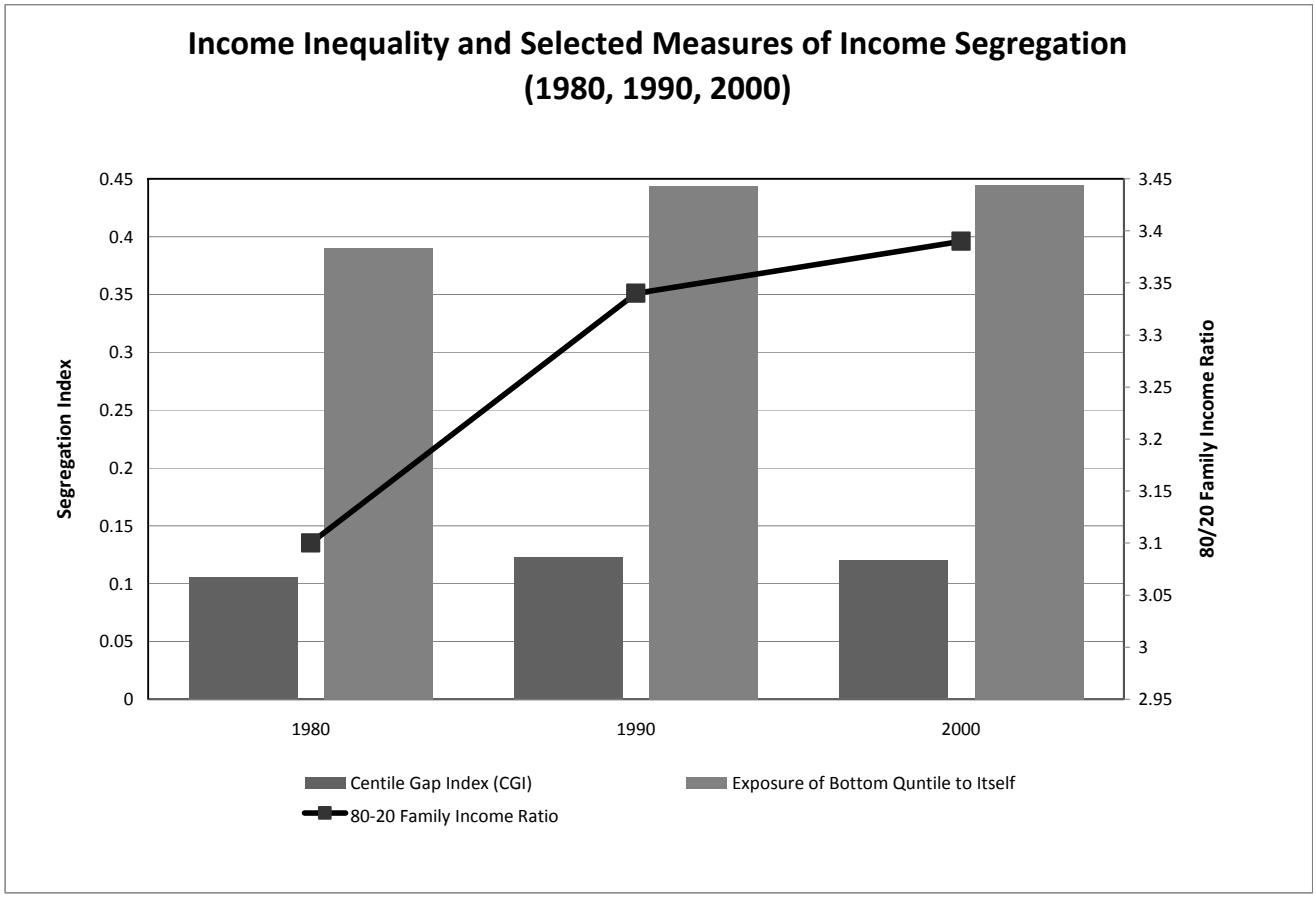


Figure 3: Social Program Spending by Type of Benefit, 1968-2002

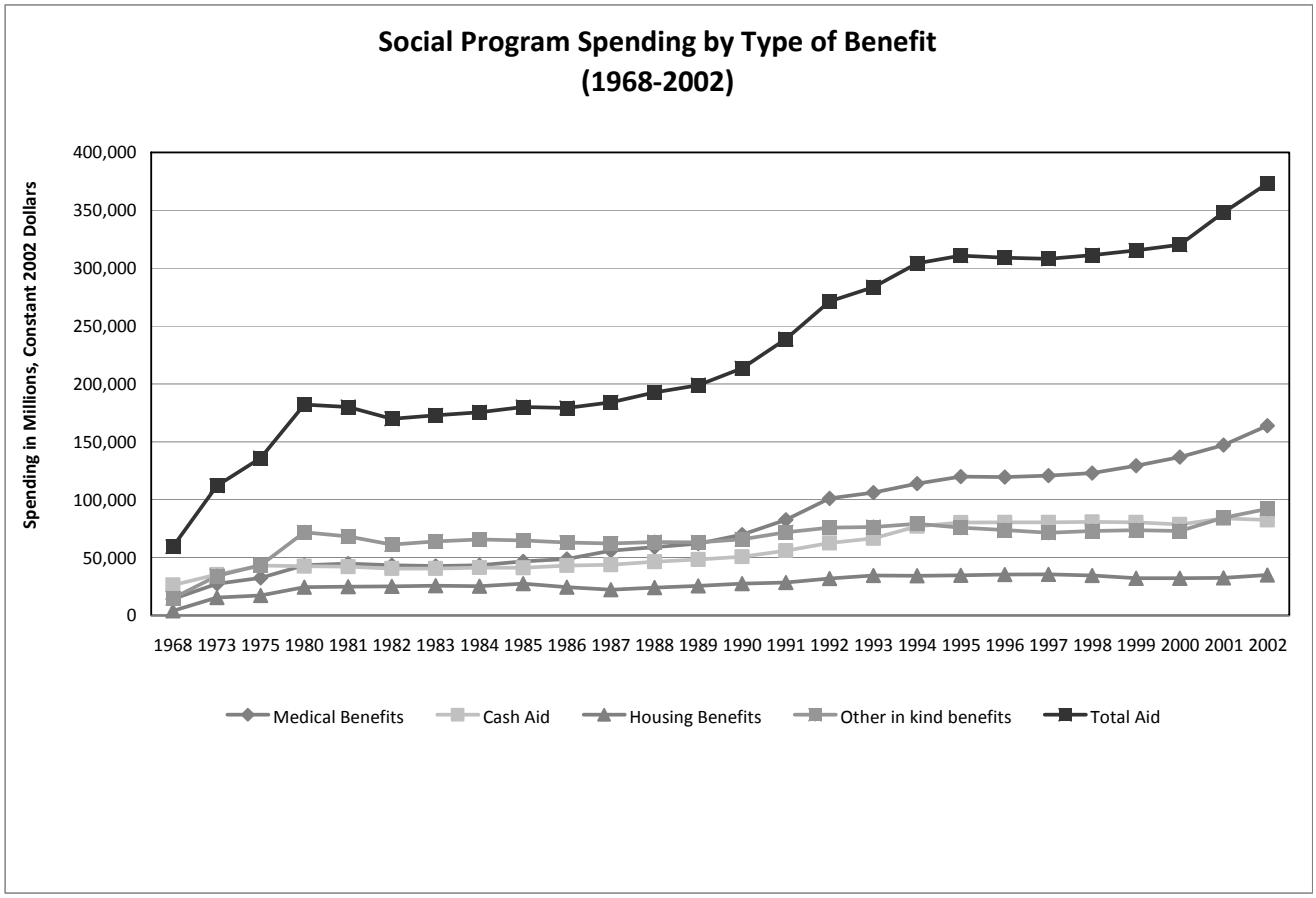
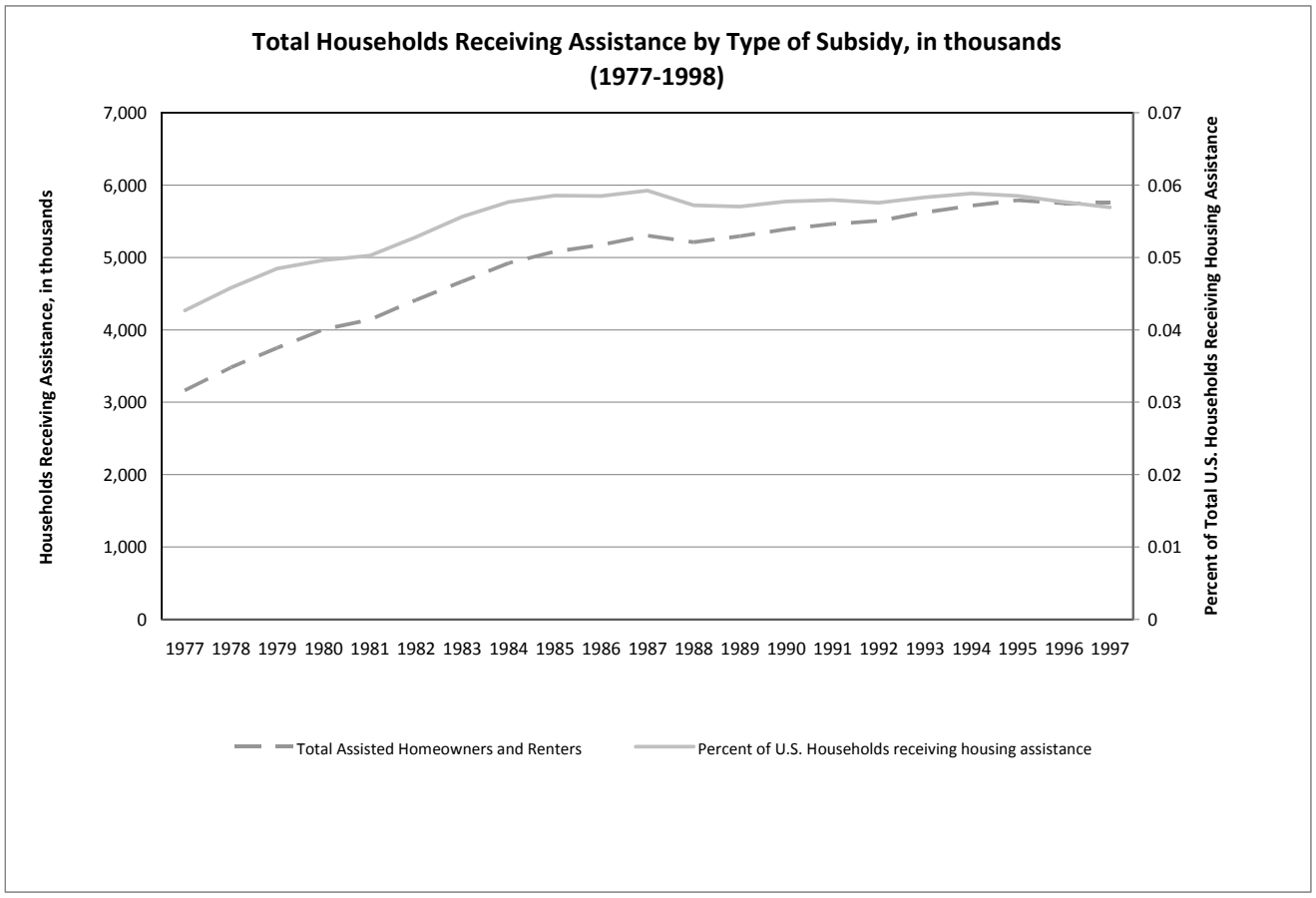


Figure 4: Trends in Share of Low-Income Families Receiving Housing Assistance, 1977-1998



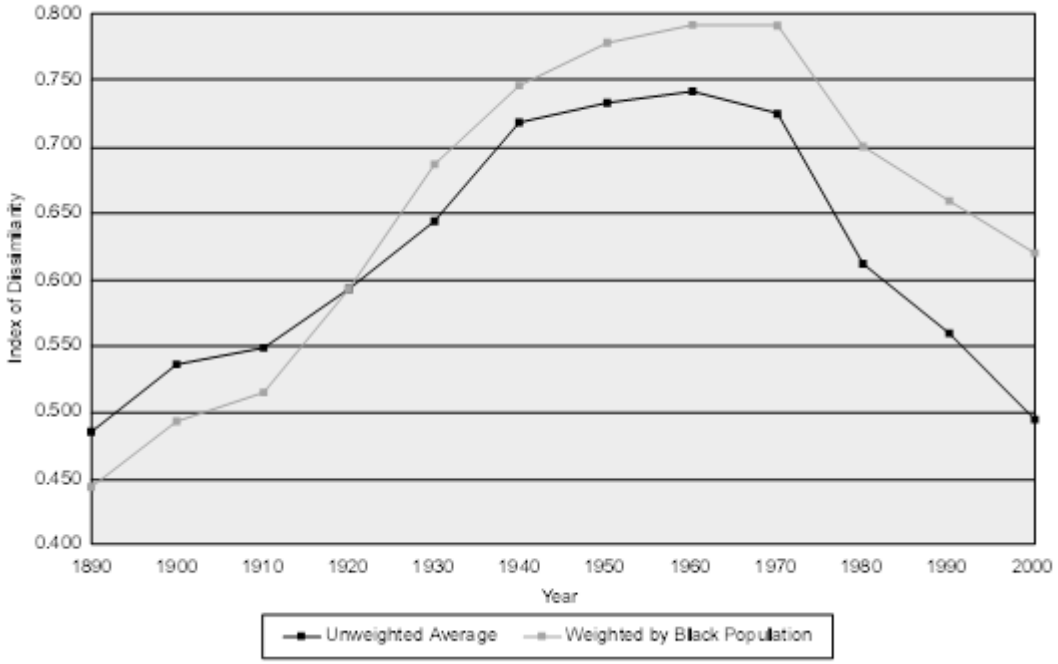


Figure 5: Mean residential dissimilarity for US Metropolitan Areas, 1890-2000. Source: Glaeser and Vigdor (2003).

Figure 6: Crime Trends in the United States

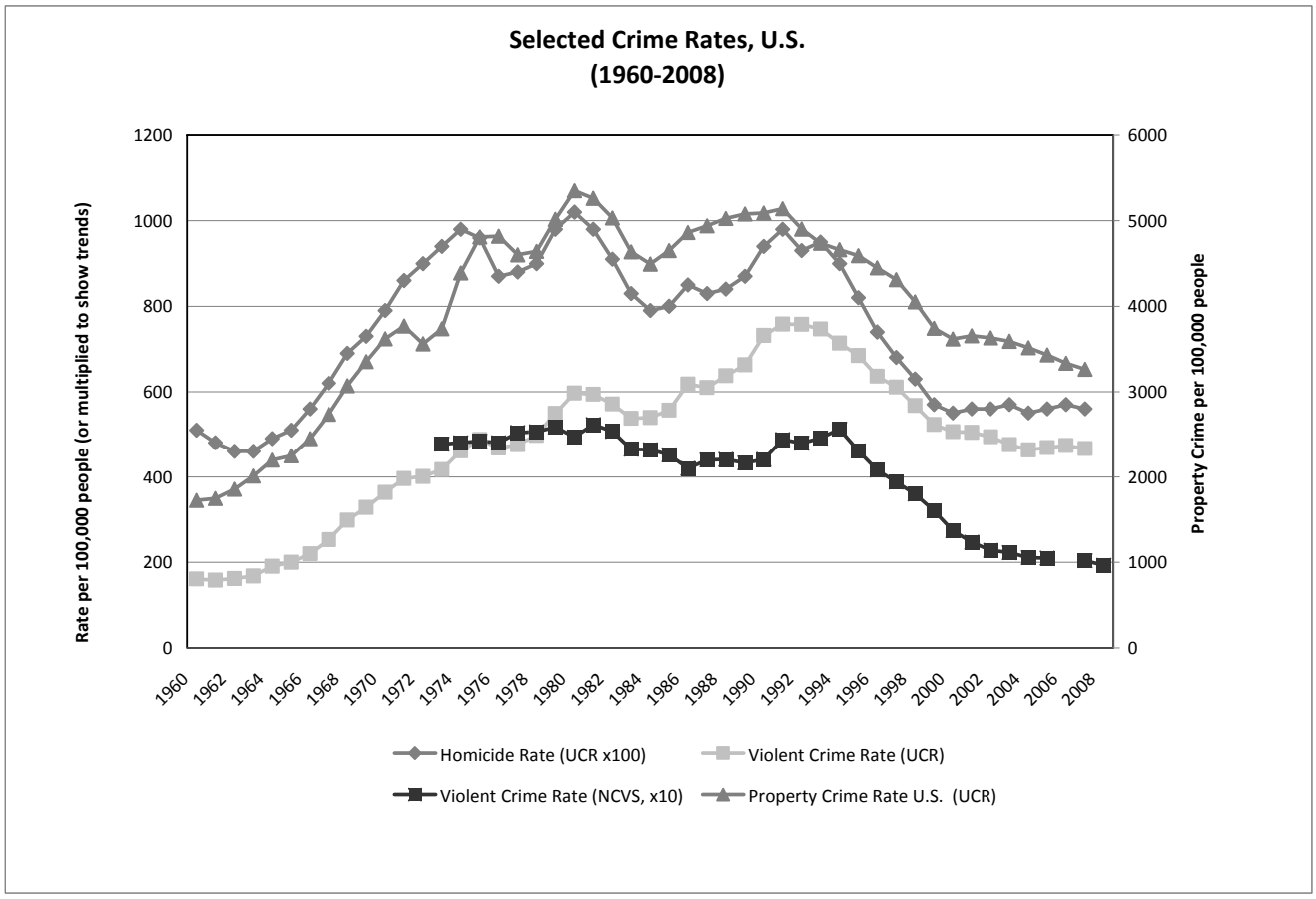
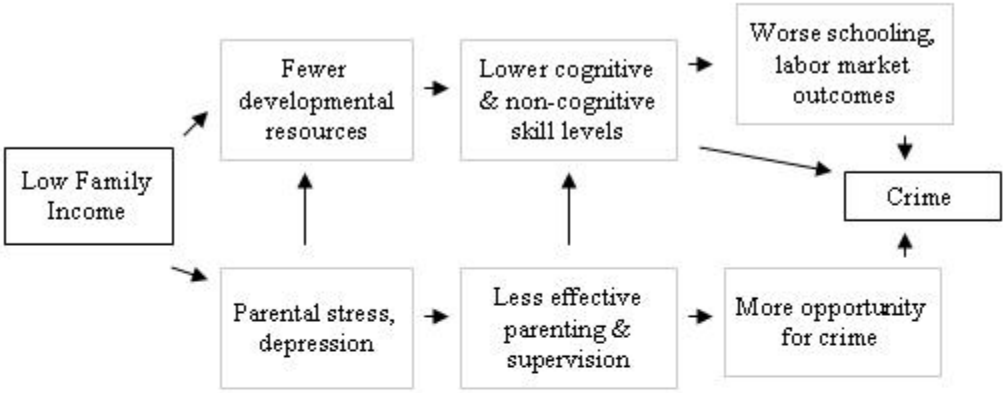


Figure 7:

Poverty's Potential Effect on Crime through Developmental Pathways



Poverty's Potential Effect on Crime through Motivation, Incentives & Behavior

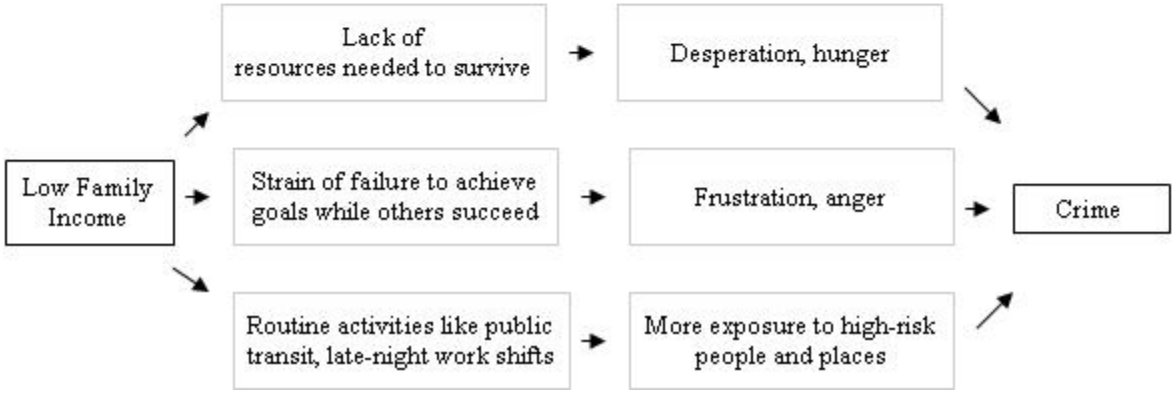


Figure 8:
Concentrated Poverty's Potential Effect on Crime