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EDUCATIONAL RESOURCES, RACIAL ISOLATION AND ADULT

IMPRISONMENT RISK AMONG U.S. BIRTH COHORTS SINCE 1910

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FINAL REPORT

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IMPRISONMENT RISK AMONG U.S. BIRTH COHORTS SINCE 1910

I. INTRODUCTION

Our main purpose in this project is to study the effects of state-level educational policies on the likelihood of adult incarceration for African Americans and whites during the twentieth century. In particular, we examine how state levels of school resources and levels of racial isolation were related to individual imprisonment risk for cohorts of students born between 1910 and 1972. Our findings provide strong evidence that both of these state-level school characteristics had significant effects on individual incarceration risk. Moreover, in both cases, we were able to demonstrate important qualifications characterizing connections between state educational characteristics and imprisonment outcomes. In the case of school resources, we found the most support for a "gatekeeper" model which shows that increased spending on education reduces overall imprisonment risk, but also produces a group of educational "losers" who face especially high imprisonment risks. In the case of connections between the racial make-up of schools and individual imprisonment risk, we found that African American students who attended schools with a higher proportion of white students were less likely to end up in prison as adults. Moreover, these effects became much stronger over time.

Most prior research on incarceration rates has explored the effects of macro-level economic, political, and demographic variables, including unemployment (Western and Beckett 1999; Grant and Martinez 1997; Chiricos and Delone 1992), economic inequality (Garland 1990; Greenberg 1999), electoral cycles (Beckett 1997; Jacobs and Carmichael 2001), welfare spending (Greenberg and West 2001) and race relations (Jacobs and Carmichael 2001; Greenberg and West 2001). These studies have begun to provide an

understanding of the structural parameters in which individual-level processes leading to incarceration may occur. However, individual level modeling of imprisonment rates has thus far been hampered by methodological limitations and theoretical uncertainty over the appropriate conceptual framework for such an analysis.

By using previously unreleased U.S. census data that include prison inmates, we were able to examine the impact of educational resources (measured as student/teacher ratios) and racial isolation (measured as proportion of white students) in the states where individuals attended elementary and secondary school on their subsequent imprisonment risk as adults. While we could identify no prior research that uses census data to examine connections between state-level school resources or racial isolation in schools on individual imprisonment risk, there are sound theoretical reasons to expect such links. Prior research has demonstrated connections between a variety of educational variables and criminal behavior (Hirschi and Hindelang 1977; Gottfredson 1981; Gottfredson and Hirschi 1990) and criminal justice outcomes, including imprisonment (Sampson and Laub 1993; Arum and Beattie 1999). Educational variables have also been shown (Card and Krueger 1996; Arum 1996) to affect outcomes such as occupational status and earnings, which are in turn likely to affect criminal propensity and contacts with the criminal justice system.

In this report we first review general connections between incarceration and educational experiences and then consider the two major research questions we raised in the original grant application: First, how are state-level educational resources related to individual imprisonment risk? And second, how is the proportion of white students in the states where blacks are educated related to their subsequent individual-level imprisonment

risk? We conclude with a discussion of the results and their implications for future research and social policy.

II. INCARCERATION AND EDUCATIONAL EXPERIENCES

In recent years, policy analysts (e.g., Donziger 1996:34, Austin and Krisberg 1998, Currie 1998) have expressed grave concerns about both the financial and social costs of the sharp increases in imprisonment that began in the United States about three decades ago. Until the mid-1970s, the U.S. admitted about 50,000 new inmates to federal and state prisons each year–a decade later this rate had quadrupled to 200,000 new inmates a year. By the end of Ronald Reagan's second presidential term in 1988, the United States had the highest incarceration rate of any industrialized country and one of the highest incarceration rates in the world (Currie 1998).   Many of the nation's most populous states, notably, California, Florida and Texas, undertook massive, multibillion dollar prison construction projects. But despite immense state and federal prison construction programs, 35 states and the U.S. Federal Bureau of Prisons were at more than 100 percent of their rated capacity in 1995 (Bureau of Justice Statistics 1996:556).

Understanding incarceration dynamics requires an appreciation of both micro- and macro-level processes underlying the risk of individual-level imprisonment. Research at a macro level has explored the economic, political, and demographic factors producing variation in aggregate incarceration rates across states and nations, as well as over time. For example, U.S. incarceration rates have been linked to economic inequality, electoral cycles, labor movement activity, and race relations (Bridges and Crutchfield 1988; Grant and Martinez 1997; Jacobs and Helms 1996).

Building on Rusche and Kirchheimer's (1939) argument that high unemployment leads capitalist states to rely more heavily on incarceration for social control, researchers have extensively explored the relationship between macro-level unemployment and incarceration rates. Most current research concludes that imprisonment increases during periods of high unemployment (Grant and Martinez 1997; Thornberry and Christenson 1984). Research also has identified demographic and institutional variables related to macro-level incarceration rates (D'Alessio and Stolzenberg 1997; MacKenzie et al. 1988). This structural research has been useful for providing a better understanding of the parameters affecting incarceration levels and trends.

But while extensive research on structural factors affecting incarceration exists, methodological limitations and theoretical debate have hampered individual-level modeling of imprisonment chances. Existing research on the causes of individual-level imprisonment have focused on criminal justice decision making (Dixon 1995, Gottfredson and Gottfredson 1980, Klein et al. 1990, Myers and Talarico 1987), correlates of recidivism (Gendreau et al. 1996), and determinants of criminal propensity (Gottfredson and Hirschi 1990, Sampson and Laub 1993, Wilson and Herrnstein 1985). While each of these approaches has a role in explicating incarceration dynamics, only the investigation of the determinants of criminal propensity has provided a clear focus on the relationship between educational experience and imprisonment.

Education affects the likelihood of individuals committing crime, which net of criminal justice decision making and other social variables, increases the risk of imprisonment. But while numerous studies recognize overall educational experience as a key determinant of imprisonment, existing research has largely ignored such characteristics

of schooling as funding levels and student-teacher ratios (for an exception, see Arum and Beattie 1999). Moreover, we could identify no prior research that has examined the impact of school desegregation policies on adult imprisonment chances.

This failure to examine the impact of desegregation and other measures of educational experiences on imprisonment rates is potentially consequential. Children of all ages, adolescents and even adults have come to spend increasing amounts of time in schools, and as the American family continues to evolve, there is clear evidence that society has increasingly looked to schools to socialize and control children and young adults (LaFree 1998:159-61). In fact, Gottfredson and Hirschi (1990:105) argue that schools have some advantages over families as social control institutions. Compared to most parents, teachers may have less difficulty recognizing deviant or disruptive behavior, and schools have a clear interest in maintaining order and discipline.

We would also expect school experiences to be critical in predicting participation in crime because childhood and adolescence are periods when individuals are subject to the highest risk of delinquency and face major challenges to their moral and psychological development (Finch et al. 1991; Gottfredson and Hirschi 1990). Much prior research suggests that adolescence and childhood represent developmental periods in which choices are made with long-term consequences for the life course (Elder 1985; Hagan and Wheaton 1993; Jessor et al. 1991; Laub and Sampson 1993). These considerations lead Witte (1997:220) to reason that if "Crime and education are approximately equally prevalent activities for young males. Are they related?"

In short, our research takes seriously the possibility that school experiences can serve as defining moments in an individual's life. Specifically, we identify the effects of several

important state-level educational characteristics on the likelihood that individuals will be imprisoned as adults.

A. Race, Education and Incarceration

Although prison population increases have been substantial for all groups, the escalation in prison population over the past three decades has been particularly alarming for racial minorities, especially African Americans. The African American proportion of new inmates first topped 35 percent in 1970, 40 percent in 1978, and 50 percent in 1989 (LaFree 1998:167). By the early 1990s, a racial minority constituting 12 percent of the total U.S. population made up 52 percent of new admissions to state and federal prisons (Miller 1996). U.S. Bureau of Justice Statistics researchers estimate that African American men born in the United States in the mid-1990s faced a nearly 29 percent risk of going to prison at some point in their lifetime–and these estimates do not include jail or probation time (Bonczar and Beck 1997).

If anything, connections between educational institutions and incarceration rates may be even more critical for African Americans than whites. The legacy of slavery in the United States has meant that blacks were historically forced into racially segregated schools and racial disparities in incarceration rates have long been a defining characteristic of the U.S. penal system. However, when viewed longitudinally, the relationship between education and incarceration for blacks appears anomalous. Just as black incarceration rates were climbing to unprecedented levels after the 1960s, blacks seemed to also be making substantial gains in educational attainment. In the late 1950s, median school years completed by African American men were a full three years lower than the white male

average (LaFree, Drass and O'Day 1992:62; LaFree and Drass 1996). By the 1990s, median school years for blacks and whites were identical (Arum and Beattie 2000). Thus, by the turn of the twentieth century, African-Americans were as likely to complete high school as whites, but they were seven times more likely than whites to be incarcerated. We explore the possibility that this anomaly can be explained in part by focusing on the character of black educational experiences during the post-World War II period.

B. <u>Can Adolescent School Experiences Affect Adult Incarceration Chances</u>?

While incarceration as examined in this study is in no way simply equivalent to criminality, research on the determinants of individual-level crime—the criminological research tradition that most fully explores the role of educational experience—can partially inform our investigation. Research on the determinants of criminality suggests ways in which education is related to crime and the occurrence of crime indisputably increases the risk of individual-level incarceration.

Previous research on the determinants of criminal behavior has demonstrated the effects of educational experience measured as years of education, cognitive skills, grade point average and attitude toward school. The more education an individual has and the higher an individual's cognitive skills, demonstrated on standardized tests, the lower the risk of crime (Gottfredson and Hirschi 1990, Wilson and Herrnstein 1985, Hirschi and Hindelang 1977). High grade point averages and positive student attitudes toward school have also been shown to reduce the likelihood of adolescent delinquency and adult criminality (Sampson and Laub 1993; Wiatrowski, Griswold and Roberts 1981). The criminological effects of other aspects of high school education are less clear. With few

exceptions (Arum and Beattie 1999), existing criminological research has failed to establish convincing evidence for the effects of educational resource investment on individual-level incarceration rates.

C. <u>The Impact of Educational Investment and Racial Isolation on Imprisonment Risk</u>

The postwar U.S. forms a natural laboratory for the study of relationships between educational resources, school isolation and incarceration rates because of the great variability in these measures over time and between states. The Supreme Court's landmark *Brown v. Board of Education* decision in 1954 overturned the longstanding legal principle of "separate but equal" enunciated in *Plessy v. Ferguson* in 1896. While Brown did not have the immediate effect on school desegregation that many hoped for, its impact was eventually quite substantial. For example, the enrollment of black students in the South went from one-tenth of one percent in majority white schools in 1960 to 33 percent only a decade later. Whereas virtually all southern black students attended all-black schools in 1960, by 1970 only 34 percent of southern blacks did.

However, school desegregation changes were far smaller outside the South, stagnated throughout the country in the 1980s, and have shown movement toward increasing resegregation in the 1990s (Orfield and Eaton 1996, Rivkin 1994). Rivkin (1994:287) examines the total percentage of black students in 40 large central-city school districts from 1968 to 1988. In all but five cities, there were a higher proportion of black students attending central-city schools after 1980 than there had been in 1968. In several large cities (Atlanta, Baltimore, Birmingham, District of Columbia, New Orleans, and Detroit), the percentage of blacks attending central city schools had exceeded 80 percent by 1988.

When the growing number of Hispanic and Asian students is added to these calculations, the chances that a minority student will attend school with a substantial proportion of white students have greatly declined in most central city school districts since 1970. Rivkin (1994:289) calculates an "exposure index" which measures the total percentage of African American children's schoolmates who were white. In 1988, this percentage only exceeded 50 percent in five of forty large central-city school districts (Portland, Oregon; Louisville, Kentucky; Nashville, Tennessee; Minneapolis, Minnesota; and Witchita, Kansas).   Nearly fifty years after the U.S. Supreme Court's *Brown* decision, American schools are still profoundly segregated.

In this research we focused especially on connections between individual imprisonment risk and two measures of state-level educational policy: (1) educational resources, and (2) levels of racial isolation. In the sections that follow, we describe our rationale for studying each of these educational characteristics, describe the methods we used and provide a summary of the results.

III. EDUCATIONAL RESOURCES AND IMPRISONMENT RISK: THE ROLE OF SCHOOLS AS PRISON GATEKEEPERS

While we could identify no prior research that has used census data to examine connections between state-level spending on education and individual imprisonment risk, there are sound theoretical reasons to expect such a link. Prior research has demonstrated connections between educational variables and criminal behavior (Hirschi and Hindelang 1977; Gottfredson 1981; Gottfredson and Hirschi 1990) and criminal justice outcomes, including imprisonment (Sampson and Laub 1993; Arum and Beattie 1999). Educational variables have also been shown (Card and Krueger 1996; Arum 1996) to affect outcomes

such as occupational status and earnings, which are in turn likely to affect criminal propensity and contacts with the criminal justice system.

Based on prior research, we developed three competing models to explain the expected impact of state-level school resources on the individual risk of imprisonment for adults. Two of these models make opposite predictions about the impact of school resources on imprisonment risk. An educational resource model assumes that high school can be a critical defining moment and predicts that educational resources will directly reduce individual incarceration risk for all students. By contrast, educational skeptics take the position that the propensity to commit crime is relatively fixed at an early age and therefore educational spending will have little or no impact on criminal propensity or adult incarceration risk.

Finally, we are especially interested in testing a gatekeeper model of educational attainment that focuses on the processes by which secondary education sorts juveniles into stratified adult roles, including the highly stigmatized roles associated with imprisonment. While a gatekeeper model acknowledges that increasing school resources will lower imprisonment risk, it also raises the possibility that well funded schools are especially efficient at moving educational successes into the workforce and educational failures into prisons. Using an innovative new methodology developed by labor economists we find considerable support for our gatekeeper model based on an analysis of large samples of individuals (up to 4.5 million) educated in the United States during the twentieth century.

A. Behavioral and Labeling Perspectives on Imprisonment Risk

There have long been two competing perspectives about how crime is related to individual-level imprisonment risk. A b*ehavioral* perspective argues that the results of major criminal justice processing outcomes, especially imprisonment, are due mostly to the actual criminal behavior of those currently enmeshed in the legal system (Hindelang 1978; Wilson and Herrnstein 1985; Gottfredson and Hirschi 1990).   From this point of view, imprisonment is a straightforward measure of criminal activity. By contrast, a *labeling* perspective highlights the extent to which sentencing and imprisonment decisions are affected by characteristics of legal processing, especially the race and class of suspects being processed (Miethe and Moore 1985; Dixon 1995; Klein et al. 1990). From this point of view, imprisonment rates bear little or no relationship to criminal activity. Instead, they represent either the structural disadvantages of suspects (Sutton 2000; Beckett and Western 2001), or the differential ability of suspects to resist criminal labels (Bridges and Crutchfield 1988; Steffesnmeier, Ulmer and Kramer 1998).

While most research (e.g., Hindelang 1978; Jacobs and Carmichael 2001; Garland 2001) has presented these two perspectives as mutually exclusive possibilities, one way to interpret the often contradictory findings in this area is to conclude that criminal sanctions involve a mixture of both processes. Thus, educational resources may affect the likelihood of individuals committing a crime, which in turn changes their risk of punishment. Or educational resources may affect individual attitudes, preferences, habits, and skills in such a way that their subsequent interactions with others are altered, and these alterations in turn change their risk of being labeled criminal and incarcerated. While a resolution of these competing perspectives is well beyond the scope of the current project, the theoretical

models that we advance here are differentially sensitive to behavioral and labeling interpretations of incarceration risk.

In general, educational resource models have assumed that any impact of educational characteristics on imprisonment risk is mostly through behavioral mechanisms: juveniles with more favorable school experiences are less likely to commit crime and therefore face lower imprisonment risk as adults. This view is typified by Cloward and Ohlin's (1960:98) argument that lower-class juveniles who fail to secure an adequate education have little chance of improving their circumstances and that frustration leads them to "acute discontent" and "aberrant behavior." Similarly, those skeptical of the educational resources model (e.g., Wilson and Herrnstein 1985) generally assume that there is little connection between educational experiences and imprisonment risk because educational experiences have little impact on criminal propensity. By contrast, the school as gatekeeper model is consistent with both behavioral and labeling perspectives on imprisonment: education grooms individuals for specific societal roles but individuals may actually assume these roles through a mixture of their own behavior, the rewards and costs they experience through their interactions with others, or through some combination of both processes. We consider these associations in greater detail in the sections that follow.

B. Educational Resources, Incarceration Risk and the Skeptics

In their exhaustive review of the causes of crime, Wilson and Herrnstein (1985:280) conclude that "it is remarkable and a bit dismaying, given the great attention devoted to schools as influences on delinquency, that so little effort has been made to find out if

different kinds of schools lead to different behavioral outcomes." Direct tests of the link between educational resources and imprisonment risk are sparse. An early study in Tennessee by Reiss and Rhodes (1961) found that students who attended schools with others who had lower socio-economic backgrounds faced higher rates of subsequent incarceration, net of their family background. However, the authors included no direct measure of differential school resources. More recently, Arum and Beattie (1999) use data from the National Longitudinal Survey of Youth to examine the effects of differing types of high school experiences on the individual risk of incarceration among young men (ages 19 to 36) in their sample. The authors find consistent evidence that students attending schools with high student/teacher ratios face an elevated risk of incarceration after graduation. As student/teacher ratios increased from 15 to 25 students per teacher, the risk of subsequent adult incarceration increased 1.4 times (from 3.7 per thousand to 5.7 per thousand).

Indirect support for a connection between school resources and imprisonment risk may be found in research that either examines the effects of various educational experiences on the commission of crime (Gottfredson and Gottfredson 1985; Farrington et al. 1986) or in research that examines the effects of educational resources on socioeconomic outcomes that are in turn likely to influence crime and criminal justice processing (Arum 1996; Finn and Achilles 1990; Card and Krueger 1996, 1992a). An English study by Rutter, Maughan, Mortimore and Ousten (1979) found no effect on crime of school resources measured as student/teacher ratios, although they did find significant effects of school climate defined as student composition and school ethos. Gottfredson and Gottfredson (1985) conclude that rates of student and teacher crime victimization in schools are a

product of a range of school characteristics, including school resources, peer composition and vocational curricular emphasis. Hirschi and Hindelang (1977) argue that the more education an individual has and the stronger an individual's cognitive skills, demonstrated on standardized tests, the lower the risk of crime (see also, Gottfredson and Hirschi 1990, Wilson and Herrnstein 1985).

Similarly, prior research (Gottfredson and Gottfredson 1985; Farrington et al. 1986; Viscusi 1986) shows that both time spent at school and time spent working are associated with significantly lower levels of criminal activity and Witte and Tauchen (1994) conclude that time spent in educational activities appears to have a larger crime reduction effect than does time spent at work. High grade point averages and positive student attitudes toward school have also been shown to reduce the likelihood of adolescent delinquency and adult criminality (Sampson and Laub 1993; Wiatrowski, Griswold and Roberts 1981). Finally, prior research confirms that weak school attachment and poor school performance, measured as negative attitudes toward school and low grades, increase the probability of delinquency and negatively affect adult life course trajectories (Hagan, MacMillan and Wheaton 1996; Sampson and Laub 1993).

Researchers have also identified the effects of educational resources on a range of socioeconomic outcomes that may in turn be expected to affect crime and criminal justice processing, including lower student/teacher ratios and improvement in test scores (Arum 1998; Finn and Achilles 1990) and increased years of educational attainment and higher lifetime earnings (Card and Krueger 1996, 1992a). If schools with greater resources are better able to provide positive educational experiences, we might expect that these schools will have lasting effects on the lives of their students. In support, some prior research (e.g.,

Sorenson and Hallinan 1977) shows that educational resources allow schools to reduce class size and thus increase student opportunities for learning from, and relating to, their teachers. In a recent study Lochner and Moretti (2001) use U.S. census data to show that those who drop out of high school face significantly higher risks of incarceration. They also examine the effect of dropping out of high school on self-reported crime in the National Longitudinal Survey of Youth and conclude that their estimates for imprisonment are caused by changes in criminal behavior and not educational differences in the probability of arrest or incarceration conditional on crime.

But while it would be fair to say that at present a majority of researchers support the conclusion that educational characteristics affect adult criminal behavior and incarceration risk, this conclusion is far from unanimous. Wilson and Herrnstein (1985:270) conclude that "whatever effects schooling has on delinquency, they cannot be great." These critics maintain that selection bias accounts for post-childhood measures associated with adult criminality. For example, Gottfredson and Hirschi (1990) argue that delinquent patterns are firmly established in childhood and delinquent youth simply choose deviant associates and unconventional lifestyles as adults. Some support for this reasoning is also found in research (e.g., Moffit 1993; Moffitt, Lyman and Silva 1994) on "life course persistent" male offenders; whose anti-social behavior begins by age 13 but persists into later life stages. These arguments support our null hypothesis of no significant effect of educational spending on adult imprisonment risk.

C. Schools as Prison Gatekeepers

A major drawback of the school resources argument is that it emphasizes the positive role that schools play in providing the skills necessary for upward mobility but downplays the potentially negative impact schools have on educational underachievers and failures. Thus, the school resources argument provides a plausible explanation for how increased educational spending may reduce criminal behavior and imprisonment risk for students who are educational successes, but is silent about the potential for increased educational spending to increase criminal behavior and imprisonment risk for students who are educational failures. But as Carnoy (1972) points out, educational attainment is relative up and down the educational hierarchy. Thus, while expanding educational quality may improve the prospects for graduates, it may also lower the prospects for non graduates. According to Meyer (1977:62) "non graduates are socialized through life experiences to the meaning of their failure just as graduates are socialized to the meaning of their success."

This reasoning raises the possibility that schools with more resources do not benefit all their members equally but instead become more efficient gatekeepers over entry into both highly desirable economic institutions and also highly stigmatizing institutions such as prisons. Researchers have long appreciated the selection and sorting functions of schooling. Three-quarters of a century ago Sorokin (1927: 188-9) noted that "the school is primarily a testing, selecting and distributing agency" which "sifts 'the good' from 'the bad' future citizens, 'the able' from 'the dull,' 'those fitted for the high positions' from those 'unfitted.'" Sorokin further argued (p. 189) that "the intensiveness of this function of the school naturally fluctuates from society to society, from time to time."

More recently, Farkas et al. (1990:127) claim that the secondary school is one of the most important gatekeepers in contemporary American society. At the macro level, gate keeping institutions define the reward structure; at the micro level, individuals respond to this reward structure with strategies of action that are constrained by their access to differentially valued cultural resources. According to Farkas et al. (p. 127), gate keeping institutions such as schools recognize and reward specific individual characteristics, "including habits, skills, and styles as well as attitudes, preferences, knowledge, goods, and credentials."

While most of the research on how gatekeeping institutions exclude and recruit individuals deals with selection into high status positions (DiMaggio 1982; Swidler 1986; Lamont and Lareau 1988; Farkas et al. 1990), the same arguments about the gate keeping functions of major social institutions should apply to induction into highly stigmatized positions such as that of prison inmate. Given this perspective, it is reasonable to expect that while increased educational resources can allow schools to improve outcomes for all students, increased resources might also lead schools to be more efficient in their gate keeping functions. As resource rich schools are more effectively able to sort out marginally capable students from those that are least capable and successfully educate the former, the high school dropouts who are left behind in these settings may be especially prone to incarceration; after all, they are the most vulnerable students highly selected on a range of unmeasured negative characteristics (e.g., grade point averages, high school graduation, long term goals) likely related to incarceration. Importantly, these processes could lead to higher incarceration risk for dropouts by either increasing their actual criminal behavior (the behavioral argument), by

decreasing their ability to avoid criminal stigmatization (the labeling argument), or most likely, through some combination of both processes.

Although they do not offer a detailed interpretation, Card and Krueger (1996) report exactly such an effect for the relationship between increased educational resources and adult earnings for those with low educational attainment: compared to low educational achieving students in poorly funded educational systems, low achievers educated in well funded educational systems earn substantially *less* as adults. Card and Krueger develop a human capital argument to explain these results, claiming (p. 35) that as school quality increases some students will attend school longer either because their schooling experiences are more pleasant or because they anticipate higher returns associated with their attainment. However, an emphasis on schools as gatekeepers may be a more appropriate model for our purposes because it can explain not only how better funded schools could reduce the imprisonment risk of high education achievers, but also how the same schools might actually increase imprisonment risk among low education achievers.

To summarize then, prior research suggests three competing models for the relationship between the amount of resources states devote to education and the adult imprisonment risk of those educated in these states. The null hypothesis is the skeptic's claim that educational resources will have no impact on criminal behavior and hence, incarceration risk. By contrast, an educational resource model suggests that state levels of school resources will directly reduce individual imprisonment risk. And finally, an educational gatekeeper model predicts that connections between educational attainment and imprisonment risk will be strongest for states that devote the most resources to education. This means that students who succeed in well funded schools will face

significantly lower imprisonment risk, but also that students who fail in the same schools will face an elevated imprisonment risk.

IV. DATA AND METHODS

We test the effects of educational resources on incarceration by building on methods recently developed by labor economists Card and Krueger (1992, 1996). Card and Krueger used U.S. census data to test the effects of state-level educational resource investment on labor market outcomes by assigning state-level, cohort-specific educational characteristics to individuals based on the state in which they were born. But to control for differences in the return to education in different states, they estimated rates of return to schooling only on men who were educated in one state and then moved to another (i.e., interstate migrants). For example, their analysis identifies whether high school graduates currently living in New Mexico have similar incomes if they were educated in New York (where educational resource investment was high) or California (where investment was low). They added state-level "fixed effects" to control for any unmeasured heterogeneity within states. Using these methods, Card and Krueger (1992) demonstrated that educational resources invested in a state where an individual was born were systematically related to their later adult earnings.

While Card and Krueger's (1992) empirical results were widely cited, their methods were also carefully critiqued (Heckman, Layne-Farrar and Todd 1996; Hanushek, Rivkin and Taylor 1996). In particular, critics questioned the absence of adequate controls for selective migration as well as the assumption of linearity in economic returns associated with years of schooling.[1] In addition, we were concerned about the validity of Card and

Krueger's assumption that individuals who currently reside outside their birth state were actually educated there.[2] In response to these criticisms, we modified the original Card and Krueger methodology in two ways.

First, instead of relying solely on Card and Krueger's assumption that individuals who reside in a location other than their birth state actually received their education in their birth state, we take advantage of a separate census question that identifies the state a respondent was residing in five years earlier. While this results in a smaller sample, we can have greater confidence that individuals who were living in their birth state five years before they were interviewed (i.e., *recent interstate migrants*) actually received their education in their birth state. In fact, in estimates based on the National Longitudinal Youth Survey (available on request), we found that 92% of individuals in a recent interstate migrant sample had the same birth state as their state of residence at age 14. In our multivariate analysis, we rely both on Card and Krueger's originally defined interstate migrant sample and our more restrictive recent interstate migrant sample. If estimates are similar across both samples, we can have greater confidence in the validity of our conclusions.[3]

Second, because migration selectivity is potentially related to distance of migration, we add controls for migration that occurs solely between adjacent neighboring states as well as for migration that occurs solely within a region (i.e., Northeast, South, West and Midwest). We also present supplementary analysis in which variation in selective migration pressure is further controlled by including a time-period specific out-migration rate of individuals aged 18 to 60 from each respondent's birth state.

We use logistic regression with state-level fixed effects for both birth and residence state to calculate the likelihood of incarceration for adults who no longer reside in their birth state. Our research makes use of three waves of micro-level data on state prisoners and local jail inmates from the 1970, 1980, and 1990 U.S. censuses. Because they were not necessarily located in the same state where conviction and prior residence occurred, we exclude all federal prisoners from our analysis. We merge 16% micro-level census data on state and local prisoners with 5% samples of publicly released micro-level data on non-institutionalized individuals from the 1980 and 1990 U.S. censuses and two 1% samples from the 1970 census.[4] We re-weighted data from the various samples to adjust sample densities to represent the population accurately.[5] State-level measures of teacher-student ratios were taken from the Digest of Education Statistics and the Biennial Survey of Education Series.[6]

This part of our analysis focuses on three indicators of the role of educational experiences on adult incarceration risk. First, we examine reduced form models in which effects of state-level educational resources (measured as student-teacher ratios[7] and imputed on the basis of reports of state and year of birth) are assumed to occur solely by affecting average incarceration rates of individuals exposed to education in a given state (i.e., by affecting variation in intercepts associated with birth state). Second, we examine an interaction between high school graduation and public school resource investment. We look at high school graduation separately since non-linearities in the relationship between education and incarceration occur most clearly with respect to this dichotomy (i.e., the difference between high school graduates and high school dropouts is more salient than the other variation in years of secondary or tertiary educational attainment). Finally, we

examine a more conventionally modeled interaction between years of education and our imputed assignment of educational resource investment.[8] Our analysis is thus designed to explore the theoretical models described above. If the skeptics are right, educational resources should have no impact on incarceration risk either through the reduced form models or the interaction models. If the education resource argument is right, educational resources should impact incarceration risk in the reduced form models only. And if the educational gatekeeper model is correct, we should find strong evidence for interaction between educational attainment and educational spending with a closer association between educational attainment and incarceration risk for individuals educated in better funded schools systems.

In our analysis, we estimate the following equation:

$$P = 1/(1+e^{-XB}).$$

Where XB is a function taking the general form either of:

$$\delta_j + \mu_k + X_{ijk} + E_{ijk} \bullet (\gamma_{jc}) + r_{ijk.}$$

Or, the reduced form of:

$$\delta_j + \mu_k + X_{ijk} + \gamma_{jc} + r_{ijk.}$$

The probability of being incarcerated is calculated for the individual i, born in state j, in cohort c, and currently living in state k. δ_j represents a fixed-effect for each state of birth; μ_k represents a fixed effect for each state of residence; X_{ijk} represents a set of control variables affecting incarceration risks (i.e., age, gender, race, time-period and additional measures – discussed in detail below – that adjust for selective migratory pressures associated with state of birth and time-period); and r_{ijk} represents an error term at the individual-level. We examine the effects of educational experience on incarceration rates

in reduced form models in terms of associations with state-level variation in cohort and state of birth specific educational resource intercepts (γ_{jc}). In our full models, we examine the effects of educational attainment in relation to an interaction with educational resources [$E_{ijk} \bullet (\gamma_{jc})$]. This interaction term represents both higher and lower order terms of the interaction (i.e., educational attainment, educational resources, and educational attainment interacted with educational resources) and thus also identifies associations between incarceration and state-level variation in educational attainment slopes.

Our estimates of the individual likelihood of incarceration control for gender, race (measured as African-American or Hispanic), age and age-square (to control for the expected curvilinear association between age and incarceration). In addition, we add time period to the models to adjust for the degree to which incarceration rates are sensitive to historical political conditions affecting sentencing likelihood and duration.

These methods allow us to provide general estimates of the effects of state-level imputed educational context variables on outcomes associated with educational attainment. Like Card and Krueger (1992:4), we seek to explain the shift in the return to education attributable to schooling in a particular state by examining the differences in school spending across states and over time. But while Card and Krueger were interested in how educational resource investment affected labor market returns to schooling, we focus instead on how educational resource investment affects the likelihood of individual-level incarceration.[9] Although our estimates of state-level educational context are crude, they are relatively unaffected by state-level omitted variable bias -- given our employment of an elaborate fixed effect control methodology. Thus, biases in our models should be random

and largely orthogonal to our statistical estimates of the relationship between adult incarceration and prior state level educational context.

V. RESULTS: EDUCATIONAL RESOURCES AND IMPRISONMENT RISK

Table 1 provides descriptive statistics for our two samples. Following Card and Krueger (1992), Sample A includes all interstate migrants (i.e., individuals who report differing states of birth and residence). Sample B is our more restrictive sample that includes only individuals who lived in their state of birth five years prior but resided during the census in a different state. The use of census data provides extremely large samples of individuals between the ages of 18 and 60 (over 4.5 million for sample A). We exclude cases with census imputation of state of birth, education or race.

Table 1 about here

Our two samples are virtually identical with regard to the teacher/student ratio, our primary independent variable. However, the two samples differ in several other respects. First, Sample B (recent interstate migrants) fluctuates much more dramatically by time period associated with the year of the survey: a particularly large number of individuals migrated out of their birth state in the period between 1985 and 1990. Second, respondents in Sample B are considerably younger (on average 27.9 years compared to 35.7 years), slightly better educated (13.2 average years of education compared to 12.8 years) and slightly more often male (51.5 to 49.4 percent) than the sample including all interstate migrants. Finally, because of the large number of 1990 respondents in the survey as well as their younger age, the overall rate of incarceration of recent interstate migrants is considerably higher than in the full sample of interstate migrants (8.98

compared to 4.05 per thousand). We speculate that the large difference in incarceration

probabilities between the samples is due in part to the fact that recent migrants are less

integrated socially and economically into their newfound communities.[10]

Examining the migration-selection control measures allows us to identify the extent

to which U.S. interstate migration is confined to region of birth. Summing the four

regions in Table 1 shows that 42.1% of Sample A and 46.5% of sample B migrated to a

state located in the same region as their birth state. Intra-regional migration for both

samples is particularly common in the South. Interstate migration also commonly

involves individuals moving to a state adjacent to their birth state: about 20% of

individuals in both samples migrated in this way. According to Table 1, 37.9% of

individuals ages 18 to 60 have left their birth state at some point prior to the survey and

4.1% left their birth state in the past five years.

In Figure 1, we identify the relationship between the educational resources in the

individual's birth state and the likelihood of incarceration for out-migrants. Using our

larger Sample A, we provide a scatter-plot in which the x-axis is the average

student/teacher ratio found in a respondent's birth state over the 1910 to 1972 birth

cohorts sampled and the y-axis indicates the proportion of individuals who moved out of

their birth state and were incarcerated at the time of the 1970 to 1990 censuses. The size

of the bubbles in Figure 1 indicates the state's population size. Probabilities for this

figure are based on the actual percentage incarcerated and do not adjust for variables

(e.g., gender, race and age) that are incorporated into our multivariate analysis. Because

Figure 1 does not adjust for these various influences, it does not provide a direct

representation of state-of-birth-level fixed effects (i.e., variation in state-of-birth

intercepts) that are controlled for in our multivariate analysis. Nevertheless, the figure

does approximate those terms by identifying the degree to which states systematically

differ on whether their out-migrants end up incarcerated.

<u>Figure 1 about here</u>

Figure 1 provides quite dramatic evidence of the degree of association between

state-level educational resource investment and the probability that individuals will be

incarcerated (assuming they leave their birth state). The Pearson correlation coefficient

between these state-level measures is 0.67 weighted and 0.57 unweighted (p<.01 for

both). Figure 1 shows clearly that individuals who were born in states that invest little in

their schools face a much higher likelihood of ending up in other states' jails and prisons

as adults. For example, interstate migrants who were born in New York and New Jersey

with student/teacher ratios around 21.5 have a 3.0 per thousand likelihood of being

incarcerated during a census. While interstate migrants born in California with

student/teacher ratios of 25.1, have a 5.4 per thousand probability of being incarcerated.

It is worth pointing out that there are only two states, both with relatively small

populations that are outliers in Figure 1 (see bottom right quadrant of Figure 1). Hawaii

and Utah have relatively high student teacher ratios and yet relatively low out-migrant

incarceration rates (Hawaii's student/teacher ratio is 25.1 and out-migrant incarceration

rate is 1.5 per thousand; Utah's student/teacher ratio is 27.5 and out-migrant

incarceration rate is 1.9 per thousand). Interestingly, both states also have unique

demographic and cultural characteristics that may compensate for the effects of

educational conditions on imprisonment risk.

Figure 2 maps state-level variation in the degree to which host states of interstate migrants exhibit different rates of incarceration in the 1970 to 1990 censuses. These results again are descriptive and do not adjust for individual-level differences that are controlled in the multivariate analysis presented below. Nevertheless, Figure 2 shows that interstate migrants who move into certain states are particularly likely to end up incarcerated. Nevada -- contrary to its reputation as tolerant of vice and deviance – led the nation in locking up interstate migrants (6.6 per thousand were incarcerated). Incarceration rates for out of state migrants are also high in Texas, Arizona and the states of the Southeast. By contrast, New England as a region contained five of the eight states with the lowest rates of incarceration of interstate immigrants: New Hampshire, 1.3 per thousand; Vermont, 1.4 per thousand; Massachusetts, 1.7 per thousand; Rhode Island, 1.7 per thousand; and Maine, 1.8 per thousand (the other three non-New England states in this category are Hawaii, Montana and North Dakota with 1.6, 1.7 and 1.8 per thousand interstate immigrants incarcerated).

<u>Figure 2 about here</u>

To test the educational resource argument, we next examined reduced form models that estimate the effects of state-level educational resources on incarceration in the absence of considering levels of educational attainment. This procedure shows the extent to which educational resources affect incarceration likelihood through improving the average educational experiences of all individuals (i.e., affecting cohort and state-of-origin specific educational resource intercepts). Table 2 provides multivariate logistic regression results of the likelihood of individual incarceration with state-level fixed effects for birth state and current residence state. Models 1 and 2 in Table 2 are drawn

from all individuals who reside in a state differing from their birth state (Sample A) and

Models 3 and 4 are from the recent interstate migrants only (Sample B). Models 2 and 4

add the additional migration selection control of a time-period specific measure of the

percentage of interstate migration out of a respondent's birth state.

Table 2 about here

Table 2 shows only moderate support for the educational resources argument.

Although we found the expected negative relationship between teacher/student ratios and

incarceration risk in all four models, this relationship was only statistically significant in

the analysis of Sample A, all interstate migrants (Models 1 and 2). By contrast, the

effect of teacher/student ratios was insignificant for Sample B, the recent interstate

migrants (Models 3 and 4). The effect of moving from one standard deviation below the

mean to one standard deviation above the mean on the teacher/student ratio is associated

with between a 1.03 to a 1.24 times reduction in incarceration risk (depending on the

coefficient estimate used). When we excluded state-of-origin fixed effects from the

regression models in supplementary analysis (full results available upon request), state-

level differences in intercepts related to incarceration risk are more similar to the

descriptive findings in Figure 1: the teacher/student ratio coefficient equals -13.981

($p<.01$) for Sample A; and -11.984 ($p<.01$) for Sample B. Overall, the results suggest

only partial support for the hypothesis that increasing state-level educational resource

allocations will reduce overall adult incarceration risk.

Examining covariates measuring individual characteristics in the models reveals few

surprises. Men are much more likely to be incarcerated than women (about 15.5 times).

Both African-Americans and Hispanics are more likely to be incarcerated than whites

(African-Americans 6.6 times more likely, and U.S. born Hispanics 2.0 times more likely).[11] The effects for age and time-period significantly vary depending on the sample analyzed. Incarceration risk for Sample A respondents was significantly higher in the 1990 census (1.9 times more likely than in the 1970 census) and was greatest for younger respondents. For recent interstate migrants (Sample B), incarceration risk peaks at age 39 and was highest in the 1980 census–-likely due to the significantly lower number of recent interstate migrants drawn from 1980 compared to the 1970 and 1990 censuses. The 1980 recent interstate migrants faced especially high incarceration risks.

The inclusion of additional migration-selection controls in our models had few effects on our findings. Compared to others types of migration, interstate migration that occurred solely within the Northeast was associated with higher rates of incarceration while migrants within the Southern region experienced lower incarceration rates. Measures controlling for the overall rate of migration out of a respondent's birth state had only limited effects: a higher outflow rate was associated with lower incarceration rates only for recent interstate migrants. The degree to which recent interstate migration is more sensitive to economic cyclical conditions is perhaps responsible for these differences. However, the addition of these outflow measures has little substantive effect on other results in our models.

In Table 3 we test the school as gatekeeper model by examining the possibility that state-level educational resources affect the association between educational attainment and incarceration risk (i.e., state-level variation in educational attainment slopes). Models 1-4 in Table 3 are based on Sample A (all interstate migrants). The first column (Model 1) presents results for the interaction of high school graduation and state-level cohort-

specific educational resources. Model 2 adds the time-period specific measure of the percentage of interstate migration out of a respondent's state of birth. Note that the high school graduation by teacher student ratio interaction term in both models 1 and 2 is highly significant: high school graduates from states that make substantial school investments face a significantly lower risk of imprisonment.

Table 3 about here

Models 3 and 4 in Table 3 are similar to Models 1 and 2, with the exception that we use years of education instead of the dichotomous measure of high school graduation. Note that the years of education by teacher/student ratio interaction term is again negative and significant in both Models 3 and 4. Models 5 to 8 replicate results for Models 1 to 4 but use instead Sample B (recent interstate migrants). Note again that the interaction terms for both of the high school graduate by teacher/student ratio models (5 and 6) and the interaction terms for both of the years of education by teacher/student ratio models (7 and 8) are significant and negative.

In short, the results, regardless of modeling strategy or sample used, offer consistent and robust support for the gatekeeper model. The effects of a high school diploma (or educational attainment defined more generally) on the risk of adult incarceration are highly dependent on the state-level educational context. When resource investments are higher, educational attainment provides a significantly greater degree of protection from the likelihood of adult incarceration. Other results in Table 3 are similar to the earlier findings. Males, African-Americans, Hispanics, and older individuals face elevated imprisonment risk. However, this risk is curvilinear by age, first increasing and later declining. Compared to those interviewed in the 1970 census, individuals in both the

1980 and 1990 censuses face a significantly increased risk of imprisonment. Sample A respondents who migrated within the Midwest faced greater imprisonment risk while those who migrated to an adjacent state faced a lower imprisonment risk. Sample B residents who migrated within the Northeast faced a higher risk of imprisonment. As in the previous table, Sample A respondents from states with a higher percentage of out migration faced higher imprisonment risks while Sample B respondents from states with a higher percentage of out migration faced lower imprisonment risks.

Figure 3 shows the relationship between incarceration risk and cohort specific student/teacher ratios for all interstate migrants and recent migrants only. Estimates in Figure 3 are based on results from Table 3, Model 1 using Sample A and Model 5 using Sample B. The x-axis in Figure 3 identifies one standard deviation changes in cohort specific student/teacher ratios in birth states[12] and the y-axis measures the individual risk of incarceration for migrants. While the intercepts are significantly higher in Sample B than Sample A (given the overall higher incarceration rate of recent interstate migrants), the effects are similar. Compared to states that spend less on education, the gap in incarceration risk for graduates and drop outs is much wider among migrants from states that spend more on education. Moreover, this gap gradually narrows as the student/teacher ratio declines. In fact, in the case of all interstate migrants, the gap totally disappears at a student/teacher ratio of 40 to one.

<u>Figure 3 about here</u>

Figure 3 shows that as educational resources increase by one standard deviation, high school graduates are 1.43 to 1.24 times less likely to be incarcerated (depending on whether the estimate is based on all interstate migrants or recent interstate migrants

respectively). When the student/teacher ratio was 20 to 1 in their state of birth, interstate migrants who completed high school were incarcerated at a rate of 2.3 per thousand with other variables set at their mean; when the student/teacher ratio was 29 to 1 in their state of birth, high school graduates who have moved to other states had a 4.8 per thousand probability of incarceration. Recent interstate migrants who completed high school in similar conditions face a 5.8 per thousand imprisonment rate compared to a 9.0 per thousand probability of incarceration. In short, Figure 3 shows consistent support for the conclusion that state-level educational resources greatly reduce imprisonment risk for high school graduates and those with higher educational attainment (i.e., state-level variation in educational attainment slopes).

But while our results confirm the educational resource model's prediction that low student/teacher ratios will be strongly associated with low imprisonment risk among high school graduates, the results also support the less obvious gatekeeper assertion that low student/teacher ratios will be associated with high imprisonment risk among high school dropouts. For example, high school dropouts from states with student/teacher ratios of 20 to 1 have an 11.1 per thousand probability of being incarcerated during the census count as compared to only a 7.8 per thousand probability of being incarcerated if the student/teacher ratio was 29 to 1. Thus, as predicted by the gatekeeper perspective, high school dropouts in our fixed-effect models face higher incarceration risks in states that invest greater amounts on education.[13] These findings are consistent with the conclusion that resource rich schools more effectively sort out marginally capable students from those that are the least capable and successfully educate these marginally capable students. But at the same time, high school dropouts in these relatively well off settings

are particularly prone to incarceration because they have become the most at-risk

students highly selected on a range of unmeasured negative characteristics (e.g., grades,

long term goals) related to crime and incarceration.

<p style="text-align:center"><u>Figure 4 about here</u></p>

Figure 4 presents a related state-level analysis of the effects of high school

graduation on incarceration likelihood. We estimated logistic regressions separately by

state of origin for all fifty states. We used equations similar to Model 1 in Table 3 except

that we omitted fixed effects for birth state, the teacher/student ratio and the interaction

term. The y-axis graphs the state-specific logistic coefficient estimates for the effect of

high school graduation on incarceration, the x-axis identifies the average student/teacher

ratio found in the state; the size of the bubble identifies the state sample size that is the

basis of the statistical estimate.

Figure 4 confirms that effects of high school graduation are closely related to

educational resource allocations; the association is particularly prominent in high

population states where estimates have the highest reliability (the weighted Pearson

correlation coefficient is 0.61, $p<.01$; the unweighted correlation is 0.36, $p<.05$).   For

example, high school graduates from Massachusetts, a state with an average student-

teacher ratio of 22.5 to 1, were 3.2 times less likely incarcerated as interstate migrants

than high school dropouts from that state. By contrast, high school graduates from

Tennessee, a state that invests less in public education (average student/teacher ratio of

27.3), were only 1.9 times less likely to be incarcerated as interstate migrants than high

school graduates from the same state.

We began this part of the analysis with three models of the relationship between educational spending in high schools and individual level adult imprisonment risk. Contrary to educational skeptics and in support of the educational resource model, we do find that individual migrants educated in states that spend more on high schools experienced lowered individual incarceration risk for adults—especially high school graduates. However, contrary to the educational resource model, high spending schools do not reduce the risk of all their students equally. Instead, as predicted by the school as gatekeeper model, high spending schools increase the fit between educational success and imprisonment risk: educational successes in high spending schools face a reduced risk of imprisonment while educational failures face an even higher risk of imprisonment than they would face in a state that supplies fewer educational resources to its high school students.

One way to interpret these results is to imagine that based on their expected educational success, schools sort students into three categories: winners, losers and a swing group. The educational winners likely face little risk of imprisonment wherever they are educated and the educational losers likely face a high risk of imprisonment wherever they are educated. But in states where educational spending is low, individuals in the swing group may get haphazardly assigned to educational winner and loser groups in terms of imprisonment risk making the fit between educational attainment and imprisonment relatively loose. On the other hand, in states where educational spending is high, most of the swing group ends up with the educational winners, inoculated from prison. However, this leaves behind a group of educational losers who face especially high imprisonment risks.

In the next part of this report we consider the second major policy issue that we explored in the research: the impact of state-level racially segregated schooling on African American incarceration risk.

VI. RACIAL ISOLATION AND INCARCERATION RISK

Following the landmark *Brown v Board of Education* decision in 1954, most research on the impact of school desegregation on African Americans has emphasized its short-term psychological effects (Levin 1975; Braddock and McPartland 1982). But beginning in the late 1970s, researchers (e.g., Kaufman and Rosenbaum 1992; Wells and Crain 1997) began to consider longer-term impacts of educational segregation for African Americans on a variety of more social-structural outcomes, including occupational attainment (Crain and Straus 1985; Braddock and McPartland 1987), college attendance (Crain and Mahard 1978; Braddock 1980; Dawkins 1991), and occupational aspirations (Dawkins 1983; Gable, Thompson and Iwanicki 1983). This growing body of research is beginning to provide useful information on whether the life chances of black students who attend more racially diverse schools are significantly improved over those of comparable blacks who do not.

But while researchers are beginning to investigate the impact of racially isolated schooling on positive life experiences such as educational and occupational attainment, little research to date has explored the possibility that greater racial diversity in schooling might reduce the risk of negative life experiences such as crime and imprisonment. This is a potentially important oversight because prior research has linked racial isolation to a wide range of variables that may in turn, be expected to influence imprisonment chances,

including adult earnings (Wilson 1987; Massey and Denton 1993), educational attainment (Entwisle and Alexander 1992; Bankston and Caldas 1996), adult interaction patterns (Braddock and McPartland 1987), and school success (Jaynes and Williams 1989). Moreover, given the disproportionate rates of imprisonment experienced by African Americans, any link between race-related educational experiences and subsequent criminal justice processing has considerable policy importance.

While we could identify no prior research that specifically examines connections between racial isolation and adult incarceration risk, we summarize four related bodies of research that are consistent with this possibility. First, there is considerable evidence that racial isolation concentrates poverty and economic disadvantage within schools (Wilson 1987; Massey and Denton 1993). Poverty concentration, in turn, has been linked to a variety of negative outcomes, including crime (Krivo, Peterson and Rizzo 1998; Massey and Eggers 1990; Massey, Eggers and Denton 1994) and imprisonment risk (Arvanites and Asher 1998; Beckett and Western 2001). Massey and Denton (1993:125-130) show that because a far higher percentage of African American than white families are poor, racial isolation is more likely to result in black than white families living in conditions of concentrated poverty. Similarly, Orfield and Eaton. (1996:53) conclude that while most racially isolated African American schools are dominated by poor children, 96 percent of racially isolated white schools have middle class majorities. As a consequence, a student moving from a racially isolated African American school to a racially isolated white school is usually moving from a school of concentrated poverty with many social and educational shortcomings to a school with fewer burdens and better resources to prepare students for college or jobs.

Wilson (1987) points out that concentrated poverty also structures the character of peer climates and the influence of significant others on youth socialization. Beginning with Coleman et al.'s (1966) influential report, many researchers have argued that the effect of racial isolation on peer climates is a central element producing racial disparities in educational opportunities. For example, Massey and Denton (1992:141) claim that by concentrating low achieving students in certain schools, isolation creates a social context within which poor performance becomes standard and low expectations predominate. Similarly, Orfield and Eaton. (1996) conclude that children in isolated schools are far more likely to experience low levels of competition and expectation, less qualified teachers who leave as soon as they get seniority, and peer pressure against academic achievement.

Second, racial isolation of schools has been shown to negatively affect academic achievement and success, which in turn have been previously related to crime and incarceration risk (Andrew 1979; Friedman and Rosenbaum 1988). For example, an analysis by Bankston and Caldas (1996) found that above and beyond an individual's own racial status, *de facto* segregation (which they define as strong minority concentration) has a significant effect on academic achievement. Moreover, this effect is independent of behavior patterns, habits prevailing in schools, and school SES levels. Similarly, Massey and Denton (1993) calculate that racial isolation has a significant effect, over and above the effect of poverty, on raising the number of African Americans who score below the 15th percentile on the California Achievement Test.

In a study of the growing convergence in test scores for African American and white students, Cook and Evans (2000) find that only 25% of this convergence can be explained by changing family characteristics of blacks and whites and increasing similarities in the

quality of the schools that blacks and whites attend. The other 75% of the convergence is explained by changes that take place within schools; a narrowing of the test score gap between black and white students who attend the same schools and have similar levels of parental education.   The authors also find that the relative quality of predominantly minority schools (defined as schools that are less than 20% white) and poor, inner city schools has become much worse over time. Although Cook and Evans do not directly test the effects of racial integration on test scores, they conclude (p. 752) that there is "no evidence that the rationale for integration has declined over time."

Research on summer "setback" (the tendency for adolescents to test worse following summer vacations) demonstrates that youth have distinct patterns of in-school and out-of-school learning associated with school and neighborhood racial composition (Entwisle and Alexander 1992, 1994). Most notably, African-American students in integrated schools show larger than expected gains in mathematics (Entwisle and Alexander 1992; Prager, Longshore and Seeman 1986; Wortman and Bryant 1985).   Moreover Entwisle and Alexander (1992) conclude that advantages of attending racially integrated schools extend to even the poorest African American children. In related research, Entwisle and Alexander (1994) have demonstrated a complex effect of racial isolation on elementary school reading test scores. Because compared to other cognitive areas, reading test scores are more sensitive to informal non-school learning of language, summer family and neighborhood context appear to account for an especially large role in annual cognitive gains in this area.

Racial isolation in schools has also been linked to successful completion of high school and college; variables that are directly related to crime and imprisonment (Elliott and Voss

1974; Gottfredson 1981). Kaufman and Rosenbaum (1992) have demonstrated that, net of individual background, African Americans who attend more racially diverse schools have a greater likelihood of college attendance (Rosenbaum 1991; Braddock 1980). Similarly Cambum (1990) has shown that controlling for test scores, attendance at integrated rather than segregated city high schools greatly increases the probability that African American students will finish college (see also Braddock and McPartland 1982).

Third, there is considerable support (but not total, see Crain and Mahard 1978) for the conclusion that children attending racially isolated schools have higher, more realistic occupational aspirations and that they eventually obtain higher status jobs. These characteristics have clear implications for both crime and imprisonment chances. In a study of high school seniors, Dawkins (1983) found that black students who attended desegregated schools were more likely to expect to enter professional occupations (e.g., medicine, law) that have traditionally included few blacks. A study by Falk (1978) first surveyed black high school sophomores in 13 segregated high schools in rural Texas counties; then resurveyed them again two years later, when the students were seniors and half of them were enrolled in newly desegregated (predominantly white) schools; and then conducted a final survey four years after the students had graduated from high school. Falk found that the students attending the desegregated schools had higher occupational aspirations and that their occupational aspirations were more realistic: the levels of education to which they aspired were more highly correlated with their actual educational attainment four years later.

Finally, there is evidence that African Americans who attend racially isolated schools are more likely to interact with whites as adults. Wells and Crain (1994) use "perpetuation

theory" to account for the long-term effects of racial segregation on individual-level attitudes and behavior. As developed by McPartland and Braddock (1981), perpetuation theory maintains that racial segregation often repeats itself across the stages of the life cycle and in institutional settings among individuals who have not experienced sustained desegregation earlier in life. In support, prior research shows that African-Americans who have attended integrated high schools are more likely to attend predominately white colleges (Dawkins 1983, Braddock 1980), to have social networks as adults which incorporate whites (Braddock and McPartland 1987), to work in settings with greater numbers of whites (Trent 1991, Crain and Strauss 1985), and to select racially diverse schools for their children (McPartland and Braddock 1981). These processes may in turn affect imprisonment risk through both behavioral and labeling mechanisms.

From a behavioral perspective, blacks who have more contact with whites may reduce imprisonment risk for blacks by improving the effectiveness of the social networks that lead them to jobs and afterwards, to success at jobs. Granovetter (1986) notes the importance of "weak ties" in bridging the often separate cliques of white and nonwhite teenagers. In a national survey of employers, Braddock and McPartland (1987) found that apart from referrals from public employment agencies, the two most popular methods of recruiting job candidates for entry-level positions was through informal referrals and unsolicited walk-ins. The researchers speculate that racial minorities who experience "social network isolation" (p. 9) may consequently find more limited job opportunities.

If desegregation increases the ease with which African Americans interact with whites, it may also increase their success at avoiding criminal labels. In fact, more successful interaction styles may perhaps offer at least a partial explanation for the persistent finding

(Zatz 1984; Crew 1991; Ulmer and Kramer 1996) that compared to whites, racial

minorities charged with crimes are less likely to plea bargain. Clearly individuals who

have had little experience interacting with whites and perhaps actively fear and mistrust

whites, are likely to be at a disadvantage in processing outcomes returned by a legal

system that is predominately staffed by whites. There is also evidence suggesting that

compared to whites, blacks are less likely to receive non-custodial sanctions such as

probation and parole (Nelson 1994; Steffensmeier, Ulmer and Kramer 1998)—outcomes

that may also be directly related to successful bargaining on the part of offenders. In fact,

there is a growing consensus (Chiricos and Crawford 1995; Spohn 2000) that sentencing

differences between African Americans and whites have been greater for these types of

noncustodial outcomes than for the total length of sentences imposed.

VII. ANALYZING THE IMPACT OF RACIAL ISOLATION IN SCHOOLS ON

IMPRISONMENT RISK

We test the effects of racial isolation (measured here as percent white students in

school of average African American student) on incarceration risk by building on methods

similar to those already described. As in the earlier analysis, we use logistic regression

with state-level fixed effects for both state of origin and state of residence to calculate the

likelihood of incarceration for adults who no longer reside in their birth state. In this part

of the analysis, we estimate the following equation:

$$P = 1/(1+e^{-XB}).$$

Where XB is a function taking the general form either of:

$$\delta_j + \mu_k + X_{ijck} + E_{ijck} + \gamma_{jc} + r_{ijck}.$$

Or, the reduced form of:

$$\delta_j + \mu_k + X_{ijck} + \gamma_{jc} + r_{ijck.}$$

The probability of being incarcerated is calculated for the individual *i,* born in state *j,* in cohort *c,* and currently living in state *k.* δ_j represents a fixed-effect for each state of birth; μ_k represents a fixed effect for each state of residence; X_{ijck} represents a set of control variables affecting incarceration risks (similar to those discussed above); E_{ijck} represents an individual's educational attainment and r_{ijck} represents an error term at the individual-level. We examine the effects of educational experience on incarceration rates in terms of associations with state-level variation in cohort and state of birth specific school desegregation intercepts (γ_{jc}). To explore the degree to which effects of racial isolation change over time, we also model an interaction between cohort and state of origin cohort-specific school racial isolation intercepts (γ_{jc}). We also estimate reduced form models without controlling for educational attainment to assess the degree to which school isolation can affect the likelihood of incarceration indirectly through affecting educational attainment.

As before our estimates of the individual likelihood of incarceration control for gender, age and age square (to account for the curvilinear relation between age and incarceration), in addition to netting out variation in intercepts associated with state of origin and state of residence. Because of their relatively small numbers, we excluded Hispanics from this part of the analysis. In addition, we add a measure of each individual's birth cohort to the models to adjust for the degree to which incarceration rates changed over time.

These methods allow us to provide general estimates of the effects of state-level measures of school racial isolation on outcomes associated with educational attainment. As in the earlier analysis, biases in our models should be random and largely orthogonal to our statistical estimates of the relationship between adult incarceration and prior state level educational context.

Our analysis relies on state and cohort specific imputation of average racial public school racial isolation. We measure African-American school racial isolation through use of an exposure index: the percentage of white students in the school population of an average African-American student in a state. For birth cohorts born in the 1960s and 1970s, we have good estimates of this measure from previous research that has relied on data from the Office of Civil Rights. Particularly, we make use of state-level reports identified in research by Orfield and Eaton (1996) and their colleagues at the Harvard Civil Rights Project. We make use of these measures for the majority of our analysis-- presenting the effects of this variable on both African-American and white incarceration risk (the latter to assess the degree to which results are spurious).

We conduct additional supplementary analysis to explore the degree to which recent associations between racial isolation in state school systems and individual incarceration risk are stable over time. Specifically, examining cohorts prior to the 1960s allows us to explore whether any connection between racial isolation and imprisonment risk changed over time. Unfortunately, no pre-1960s estimates of racial school isolation exist for states that did not racially segregate their students by law. To explore this earlier historic period, we are thus required to adopt an instrumental variable approach, where we create a measure for our individual-level analysis that provides an estimate of *predicted* racial

isolation in a state by cohort. For historically *de jure* segregated states in the South, we assign students in schools prior to 1960, an exposure index of 1 percent white students in a school of the average African-American student; in these states, we are also able to utilize historic measures of desegregation found in Rosenberg (1991) to adjust our 1970 measures of school segregation to reflect early efforts to desegregate schools after *Brown v. Board of Education.*[14]

For states that did not have *de jure* enforced segregation, we estimate prior patterns of predicted racial isolation through state-level ordinary least square regression. Specifically, we found that 84 percent of recent patterns of racial isolation (measured by an exposure index in states not having prior histories of *de jure* desegregation) could be explained as a product of three factors: percent of state urban, percent of state African-American, and the overall size of a state's school system.[15] For states without histories of *de jure* segregation we use these factors to assign states predicted African-American racial isolation exposure values by cohort.

VIII. RACIAL ISOLATION AND IMPRISONMENT RISK

Table 4 provides descriptive statistics for African Americans and whites in our two samples based on incarceration risk in 1980 and 1990. As in the analysis of state educational resources, sample A includes all individuals who report differing states of birth and residence (i.e., interstate migrants) and sample B includes only individuals who lived in their state of birth five years prior to the census (i.e., recent interstate migrants). Sample A includes more than a million whites and more than 100,000 African Americans between the ages of 18 and 60; sample B includes more than 184,000 whites

and 24,000 blacks for the same ages. Our racial isolation measure is the state-level

percent of white students in the school of the average African American. As before, we

exclude cases in which the census used imputed values for the state of birth, education or

race.

<div align="center">Table 4 about here</div>

Blacks and whites in the two samples differ in three main respects. First, in both

Samples A and B African Americans face a much higher incarceration risk than whites

(5.7 times higher for sample A and 6.2 times higher for sample B). Second, compared to

whites, African Americans in both samples are less likely to be high school graduates

(15.4% less likely in Sample A and 8.6% less likely in Sample B). The difference

between the two samples in terms of black graduation rates probably reflects in part the

fact that Sample B migrants are younger and have migrated more recently, picking up on

the gradual convergence in educational attainment levels between blacks and whites.

And finally, whites in both samples were more likely than blacks to have migrated within

the Northeast, Midwest or West; blacks were substantially more likely than whites to

have migrated within the South. Blacks and white were roughly similar in terms of

proportion male, age, adjacent state as birth residence, and percent interstate migration.

There are also several important differences between the two samples. First,

incarceration rates are much higher for recent interstate migrants compared to total

interstate migrants (2.0 times higher for whites and 2.2 times higher for blacks). This

may reflect not just that the sample is younger, but also that recent interstate migrants

have weaker ties to their respective communities. Second, as in the earlier analysis, the

total proportion of individuals that has migrated is considerably higher than the

proportion that has migrated within the past five years (9.6 times higher for whites and 10.0 times higher for blacks). Third, compared to total black migrants, recent black migrants have attended schools in states that have a much higher (45.7%) estimated proportion of white classmates. And finally, compared to total migrants, recent migrants are more likely to be male and are considerably younger.

In Figure 5, we identify the relationship between the level of racial heterogeneity in the state of origin and the likelihood of incarceration for out-migrants. The x-axis in Figure 5 is the percent of white students in the schools of the average African American respondent's state of origin over the 1960 and 1970 birth cohorts; the y-axis shows the proportion of individuals who moved out of their state of birth and were incarcerated at the time of the 1980 and 1990 censuses. As in earlier figures, the size of the bubbles in Figure 5 indicates the population magnitude of each state[16] and the probabilities for Figure 5 are based on the actual percentage incarcerated and do not adjust for variables (e.g., gender, race) that are incorporated into our multivariate analysis. Because Figure 5 does not adjust for these various influences, it does not provide a direct representation of state-of-birth-level fixed effects (i.e., variation in state-of-birth intercepts) that are controlled for in our multivariate analysis. Nevertheless, the figure does offer an approximation of the degree to which states systematically differ on whether their out-migrants end up incarcerated.

<u>Figure 5 about here</u>

Figure 5 provides quite dramatic evidence of the degree of association between state levels of educational isolation by race and the probability that individuals will be incarcerated (assuming they leave their state of birth). The Pearson correlation

coefficient between these state-level measures is .69 weighted and .51 unweighted (both

significant at the p<.01 level). The evidence is strong that African Americans who were

born in states with school systems in which there were few white students have a much

higher likelihood of ending up in other states' jails and prisons as adults. For example,

compared to recent white interstate migrants, black recent interstate migrants who were

born in Washington DC, where the average black student attended schools that were just

under 2 percent white, were 18 times more likely to end up in prison.[17] By contrast, the

typical black student in North Carolina attended school in classes that were more than 50

percent white and the ratio of black to white incarceration for recent migrants from North

Carolina was only two to one: nine times lower than the rate for the DC movers.

To test the racial isolation argument, we next examined models that estimate the

effects of state-level racial isolation rates on incarceration risk for birth cohorts in the

1960s and 1970s. We estimate white and African American models separately for each

sample. Table 5 provides multivariate logistic regression results of the likelihood of

individual incarceration with state-level fixed effects for state of origin and state of

residence. Models 1 to 4 in Table 5 are drawn from all individuals who reside in a state

differing from their state of birth (Sample A) and models 5 through 8 are from the recent

interstate migrants only (Sample B). Models 2, 4, 6 and 8 include a measure of whether

the respondent graduated from high school.

Table 5 about here

Table 5 shows strong support for the racial isolation argument. Starting first with

Sample A we see that as expected, compared to other black students, black students who

migrated from states where blacks encountered more whites in school faced significantly

lower imprisonment risk. As expected, the number of white students in school with the average African American has no effect on incarceration risk for white students in Sample A. Note than when a measure of high school graduation is included in the model (columns 2 and 4), the size of the racial diversity coefficient for blacks drops by 13 percent. In other words, attending schools with a higher proportion of whites reduces the chances that blacks will end up in prison as adults both directly and also indirectly through its impact on high school graduation: black migrants who attended schools with fewer whites were more likely to graduate and high school graduates were significantly less likely to end up in prison as adults.

We note several other results from the analysis of Sample A in passing. The significant birth cohort effect for all four of the Sample A models reflects higher imprisonment rates for more recent cohorts. As expected, men and older persons face much greater imprisonment risk than women and younger persons, although the significance of the age square term shows that movers face a declining incarceration risk as they grow older. All of these effects were strong for both African Americans and whites. The inclusion of additional migration-selection controls in our models had little impact on our main substantive conclusions. Sample A results show that blacks who migrated within the Midwestern region face an especially high risk of incarceration— reflecting perhaps the high black incarceration rates in many large Midwestern cities. Whites who migrated within the Northeastern region faced higher imprisonment risk, but whites who migrated within the South faced lower imprisonment risk.

Results for the recent interstate migrants (Sample B) are very similar to the results for Sample A. Most notably, African American recent migrants in state school systems

with a higher proportion of white students face a significantly lower risk of
imprisonment (Model 5). As in the Sample A analysis, the impact on black incarceration
risk of attending school with a higher proportion of white students declines when we add
a measure of high school graduation in Model 6 (by 10.3 percent). Thus, greater racial
diversity reduces the prison risk of black migrants directly and also indirectly because
black students educated in less segregated schools are more likely to graduate from high
school.

Among the recent interstate migrants, the strong positive connection between
imprisonment risk and birth cohort is reversed, with more recent white birth cohorts
actually having lower imprisonment risk. For both blacks and whites, high school
graduation significantly reduces imprisonment risk. As in the analysis of Sample A and
for both African Americans and whites, males and older respondents face higher
imprisonment risks but these risks decline with age. For the Sample B analysis, Blacks
who migrated within the Midwest or the West faced elevated imprisonment risk while
whites who migrated in the South faced lower imprisonment risk, but whites who
migrated within the West faced higher imprisonment risk.

Table 5 shows that contrary to our expectations, the average proportion of white
students in the school of the typical African American also reaches statistical
significance in the two models for recent white migrants (7 and 8). But note that the size
of the coefficient for whites is far lower than the size of the coefficient for blacks and in
fact resembles the findings for Sample A. Thus, for total interstate migrants, the white
racial isolation measure (model 1) is 4.33 times larger for blacks than for whites (model
3). Similarly, for recent black interstate migrants, the racial isolation measure (model 5)

is 3.05 times greater for blacks than for whites (model 7). The significant effects of

integrated school settings on white students suggests either that some change in state-

level African-American school integration may be associated with other unmeasured

state-level changes that reduce incarceration risk (approximately one-third of the effects

of school integration on African-American students might thus be questioned); or that

the positive effects of African American school integration might generate diffuse

benefits that affect white students as well as African-American students.

To get a better substantive feel for the results, in Figure 6 we present an analysis

which compares African American incarceration risk and the percent white students in

the school of the average African American for the interstate movers and for the recent

interstate movers. The estimates in Figure 6 are based on the results from Table 5,

models 1 and 5. The x-axis in Figure 6 identifies the percent of white students in school

with the average black student and the y-axis measures individual risk of imprisonment

for blacks. While there are clear effects for both samples, the effects are especially

dramatic for the recent interstate migrants (i.e., Sample B). For the recent movers,

blacks students who attended schools that on average were 55 percent white had

incarceration rates under 10 per 1,000. For the total movers (Sample A), incarceration

risk for blacks still nearly doubles as we move from states where the average black child

was in classes in which 55 percent of the students were white to states where the average

black child was in classes in which only 15 percent of the other students were white.

<u>Figure 6 about here</u>

In research on the impact of racial isolation on academic achievement for blacks,

Bankston and Caldas (1996:553) raise the possibility that there may be a "threshold" effect

associated with levels of school integration and academic achievement for blacks and whites. Our data allow us to raise the related issue of whether there is a threshold (or tipping point) at which levels of racial isolation have an especially pronounced effect on black imprisonment risk. In Figure 7, we provide estimates of the relationship between state-level school racial isolation and incarceration risk with a slightly different methodology. We ran separate models for each state of origin where more than 1,000 African-Americans were in our pooled 1980-1990 sample of interstate migrants. The x-axis represents the average racial isolation level in state of origin during the time period studied; the y-axis identifies the extent to which African-American interstate migrants face higher risk of incarceration than whites educated in the state; and the size of the bubble identifying the sample size.

<u>Figure 7 about here</u>

Figure 7 shows that a "tipping point" might indeed exist with schools having fewer than 30 percent of white students in the school of an average African-American student facing dramatically increasing rates of African-American imprisonment. The most extreme example of this possibility is the data point representing interstate migrants originating in the highly racially isolated schools of the District of Columbia; African-American were 14.7 times more likely than whites from this setting to be incarcerated as adults.

In the next part of the analysis we examined the impact of racial isolation on black imprisonment risk in earlier cohorts (from the 1930s to the 1950s), when <u>de jure</u> educational segregation laws still existed. As we explained above, for these earlier birth cohorts, we had to develop estimates of the proportion of white students in school with

the average black student. As in the earlier analysis presented in Table 5, we again estimated separate models for blacks and whites, with and without the high school graduation measure and for both total migrants and recent migrants. The results are presented in Table 6.

The total number of cases available for analysis in Table 6 is substantially larger because we are now including birth cohorts from the 1930s to the 1950s. The main analytical difference between Table 6 and the previous analysis is that we have added a product term that measures birth cohort by our estimate of the number of white students in the school of the average black student to the models. This is done to capture expected differences in the relationship between racial isolation and imprisonment risk for African Americans over time.

<u>Table 6 about here</u>

What is especially interesting about Table 6 are the results for the birth cohort by racial isolation product term. As expected, Table 6 shows strong birth cohort effects in all four of the Sample A models reflecting the fact that incarceration risk increases substantially over time. But note the highly significant birth cohort by proportion of white students product term for Models 1 and 2 which show African American imprisonment risk. We can interpret this variable as showing that the ability of white students to lower the incarceration risk of black students is much greater in more recent birth cohorts. Also as expected, we find no significant birth cohort by proportion of white students product term in either of the white models (3 and 4).

Although not all of the effects are statistically significant, the direction of effects are exactly the same for the Sample B analysis: later birth cohorts face a higher

incarceration risk and the ability of white students to reduce imprisonment risk for black students increases for more recent birth cohorts. In three of the four Sample B models, the birth cohort variable is statistically significant (the exception is model 5) and one of the two African American product terms is marginally ($p < .10$) significant. As in the Sample A analysis, the product term is not significant for either of the white models (7 and 8).

Other results from Table 6 are similar to the Table 5 results. Graduating from high school greatly lowers imprisonment risk for both blacks (models 2 and 6) and whites (models 4 and 8). For both samples A and B, men are more likely to be incarcerated and incarceration risk peaks in our sample for adults in their early to mid thirties. Blacks in Sample A who migrated within the Midwest face an elevated risk of incarceration while blacks from states with a higher proportion of interstate migration face lower imprisonment risk. Whites in Sample A who migrated within the Northeast or the West faced higher imprisonment risk while those who migrated within the South faced lower imprisonment risk. Blacks in Sample B who migrated within the Northeast, Midwest or West faced higher imprisonment risk. Whites in Sample B who migrated within the Northeast faced higher imprisonment risk, but whites who migrated within the South faced lower imprisonment risk. Both blacks and whites in Sample B from states with a higher proportion of interstate migration faced lower imprisonment risk.

Consistent with our theoretical arguments, the results show a highly significant interaction between birth cohort and our estimate of the proportion of white students in schools attended by blacks for the total sample (Models 1 and 2) and while the results for the product terms do not reach statistical significance in Sample B, they demonstrate

similar patterns. These findings generally support the conclusion that attending schools with a higher proportion of white students has an increasingly strong affect on black imprisonment risk over time.

These results are more dramatically illustrated in Figure 8, which is based on estimates of incarceration risk for total and recent African American migrants (Table 6, models 2 and 6). Table 6 shows the relationship between incarceration risk (per 1,000) and successive birth cohorts from 1930 to 1970. The top two lines depict the results for the recent migrants and the bottom two lines for total migrants. To illustrate how important these differences are we contrast African Americans who were educated in schools that contained 1% whites with African Americans who were educated in schools that contained 40% whites.

<u>Figure 8 about here</u>

Note first that all of the trend lines in Figure 8 are increasing, which signifies the rising risk of imprisonment for individuals born in more recent cohorts. For the recent migrants shown in the top part of Figure 8, incarceration risk for the 40% and 1% white samples were about the same for the 1930 cohort. But the two lines then begin to dramatically diverge for subsequent cohorts. The gap is the widest for the cohorts from 1960 and 1970. For cohorts born in 1970, incarceration risk jumps from 35 per 1,000 for black migrants from schools in which on average 40 percent of the students were white to an imprisonment risk of 60 percent per 1,000 black migrants who were in schools where on average only 1 percent of the students were white—this represents a 71 percent increase in imprisonment risk for blacks between the two contrasts.

The results are similar but somewhat more complex for Sample A, shown in the bottom half of Figure 8. Here we can see that for birth cohorts from the 1930s to the 1950s—the period of de jure segregation—black movers actually faced a lower risk of imprisonment when they were educated in more racially segregated than in less racially segregated schools. However, for the 1960s and 1970s cohorts the results are more similar to the results for the recent migrants. These results suggest that the basic characteristics of racially isolated schools have changed over time. We suspect that blacks attending de jure racially segregated schools prior to the 1960s were more likely than blacks attending racially isolated schools in more recent years to be in classrooms where there was strong order, a strong emphasis on learning, and more consistent school disciplinary practices. This reasoning is consistent with Coleman's (1966) argument that racial segregation may affect school performance most strongly through its affects on the climate of the school.

In short, our results show consistent support for the argument that levels of racial isolation in schools is directly related to imprisonment risk for African Americans. These results may be timely. While the effort to desegregate schools in the United States starting in the 1950s was arguably the most important step toward racial integration ever taken in this country (Clotfelter 1999), there is a growing belief that the racial integration of schools is neither a necessary nor even desirable goal. Thus, an increasing number of scholars (e.g., Boateng 1990; Gerard 1988; Leake and Leake 1992) have argued that attending racially desegregated schools may cut blacks from their cultural roots, lower their self esteem, and reduce their motivation and enthusiasm for learning. With declining public pressure, a growing number of jurisdictions are abandoning long-standing plans for

increasing racial diversity. Thus, in September 1999, a federal district judge in North Carolina ended the nearly thirty-year old-busing order in Charlotte (57 F. Supp. 2d. 228 1999). Similarly, on the twenty-fifth anniversary of the busing order in Boston, the Boston School Committee voted to end the use of race as a criterion for the assignment of students to schools (Guryan 2001:4). Orfield and Eaton. (1996) point out that many U.S. schools are steadily resegregating, implicitly returning to the separate but equal philosophies that were rejected as ineffective by *Brown* in 1954.

IX. CONCLUSIONS, IMPLICATIONS, AND FUTURE RESEARCH

In general, our results suggest that schools play a critical role in the subsequent life chances of individuals. The individual risk of imprisonment is strongly affected by the state-level characteristics of the schools where the individual was born and these effects follow individuals even when they change states. Hence, our findings support those theories of crime and criminal justice (Matza 1964; Hagan 1991; Sampson and Laub 1993) that emphasize the malleability of criminal propensity and the possibility of changes and turning points. In his influential work on delinquency and drift, Matza (1964:28) argues that delinquents are not locked into crime in an absolute way, but rather exist in a "limbo between convention and crime, responding in turn to the demands of each, flirting now with one, now the other…." Such reasoning suggests that it may well be easier for juveniles to "drift" into crime when they are educated in states that spend relatively little on education and for blacks, when they attend schools systems with few white students.

But while states that spent more on education and provided more racially diverse schools reduced imprisonment risk in the aggregate, the findings were far from simple. In

the case of educational spending, schools with more resources actually widened the gap between educational winners and losers. And we found that while black students educated in state school systems that had higher proportions of whites faced significantly lower incarceration risks after the 1960s, we also found that attending schools with a higher proportion of whites provided little or no reduction in imprisonment risk for African American cohorts born in the period of de jure segregation (1930s, 1940s and 1950s). Thus, the implications of our findings for social policy are significantly more complicated than simple prescriptions suggesting increased educational funding or racial diversity in schools. While increasing school resources will help in reducing the overall number of individuals prone to incarceration, it also likely has the unintended consequence of creating a group of educational failures that while potentially smaller in number are more "at risk" in their criminogenic orientations and propensities for behavior leading to incarceration. If educational resources alone do not reduce the imprisonment risk of high school dropouts, policy makers must consider simultaneously creating alternative mechanisms and programs to address these populations, particularly in states that invest more in their schools.

Existing research suggests several candidates for programs that could be effective with such at-risk populations. For example, drawing on data originally collected by Sheldon and Eleanor Glueck, Sampson and Laub (1996) show that military service in World War II served as a turning point in the lives of the young men in their sample. While they warn that the ability of military service to transform the lives of individuals will be closely related to the specific historical context in which it occurs, the veterans in their study significantly increased their economic well being and job stability. Moreover, these

effects were especially strong for veterans who had official prior records of delinquency. Similarly, using the National Longitudinal Survey of Youth, Arum and Beattie (1999) show that young men enrolled in vocational education classes reduced their likelihood of adult incarceration both overall and net of differences in the adult labor market.

But ironically, both access to military service and vocational educational opportunities have been severely restricted to educational dropouts in recent years. Individuals with low levels of educational attainment have increasingly been barred from military participation as a result of efforts aimed at increasing standards and raising performance of U.S. military units. Likewise, vocational education programs have also been eliminated in many secondary schools in the last few decades

Our results also show that while providing black students with a higher proportion of white classmates appears to reduce imprisonment risk for those born in more recent birth cohorts, we need to carefully evaluate why African Americans in racially isolated schools face higher imprisonment risks over time. Our results strongly suggest that the nature of education in schools that are predominately attended by African Americans is quite different today than it was before the landmark desegregation decisions of the 1960s.

In the face of unprecedented incarceration rates and increasingly shrill arguments over the social and monetary costs of specific educational policies, it is critical to have more definitive information on possible links between the characteristics of public education and the likelihood of adult incarceration. Investing increased resources to lower class sizes or increase per-student expenditures might ultimately offer less expensive and more socially desirable alternatives to incarceration. Our research, however, suggests that such investments are not simple panaceas for problems of youth socialization and social control.

Increased resource investment requires that more, rather than less, attention be paid to the problem of what to do with individuals subject to educational failure. Likewise, a renewed emphasis on providing black students with racially diverse educational environments may well result in substantially lowering their imprisonment risk. But at the same time, we need to ask ourselves why segregated schools seem to lead more directly to imprisonment today than they did in the early postwar period.

X. REFERENCES

Andrew, J. 1979. "Violence and Poor Reading," *Criminology* 17:361-65.

Arum, Richard. 1996. "Do Private Schools Force Public Schools to Compete?" American

    Sociological Review 61:29-46.

-----. 1998. "The Effects of Resources on Vocational Student Educational

    Outcomes: Invested Dollars or Diverted Dreams," *Sociology of Education*. 71:130-

    151.

Arum, Richard and Irenee Beattie. 1999. "High School Experience and the Risk of Adult

    Incarceration," *Criminology* 37:515-538

-----. 2000. *The Structure of Schooling: Readings in the Sociology of Education*. Palo

    Alto: Mayfield Press.

Arvanites, Thomas M. and Martin A. Asher. 1998. "State and County Incarceration Rates:

    The Direct and Indirect Effects of Race and Inequality," *Criminal Justice Policy*

    Review 7:27-53.

Austin, James and Barry Krisberg. 1998. "The Unmet Promise of Alternatives to

    Incarceration," *Crime and Delinquency* 28:374-409.

Bankston, C. and S. Caldas. 1996. "Majority African American Schools and Social

    Injustice: The Influence of De Facto Segregation on Academic Achievement*," Social*

    Forces 75:535-55.

Beckett, Katharine and Bruce Western. 2001. "Governing Social Marginality: Welfare,

    Incarceration, and the Transformation of State Policy," *Punishment and Society* 3:43-

    59.

Boateng, Felix. 1990. "Combating Deculturalization of the African-American Child in the Public School System: A Multicultural Approach," in K. Lomotey, ed. *Going to School: The African American Experience.* Albany, NY:SUNY Press.

Bonczar, Thomas and Allen J. Beck. 1997. "Lifetime Likelihood of Going to State or Federal Prison," *Bureau of Justice Statistics Special Report*. Washington, DC: Government Printing Office.

Braddock, J. H. 1980. "The perpetuation of segregation across levels of education," *Sociology of Education* 53:178-186.

Braddock, J.H. and J.M. McPartland. 1982. "Assessing School Desegregation Effects: New Directions in Research," *Research in Sociology of Education and Socialization* 3:259-282.

-----. 1987. "How Minorities Continue to be Excluded from Equal Employment Opportunities: Research on Labor Market and Institutional Barriers," *Journal of Social Issues* 43:5-39.

Bridges, George and Robert Crutchfield. 1988. "Law, Social Standing and Racial Disparities in Imprisonment," *Social Forces* 66:699-724.

Cambum, Eric M. 1990. "College Completion Among Students from High Schools Located in Large Metropolitan Areas," *American Journal of Education* 98:551-69.

Card, David and Alan Krueger. 1992. "The Economic Return to School Quality," *Journal of Political Economy* 100:1-40.

----- .1996. "School Resources and Student Outcomes: An Overview of the Literature and New Evidence from North and South Carolina," *Journal of Economic Perspectives* 10:31-50.

Carnoy, Martin, ed. 1972. *Schooling in a Corporate Society*. New York: McKay.

Chiricos, Theodore G. and Charles Crawford. 1995. "Race and Imprisonment: A Contextual Assessment of the Evidence," In D. Hawkins, ed., *Ethnicity, Race and Crime*. Albany, NY: State University of New York Press.

Chiricos, T.G. and M. A. Delone. 1992. "Labor Surplus and Punishment – A Review and Assessment of Theory and Evidence," *Social Problems* 39: 421-446.

Clotfelter, Charles T. 1999. "Public School Segregation in Metropolitan Areas," *Law and Economics* 75:487-504.

Cloward, Richard and Lloyd Ohlin. 1960. *Delinquency and Opportunity*. New York: Free Press.

Coleman, James, Ernest Campbell, Carol Hobson, James McPartland, Alexander Mood, Frederich D. Weinfeld, and Robert York. 1966. *Equality of Educational Opportunity*. Washington, D.C.: Department of Health, Education and Welfare.

Cook, Michael D. and William Evans. 2000. "Families or Schools? Explaining the Convergence in White and Black Academic Performance," *Journal of Labor Economics* 18:729-754.

Crain, R. L. and R. Mahard. 1978. "School Racial Composition and Black College Attendance and Achievement Test Performance," *Sociology of Education* 51:81-101.

Crain, R. and J. Strauss. 1985. *School Desegregation and Black Occupational Attainments: Results from a Long-term Experiment*. Baltimore: Center for the Social Organization of Schools.

Crew, Keith. 1991. "Race Differences in Felony Charging and Sentencing: Toward an Integration of Decision-Making and Negotiation Models," *Journal of Crime and Justice* 14:99-122.

Currie, Elliott. 1998. *Crime and Punishment in America*. New York: Henry Holt.

D'Alessio, Stewart and Lisa Stolzenberg. 1997. "The Effect of Available Capacity on Jail Incarceration: An Empirical Test of Parkinson's Law," *Journal of Criminal Justice* 25:279-288.

Dawkins, M. 1983. "Black Students' Occupational Expectations: A National Study of the Impact of School Desegregation," *Urban Education* 18:98-113.

-----. 1991. "Long-Term Effects of School Desegregation on African Americans: Evidence from the National Survey of Black Americans." Unpublished paper.

DiMaggio, Paul. 1982. "Cultural Capital and School Success – The Impact of Status Culture Participation on the grades of United-States High-School-Students," *American Sociological Review* 47:189-201.

Dixon, Jo. 1995. "The Organizational Context of Criminal Sentencing," *American Journal of Sociology* 100: 1157-98.

Donziger, Steven, editor. 1996. *The Real War on Crime: The Report of the National Criminal Justice Commission*. New York: Harper Collins.

Elder, Glen. 1985. *Life Course Dynamics: Trajectories and Transitions, 1968-1980*. Ithaca, NY: Cornell University Press.

Elliott, D.S. and H.L. Voss. 1974. *Delinquency and Dropout*. Lexington, MA: Lexington Books.

Entwisle, D. and K. Alexander 1992. "Summer Setback: Race, Poverty, School

Composition and Mathematics Achievement," *American Sociological Review* 57:72-84.

-----. 1994. "Winter Setback: the Racial Composition of Schools and Learning to Read," *American Sociological Review* 59:446-60.

Falk, William W. 1978. "Mobility Attitudes of Segregated and Desegregated Black Youths," *Journal of Negro Education* 3:132-142.

Farkas, G., D. Sheehan, R.P. Grobe, and Y. Shuan. 1990. "Cultural Resources and School Success – Gender, Ethnicity, and Poverty Groups within an Urban School-District, *American Sociological Review* 55:127-142.

Farrington, D.P., B. Gallagher, L. Morley, R.J. St. Ledger, and D.J. West. 1986. "Unemployment, School Leaving, and Crime," *British Journal of Criminology* 26:335-356.

Finch, Michael, Michael J. Shanahan, Jeylan T. Mortimer, and Seongryeol Ryu. 1991. "Work Experience and Control Orientation in Adolescence," *American Sociological Review* 56:597-611.

Finn, J. and C. M. Achilles. 1990. "Answers and Questions About Class Size: A Statewide Experiment," *American Educational Research Journal* 27:557-577.

Friedman, J. and D. Rosenbaum. 1988. "Social Control Theory: The Salience of Components by Age, Gender, and Type of Crime," *Journal of Quantitative Criminology* 4:363-382.

Gable, R.K., D.L. Thompson, and E.F. Iwanicki. 1983. "The Effects of Voluntary Desegregation on Occupational Outcomes," *The Vocational Guidance Quarterly* 31:230-239.

Garland, David. 1990. *Punishment and modern society : a study in social theory.*

    Chicago : University of Chicago Press.

-----. 2001 *The Culture of Control : Crime and Social Order in*

    Contemporary Society. Chicago: University of Chicago Press.

Gendreau, Paul, Tracy Little and Claire Goggin. 1996. "A Meta-Analysis of the Predictors

    of Adult Offender Recidivism: What Works?" C*riminology* 34:575-607.

Gerard, Harold B. 1988. "School Desegregation: The Social Science Role," Pp. 225-36 in

    P.A. Katz and D.A. Taylor, eds. *Eliminating Racism*. New York: Plenum Press.

Gottfredson, Gary D. 1981. "Schooling and Delinquency." In S.E. Martin, L.B. Sechrest

    and R. Redner, eds. *New Directions in the Rehabilitation of Criminal Offenders,*

    Report of the Panel on Research on Rehabilitative Techniques. Washington, DC:

    National Academy Press.

Gottfredson, Gary and Denise Gottfredson. 1985. *Victimization in Schools. New York:*

    Plenum Press.

Gottfredson, Michael and Don Gottfredson. 1980. *Decision Making in Criminal Justice:*

    Toward the Rational Exercise of Discretion. Cambridge, Mass.: Ballinger.

Gottfredson, Michael and Travis Hirschi. 1990. *A General Theory of Crime*. Stanford:

    Stanford University Press.

Granovetter, M. 1986. "The Micro-Structure of School Desegregation," Pp. 201-233 in J.

    Prager, D. Longshore, and M. Seeman, eds., *School Desegregation Research: New*

    Directions in Situational Analysis. New York: Plenum Press.

Grant, Don Sherman and Ramiro Martinez. 1997. "Crime and Restructuring of the U.S.

    Economy: A Reconsideration of the Class Linkages," *Social Forces* 75:769-800.

Greenberg, David. 2001. "Time Series Analysis of Crime Rates," *Journal of Quantitative Criminology* 17:219-327.

Greenberg, David F. and Valerie West. 2001. "State Prison Populations and Their Growth, 1971-1991," *Criminology* 39:615-653.

Guryan, Jonathan. 2001. "Desegregation and Black Dropout Rates," Working Paper 8345, Cambridge, MA: National Bureau of Economic Research.

Hagan, John. 1991. "Destiny and Drift: The Risks and Rewards of Youth," *American Sociological Review* 56:567-582.

Hagan, John and Blair Wheaton. 1993. "The Search for Adolescent Role Exits and the Transition to Adulthood," *Social Forces* 71:955-980.

Hagan, John, Ross MacMillan and Blair Wheaton. 1996. "The Life Course Effects of Family Migration on Children," *American Sociological Review* 61:369-85.

Hanushek, E. A., S.G. Rivkin, and L.L. Taylor. 1996. "Aggregation and the estimated effects of school resources," *Review of Economics and Statistics* 87:611-627.

Heckman, James, Anne Layne-Farrar, and Petra Todd. 1996. "Human Capital Pricing Equations with an Application to Estimating the Effect of Schooling Quality on Earnings," *The Review of Economics and Statistics*, 78:562-610.

Hindelang, Michael J. 1978. "Race and Involvement in Crimes," *American Sociological Review* 43:93-109.

Hirschi, Travis and Michael Hindelang. 1977. "Intelligence and Delinquency: A Revisionist Review," *American Sociological Review* 42:571-86.

Jacobs, David and Ronald Helms. 1996. "Toward a Political Model of Incarceration: A

    Time-Series Examination of Multiple Explanations for Prison Admission Rates,"

    American Journal of Sociology 102:323-357.

Jacobs, D. and J.T. Carmichael. 2001. "The Politics of Punishment Across Time and

    Space: A Pooled Time-Series Analysis of Imprisonment," *Social Forces* 80:61-89.

Jaynes, Gerald D. and Robin M. Williams, eds. 1989. *A Common Destiny: Blacks and

    American Society*. Washington, DC: National Academy Press.

Jessor, Richard, John Donovan, and Frances Costa. 1991. *Beyond Adolescence: Problem

    Behavior and Young Adult Development*. New York: Cambridge University Press.

Kaufman, J. and J. Rosenbaum. 1992. "The Education and Employment of Low Income

    Black Youth in White Suburbs," E*ducation Evaluation and Policy Analysis* 14:229-

    240.

Klein, Stephen, Joan Petersilia and Susan Turner. 1990. "Race and Imprisonment

    Decisions in California," *Science* 247:812-16.

Krivo, Lauren J., Ruth D. Peterson, and Helen Rizzo. 1998. "Race, Segregation, and the

    Concentration of Disadvantage, 1980-1990," *Social Problems* 45:61-80.

LaFree, Gary. 1998. *Losing Legitimacy: Street Crime and the Decline of Social

    Institutions in America*. Boulder, CO: Westview Press.

LaFree, Gary, and Kriss A. Drass. 1996. "The Effect of Changes in Intraracial Income

    Inequality and Educational Attainment on Changes in Arrest Rates for African-

    Americans and Whites, 1957 to 1990," *American Sociological Review* 61:614-34.

LaFree, Gary, Kriss Drass and Patrick O'Day. 1992. "Race and Crime in Postwar America: Determinants of African-American and White Rates, 1957-1988," *Criminology* 30:157-188.

Lamont, Michele and Arnette Lareau. 1988. "Cultural Capital: Allusions, Gaps, and Glissandos in Recent Theoretical Development," *Sociological Theory* 6:153-168.

Laub, John and Robert Sampson. 1993. "Turning Points in the Life Course: Why Change Matters to the Study of Crime," *Criminology* 31:301-325.

Leake, Donald and Brenda Leake. 1992. "African-American Immersion Schools in Milwaukee: A View From the Inside," *Phi Delta Kappan* 73:783-85.

Levin, H.M. 1975. Education, Life Chances and the Courts: The Role of Social Science Evidence," *Law and Contemporary Problems* 39:217-240.

Lochner, Lance and Enrico Moretti. 2001. "The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self-Reports," National Bureau for Economic Resources: Working Paper

Massey, Douglas and Nancy Denton. 1993. *American Apartheid: Segregation and the . Making of the Underclass.* Cambridge, MA: Harvard University Press.

Massey, Douglas and Mitchell Eggers.1990. "The Ecology of Inequality: Minorities and the Concentration of Poverty, 1970-1980," *American Journal of Sociology* 95:1153-88.

Massey, Douglas, Mitchell Eggers and Nancy Denton. 1994. "Disentangling the Causes of Concentrated Urban Poverty," *International Journal of Group Tensions* 24:267-316.

Matza, David. 1964. *Delinquency and Drift*. New York: Wiley.

McPartland, J.M. and J.H. Braddock. 1981. "Going to College and Getting a Good Job:

The Impact of Desegregation," Pp. 141-154 in W.D. Hawley, ed., *Effective School Desegregation: Equality, Quality, and Feasibility*. London: Sage.

Meyer, John and Brian Rowan. 1977. "Institutional Organizations: Formal Structure as Myth and Ceremony," in *Organizational Environments: Ritual and Rationality.* Beverly Hills: Sage.

Miethe, Terance and Charles Moore. 1985. "Socioeconomic Disparities under Determinate Sentencing Systems," *Criminology* 23:37-63.

Miller, Jerome. 1996. *Search and Destroy*. Cambridge: Cambridge University Press.

Moffitt, Terrie E. 1993. "Adolescent-Limited and Life-Course-Persistent Antisocial Behavior: A Developmental Taxonomy," *Psychological Review* 100:674-701.

Moffitt, Terrie E., Donald R. Lyman, and Phil A. Silva. 1994. ""Neuropsychological Tests Predicting Persistent Male Delinquency," *Criminology* 32:277-300.

Myers, Martha and Susette Talarico. 1987. *The Social Context of Criminal Sentencing*. New York: Springer-Verlag.

Nelson, James F. 1994. "A Dollar or a Day: Sentencing Misdemeanants in New York State," *Journal of Research on Crime and Delinquency* 31:183-201.

Orfield, Gary and Susan Eaton. 1996. *Dismantling Desegregation: The Quiet Reversal of Brown v. Board of Education*. New York: The New Press.

Prager, J. D. Longshore, and M. Seeman. 1986. *School Desegregation Research*. New York: Plenum.

Reiss, Albert and Albert Rhodes. 1961. "The Distribution of Juvenile Delinquency in the Social Class Structure," *American Sociological Review* 26:720-732.

Rivkin, S. 1994. "Residential Segregation and School Integration," *Sociology of Education*

    67:279-292.

Rosenbaum, J. 1991. "Black Pioneers: Do Their Moves to the Suburbs Increase

    Economic Opportunities for Mothers and Children? *Housing Policy Debate* 2:1179-

    1213.

Rusche, Georg and Otto Kirchheimer. 1939. *Punishment and Social Structure*. New York:

    Columbia University Press.

Sampson, Robert and John Laub. 1993. *Crime in the Making*: *Pathways and Turning*

    Points Through Life. Cambridge, MA: Harvard University Press

-----. 1996. "The Military as a Turning Point in the Lives of Disadvantaged Men,"

    American Sociological Review 61:347-367.

Sorenson, Aage and Maureen Hallinan. 1977. "A Reconceptualization of School Effects,"

    Sociology of Education 50:273-89.

Sorokin, Pitirim A. 1959 (1927). *Social and Cultural Mobility*. New York: Free Press.

Spohn, Cassia C. 2000. "Thirty Years of Sentencing Reform: The Quest for a Racially

    Neutral Sentencing Process," Pp. 427-501 in J. Horney, J. Martin, D.L. MacKenzie,

    R. Peterson, and Dennis Rosenbaum, eds. *Policies, Processes and Decisions of the*

    Criminal Justice System. Office of Justice Programs: National Institute of Justice.

Steffensmeier, Darrell, Jefferey Ulmer and John Kramer. 1998. "The Identification of

    Race, Gender, and Age in Criminal Sentencing: The Punishment of Being Young,

    Black and Male," *Criminology* 36:763-793.

Sutton, John R. 2000. "Imprisonment and Social Classification in Five Common-Law

    Democracies, 1955-1985," *American Journal of Sociology* 106:350-386.

Swidler, A. 1986. "Culture in Action – Symbols and Strategies," *American Sociological Review* 51:273-286.

Thornberry, Terence and Robert Christenson. 1984. "Unemployment and Criminal Involvement: An Investigation of Reciprocal Structures," *American Sociological Review* 49:398-411.

Trent, W. 1991. *Desegregation Analysis Report*. New York: Legal Defense and Educational Fund.

Ulmer, Jeffery T. and John H. Kramer. 1996. "Court Communities under Sentencing Guidelines: Dilemmas of Formal Rationality and Sentencing Disparity," *Criminology* 34:383-408.

Viscusi, W. K 1986. "The Risks and Rewards of Criminal Activity – A Comprehensive Test of Criminal Deterrence," *Journal of Labor Economics* 4:317-340.

Wells, A. and R. Crain. 1994. "Perpetuation Theory and the Long-Term Effects of School Desegregation," *Review of Education. Research* 64:531-555.

-----. 1997. *Stepping over the Color Line: African-American Students in White Southern Schools.* New Haven: Yale University Press.

Western B. and K. Beckett. 1999. "How Unregulated is the U.S. Labor Market? The Penal System as a Labor Market Institution," *American Journal of Sociology* 104:1030-1060.

Wiatrowski, Michael, David Griswold, and Mary Roberts. 1981. "Social Control Theory and Delinquency," *American Sociological Review* 46:525-541.

Wilson, James Q. and Richard Herrnstein. 1985. *Crime and Human Nature*. New York: Simon and Schuster.

Wilson, William Julius. 1987. *The Truly Disadvantaged*. Chicago: University of Chicago Press.

Witte, Ann Dryden. 1997. "Crime," Pp. 219-46 in J.R. Behrman and N. Stacey, eds. *The Social Benefits of Education*. Ann Arbor, MI: The University of Michigan Press.

Witte, Ann D. and H Tauchen. 1994. "Work and Crime – An Exploration Using Panel-Date," *Public Finance – Finances Publiques* 49: 155-167.

Wortman, P. and F. Bryant. 1985. "School Desegregation and Black Achievement," *Sociological Research Methods* 13:289-324.

Zatz, Marjorie S. 1984. "Race, Ethnicity, and Determinate Sentencing: A New Dimension to an Old Controversy," *Criminology* 22:147-171.

XI. ENDNOTES

[1] Critics have also raised the possibility of omitted variable bias and have suggested that the level of aggregation in state-level assessments is particularly prone to this problem. Card and Krueger (1992:41) point out that "the fact that the models… that include state-fixed effects tend to show *larger* effects of school quality, rather than smaller, suggests to us that omitted state-level variables may lead to the opposite bias. In any event, the argument that omitted variables is a bigger problem for studies that use aggregate school quality data would be stronger if such omitted variables could be identified, and if their inclusion in the regression models was shown to attenuate the effect of aggregate school resource measures." Following Card and Krueger, we include state-level fixed effects to account for the degree to which state of birth and state of residence vary on the basis of dimensions other than educational resources. For analysis of educational resource effects measured at a lower level of aggregation (i.e., school-level student/teacher ratios) and with additional individual and school-level controls, see Arum and Beattie 1999.

[2] To test this assumption we reanalyzed the 1940 census data used in Card and Krueger's (1992) original analysis, examined 1980 census data using a similar approach, and examined longitudinal individual-level data from the National Longitudinal Survey of Youth (NLSY). Our conclusion from this analysis (see Appendix 1) is that imputing state of education (up to age 14) onto state of birth using Card and Krueger's method is accurate for about 64% of the interstate migrant sample; that is, more than a third of their sample were likely schooled in part in a state different than their birth state.

[3] We do not explicitly address in the analysis the degree to which variation over time in the size of the private school sector could affect our estimates. However, prior work (Arum 1996) suggests that when private school sectors are large – and thus potentially

most threatening to our results – educational resources for a state's public and private

schools are similar. This variation is thus unlikely to threaten the validity of our results.

[4] Publicly released micro-level data were obtained from the IPUMS site located at the

University of Minnesota (http://www.ipums.umn.edu). Specific samples extracted were

the 1990 five percent state, 1980 five percent state (A Sample), 1970 (Form 1) State, and

1970 (Form 2) State. Data on U.S. state and local prisoners were provided by the U.S.

Department of the Census. For the 1980 and 1990 extracts we relied on a 5 percent state

sample; for 1970, we used both 1 percent state sample Forms A and B.

[5] Since we use these weights for our analysis, our standard errors are conservatively

estimated: although we have a 16 percent sample of prisoners, our analysis reduces the

weight of these cases by about one-third, thus inflating our standard errors.

[6] We assigned individuals to birth cohorts defined on the basis of five year intervals and

imputed educational resources to them at average age 12. For example, persons born

between 1970 and 1974 were assigned state level educational resources for 1985; persons

born between 1965 and 1969 were assigned state level educational resources for 1980.

[7] We use teacher/student ratios in our multivariate models to create results that can be

interpreted in the same direction as increased educational resources. But in the discussion

of results we use the more readily recognized student/teacher ratios.

[8] We estimate these models because they have been commonly employed in modeling

educational resource effects on other outcomes. However, we note here our reservations to

such approaches since the method creates a statistical interaction between K through 12

measures of educational context with years of education including post-secondary

experiences that are therefore not necessarily directly or logically associated with K

through 12 contextual variables.

[9] Our strategy is also slightly different in other ways from Card and Krueger's (1992)

modeling of how returns to education vary with respect to educational resources in birth

state. Specifically, Card and Krueger utilized cohort-specific state of birth fixed effects to

net out intercept differences completely from their results. Card and Krueger also use a

two-stage approach that allowed a second stage of modeling cohort-specific state-level

returns of schooling on cohort-specific state-level educational resources and thus the

inclusion of an additional error term. Instead, we relax the assumption that intercepts have

no role in modeling and use a one-stage logistic approach more appropriate for the

relatively rare incarceration outcome we examine. There are also slight differences

between our methods and Card and Krueger's methods in the regional and state level

controls that we employ.

[10] Their lack of integration would likely affect several components of the processes

leading up to incarceration, including both the propensity to engage in criminal activity

(the behavioral concern) as well as the individual likelihood of arrest and conviction (the

labeling concern).

[11] Results here are an average of findings across the four models.

[12] Differences between the categories vary in magnitude because the models and

estimates are based on an inverse of this measure (i.e., teacher/student ratio).

[13] Quite similar findings are found for the recent interstate migrant sample (Table 3,

Model 5) where the probability of incarceration is 28.8 per thousand when student/teacher

ratios are at the 20 to 1 level and 17.4 per thousand when ratios are at 29 to 1. We also

found similar results when we relaxed our modeling assumptions by excluding state-of-origin level fixed effects.

[14] Specifically, for Southern and border states, we adjust 1970 exposure indexes using Rosenberg's (1991:345-7) measures of African-American students in non-segregated school settings: the 1970 exposure index multiplied by the product of percent African-Americans non-segregated (t_i) divided by the percent African-Americans non-segregated (t_{1970}).

[15] We predict African-American segregation exposure index at the state-level over time as: 185.82 – 0.64 (percent urban) –85.00 (percent African-American) – 10.05 (log of public school K-12 students).

[16] We limit the analysis for Figure 5 to just those states that had at least 100 recent African American interstate migrants. But interestingly, an analysis based on all states (available on request) had no impact on the substantive interpretations we offer here.

[17] Although Washington DC is an outlier with regard to connections between racial diversity and black incarceration risk, dropping it from the analysis had little impact on the strong relationship between state-based racial diversity and imprisonment risk—as can be seen visually in Figure 5.

Table 1: Means and Standard Deviations for Interstate Migrants, Individuals Who Reside in Non-Birth State (Sample A); and Recent Interstate Migrants, Individuals who Reside in Non-Birth State but lived in Birth State 5 Years Prior (Sample B)

	Interstate Migrants Sample (A)	Recent Interstate Migrants Sample (B)
Dependent Variable:		
Incarceration in state or local institution (x 1000)	4.052	8.985
State Educational Characteristics:		
Teacher/student ratio	0.043 (0.008)	0.045 (0.008)
Time Period:		
1980 survey year	0.334	0.198
1990 survey year	0.391	0.451
Migration-Selection Control Measures:		
Northeast birth-residence states	0.085	0.103
South birth-residence states	0.170	0.174
Midwest birth-residence states	0.096	0.109
West birth-residence states	0.070	0.079
Adjacent birth-residence states	0.197	0.204
Percent interstate migration out of state of birth	37.886 (11.300)	
Percent recent interstate migration out of state of birth		4.103 (1.251)
Individual Characteristics:		
Male	0.494	0.515
African-American	0.110	0.094
Hispanic	0.023	0.025
High school graduate	0.813	0.870
Years of education	12.823 (2.772)	13.150 (2.528)
Age	35.712 (12.740)	27.886 (10.838)
Age squared (x 1000)	1.410 (0.948)	0.868 (0.743)

Sample A, N=4,620,094; Sample B, N=463,386.

Table 2: Logistic Regression of Effects of State of Origin Educational Characteristics and Other Variables on Likelihood of Interstate Migrants' Incarceration (1970-1990), with fixed effects for state of residence and origin

	Interstate Migrants (Sample A)		Recent Interstate Migrants (Sample B)	
	(1)	(2)	(3)	(4)
Intercept	-7.652**	-7.637**	-10.882**	-10.067**
	(0.294)	(0.291)	(0.361)	(0.389)
Educational Characteristics:				
Teacher/student ratio	-12.714**	-12.673**	-1.088	-1.508
	(4.699)	(4.714)	(4.535)	(4.575)
Individual Characteristics:				
Male	2.733**	2.733**	2.730**	2.730**
	(0.037)	(0.037)	(0.063)	(0.063)
African-American	1.855**	1.855**	1.954**	1.950**
	(0.034)	(0.035)	(0.051)	(0.051)
Hispanic	0.578**	0.578**	0.763**	0.765**
	(0.075)	(0.075)	(0.103)	(0.104)
Age	0.061**	0.061**	0.214**	0.214**
	(0.008)	(0.008)	(0.015)	(0.015)
Age-squared (x100)	-0.166**	-0.166**	-0.279**	-0.279**
	(0.010)	(0.010)	(0.021)	(0.021)
Time Period:				
1980 survey year	-0.031	-0.031	0.961**	0.531**
	(0.027)	(0.027)	(0.048)	(0.121)
1990 survey year	0.643**	0.643**	-0.057	-0.160**
	(0.038)	(0.038)	(0.055)	(0.059)
Migration-Selection Control Measures:				
Northeast birth-residence state	0.120*	0.119*	0.325**	0.328**
	(0.058)	(0.058)	(0.102)	(0.102)
South birth-residence state	-0.096*	-0.094*	-0.159*	-0.185*
	(0.038)	(0.039)	(0.070)	(0.072)
Midwest birth-residence state	0.127**	0.126**	0.126	0.133*
	(0.045)	(0.045)	(0.066)	(0.067)
West birth-residence state	0.132**	0.128**	0.201	0.244*
	(0.044)	(0.044)	(0.109)	(0.109)
Adjacent birth-residence state	-0.010	-0.010	-0.018	-0.022
	(0.020)	(0.020)	(0.043)	(0.043)
Percent interstate migration out of state of birth		0.001		
		(0.002)		
Percent recent interstate migration out of state of birth				-0.182**
				(0.048)
Psuedo R^2	0.156	0.156	0.191	0.191

** p<.01, * p<.05; standard errors adjusted for clustering by cohort specific state of origin.
Sample A, N=4,620,094; Sample B, N=463,386.

Table 3: Logistic Regression of Effects of State of Origin Educational Characteristics, Individual Educational Attainment and Other Variables on Likelihood of Interstate Migrants' Incarceration (1970-1990), fixed effects for state of residence and origin

	Interstate Migrants (Sample A)				Recent Interstate Migrants (Sample B)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	-8.8719**	-8.613**	-13.522**	-13.921**	-11.602**	-10.819**	-13.522**	-12.713**
	(0.269)	(0.261)	(0.776)	(0.832)	(0.391)	(0.422)	(0.776)	(0.809)
Educational Characteristics:								
Teacher/student ratio	21.081**	21.178**	119.582**	121.180**	33.467**	32.958**	119.582**	118.117**
	(3.886)	(3.832)	(18.712)	(18.791)	(6.524)	(6.567)	(18.713)	(18.756)
High school graduate	1.683**	1.667**			1.405**	1.392**		
	(0.223)	(0.225)			(0.370)	(0.372)		
High school graduate* teacher/student ratio	-63.625**	-63.300**			-59.595**	-59.296**		
	(5.228)	(5.261)			(8.772)	(8.828)		
Years of education			0.239**	0.250**			0.239**	0.235**
			(0.072)	(0.073)			(0.072)	(0.072)
Years of education* teacher/student ratio			-11.120**	-11.335**			-11.120**	-11.020**
			(1.742)	(1.773)			(1.742)	(1.750)
Individual Characteristics:								
Male	2.725**	2.725**	2.726**	2.726**	2.733**	2.734**	2.733**	2.733**
	(0.037)	(0.037)	(0.063)	(0.063)	(0.064)	(0.064)	(0.064)	(0.064)
African-American	1.770**	1.774**	1.854**	1.849**	1.786**	1.774**	1.786**	1.781**
	(0.031)	(0.032)	(0.046)	(0.047)	(0.047)	(0.047)	(0.047)	(0.048)
Hispanic	0.351**	0.351**	0.522**	0.524**	0.415**	0.418**	0.415**	0.417**
	(0.081)	(0.081)	(0.104)	(0.104)	(0.104)	(0.104)	(0.104)	(0.105)
Age	0.084**	0.085**	0.223**	0.223**	0.241**	0.240**	0.241**	0.241**
	(0.009)	(0.009)	(0.015)	(0.014)	(0.015)	(0.015)	(0.015)	(0.015)
Age-squared (x100)	-0.207**	-0.208**	-0.335**	-0.333**	-0.303**	-0.303**	-0.335**	-0.335**
	(0.012)	(0.012)	(0.021)	(0.021)	(0.021)	(0.020)	(0.021)	(0.020)
Time Period:								
1980 survey year	0.085**	0.085**	1.091**	0.678**	1.151**	1.143**	1.151**	0.744**
	(0.027)	(0.027)	(0.047)	(0.117)	(0.046)	(0.048)	(0.046)	(0.120)
1990 survey year	0.905**	0.902**	0.221**	0.121*	0.344**	0.341**	0.344**	0.246**
	(0.041)	(0.040)	(0.055)	(0.059)	(0.060)	(0.059)	(0.060)	(0.062)
Migration-Selection Control Measures:								
Northeast birth-residence states	0.110	0.105	0.324**	0.327**	0.316**	0.331**	0.316**	0.319**
	(0.058)	(0.058)	(0.101)	(0.101)	(0.104)	(0.105)	(0.104)	(0.104)
South birth-residence states	-0.079*	-0.066	-0.134*	-0.160*	-0.100	-0.147	-0.100	-0.127
	(0.037)	(0.037)	(0.068)	(0.070)	(0.069)	(0.078)	(0.069)	(0.071)
Midwest birth-residence states	0.136**	0.130**	0.150*	0.156*	0.173*	0.198**	0.173*	0.179*
	(0.046)	(0.046)	(0.068)	(0.068)	(0.070)	(0.073)	(0.070)	(0.070)

(continued)

Table 3 (continued):

	Interstate Migrants (Sample A)				Recent Interstate Migrants (Sample B)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
West birth-residence states	0.120**	0.095*	0.205*	0.248*	0.226*	0.304**	0.226*	0.269*
	(0.045)	(0.043)	(0.102)	(0.102)	(0.104)	(0.105)	(0.104)	(0.105)
Adjacent birth-residence states	-0.043*	-0.042*	-0.050	-0.054	-0.056	-0.055	-0.056	-0.059
	(0.019)	(0.019)	(0.043)	(0.043)	(0.044)	(0.044)	(0.044)	(0.044)
Percent interstate migration out of state of birth		-0.003		-0.175**				
		(0.003)		(0.048)				
Percent recent interstate migration out of state of birth						0.009*		-0.172**
						(0.004)		(0.049)
Pseudo R²	0.175	0.175	0.219	0.219	0.214	0.214	0.219	0.219

** $p<.01$; * $p<.05$; standard errors adjusted for clustering by cohort specific state of origin.
Sample A, N=4,620,094; Sample B, N=463,386.

Table 4: Means and Standard Deviations for Interstate Migrants, Individuals Who Reside in Non-Birth State (Sample A); and Recent Interstate Migrants, Individuals who Reside in Non-Birth State but lived in Birth State 5 Years Prior (Sample B)

	Interstate Migrants (Sample A)		Recent Interstate Migrants (Sample B)	
	Whites	African-American	Whites	African-American
	(1)	(2)	(3)	(4)
Incarcerated	0.003	0.017	0.006	0.037
Time Period:				
Birth cohort	50.648	50.201	54.767	57.317
	(9.957)	(10.491)	(10.512)	(10.117)
Educational Characteristics:				
Teacher/student ratio	0.045	0.042	0.046	0.045
	(0.007)	(0.006)	(0.007)	(0.007)
White students in school of avg. African-American[t]	40.012	33.978	40.870	33.636
	(18.234)	(13.243)	(18.567)	(12.745)
Estimated White students in school of avg. African-American	45.555	19.515	45.335	28.433
	(33.502)	(28.184)	(29.565)	(25.011)
High school graduate	0.876	0.741	0.896	0.819
Individual Characteristics:				
Male	0.499	0.467	0.516	0.516
Age	32.552	32.690	26.688	25.121
	(9.915)	(10.409)	(8.541)	(7.248)
Age squared (x 1000)	1.149	1.173	0.779	0.680
	(0.704)	(0.741)	(0.564)	(0.454)
Migration-Selection Control Measures:				
Northeast birth-residence states	0.090	0.026	0.110	0.037
South birth-residence states	0.162	0.271	0.156	0.338
Midwest birth-residence states	0.103	0.038	0.119	0.049
West birth-residence states	0.077	0.009	0.084	0.012
Adjacent birth-residence states	0.197	0.192	0.206	0.200
Percent interstate migration out of state of birth	38.386	39.686		
	(10.282)	(13.190)		
Percent recent interstate migration out of state of birth			3.998	3.949
			(1.095)	(1.970)
	N=3,348,127	N=397,448	N=367,335	N=40,423

[t] Data present cases – Sample A: Whites, N=1,041,643; African-American, N=118,328; Sample B, Whites, N=184,604; African-American, N=24,338.

Table 5: Logistic Regression of Effects of State of Origin Educational Characteristics (1960s and 1970s birth cohorts), Individual Educational Attainment and Other Variables on Likelihood of Interstate Migrants' Incarceration (1980-1990), fixed effects for state of residence and origin

	Interstate Migrants (Sample A)				Recent Interstate Migrants (Sample B)			
	African-American		White		African-American		White	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	-14.788**	-17.522**	-13.627**	-15.414**	-7.763*	-10.230**	-2.571	-3.967*
	(0.736)	(0.735)	(0.515)	(0.519)	(2.384)	(2.353)	(1.502)	(1.545)
Time Period:								
Birth cohort	0.043**	0.067**	0.023**	0.037**	-0.039	-0.018	-0.070**	-0.056**
	(0.005)	(0.004)	(0.003)	(0.003)	(0.030)	(0.030)	(0.019)	(0.019)
Educational Characteristics:								
White students in school of avg. African-American	-0.013**	-0.012**	-0.003	-0.003	-0.058**	-0.052**	-0.019**	-0.018**
	(0.005)	(0.004)	(0.002)	(0.002)	(0.016)	(0.015)	(0.005)	(0.006)
High school graduate		-1.693**		-1.526**		-1.764**		-1.554**
		(0.067)		(0.050)		(0.096)		(0.091)
Individual Characteristics:								
Male	2.539**	2.516**	2.316**	2.288**	2.272**	2.256**	2.259**	2.240**
	(0.049)	(0.049)	(0.040)	(0.040)	(0.108)	(0.103)	(0.084)	(0.083)
Age	0.522**	0.707**	0.437**	0.590**	0.556**	0.735**	0.129	0.252*
	(0.058)	(0.058)	(0.041)	(0.041)	(0.133)	(0.129)	(0.099)	(0.103)
Age squared	-0.009**	-0.012**	-0.008**	-0.011**	-0.011**	-0.014**	-0.003	-0.005*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.002)	(0.002)
Migration-Selection Control Measures:								
Northeast birth-residence states	0.162	0.169	0.330**	0.275**	0.547*	0.488	0.329	0.309
	(0.114)	(0.113)	(0.093)	(0.092)	(0.242)	(0.254)	(0.210)	(0.211)
South birth-residence states	-0.215	-0.142	-0.199**	-0.193**	-0.147	-0.143	-0.316*	-0.285*
	(0.120)	(0.107)	(0.059)	(0.056)	(0.197)	(0.197)	(0.137)	(0.143)
Midwest birth-residence states	0.403**	0.349**	-0.008	0.046	0.723**	0.657**	0.039	0.118
	(0.122)	(0.116)	(0.057)	(0.056)	(0.208)	(0.216)	(0.123)	(0.131)
West birth-residence states	0.151	0.019	0.122	0.110	0.709*	0.752*	0.531**	0.517**
	(0.194)	(0.181)	(0.071)	(0.072)	(0.313)	(0.310)	(0.163)	(0.165)
Adjacent birth-residence states	0.078	0.014	0.055	0.017	0.115	0.059	0.004	-0.026
	(0.059)	(0.052)	(0.030)	(0.029)	(0.116)	(0.108)	(0.072)	(0.072)
Percent interstate migration out of state of birth	0.002	-0.002	-0.001	-0.004				
	(0.003)	(0.003)	(0.007)	(0.006)				
Percent recent interstate migration out of state of birth					-0.054	-0.055	-0.193*	-0.187
					(0.099)	(0.096)	(0.095)	(0.104)
Pseudo R^2	0.128	0.185	0.078	0.109	0.167	0.224	0.107	0.139

** p<.01; * p<.05; standard errors adjusted for clustering by cohort specific state of origin.
Sample A: Whites, N=1,041,643; African-American, N=118,328; Sample B: Whites, N=184,604; African-American, N=24,338.

Table 6: Logistic Regression of Effects of State of Origin Educational Characteristics (1930s through 1970s birth cohorts), Individual Educational Attainment and Other Variables on Likelihood of Interstate Migrants' Incarceration (1970-1990), fixed effects for state of residence and origin

	Interstate Migrants (Sample A)				Recent Interstate Migrants (Sample B)			
	African-American		White		African-American		White	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	-10.526**	-11.556**	-10.320**	-10.722**	-10.532**	-11.386**	-8.216**	-8.391**
	(0.382)	(0.434)	(0.215)	(0.222)	(0.798)	(0.818)	(0.383)	(0.368)
Time Period:								
Birth cohort	0.040**	0.060**	0.038**	0.050**	0.007	0.028**	0.010*	0.022**
	(0.004)	(0.004)	(0.002)	(0.002)	(0.008)	(0.009)	(0.005)	(0.004)
Educational Characteristics:								
Estimated white students in school of average African-American	0.017**	0.025**	-0.002	0.001	0.003	0.011	-0.001	0.002
	(0.004)	(0.004)	(0.002)	(0.002)	(0.010)	(0.010)	(0.004)	(0.004)
Birth cohort*est. white students in school avg. Af.-Am. (x100)	-0.025**	-0.040**	0.003	-0.001	-0.020	-0.034^t	-0.004	-0.008
	(0.008)	(0.008)	(0.004)	(0.004)	(0.019)	(0.018)	(0.009)	(0.008)
High school graduate		-1.073**		-1.240**		-1.123**		-1.280**
		(0.057)		(0.031)		(0.084)		(0.043)
Individual Characteristics:								
Male	2.800**	2.782**	2.602**	2.602**	2.711**	2.697**	2.666**	2.673**
	(0.046)	(0.046)	(0.036)	(0.037)	(0.091)	(0.090)	(0.071)	(0.071)
Age	0.196**	0.247**	0.057**	0.106**	0.379**	0.418**	0.165**	0.197**
	(0.014)	(0.017)	(0.007)	(0.009)	(0.041)	(0.040)	(0.014)	(0.015)
Age-squared (x100)	-0.318**	-0.378**	-0.093**	-0.149**	-0.540**	-0.586**	-0.217**	-0.257**
	(0.020)	(0.024)	(0.011)	(0.012)	(0.063)	(0.061)	(0.021)	(0.022)
Migration-Selection Control Measures:								
Northeast birth-residence states	0.086	0.097	0.380**	0.305**	0.440**	0.440*	0.681**	0.613**
	(0.088)	(0.089)	(0.060)	(0.059)	(0.177)	(0.188)	(0.136)	(0.136)
South birth-residence states	-0.006	0.011	-0.229**	-0.201**	-0.177	-0.156	-0.330**	-0.310**
	(0.071)	(0.068)	(0.038)	(0.037)	(0.135)	(0.135)	(0.078)	(0.078)
Midwest birth-residence states	0.311**	0.271**	-0.005	0.042	0.768**	0.737**	-0.090	-0.016
	(0.080)	(0.077)	(0.044)	(0.048)	(0.134)	(0.136)	(0.089)	(0.093)
West birth-residence states	-0.079	-0.140	0.124**	0.108*	0.612*	0.631*	0.138	0.175
	(0.128)	(0.125)	(0.048)	(0.048)	(0.296)	(0.287)	(0.101)	(0.097)
Adjacent birth-residence states	0.039	-0.003	0.017	-0.020	0.065	0.014	0.016	-0.012
	(0.036)	(0.035)	(0.022)	(0.022)	(0.074)	(0.074)	(0.044)	(0.045)
Percent interstate migration out of state of birth	-0.012**	-0.014**	0.004	-0.002				
	(0.003)	(0.003)	(0.004)	(0.004)				
Percent recent interstate migration out of state of birth					-0.375**	-0.394**	-0.516**	-0.513**
					(0.038)	(0.038)	(0.019)	(0.019)
Pseudo R^2	0.149	0.170	0.093	0.111	0.201	0.225	0.121	0.143

** p<.01; * p<.05; ^{t} p<.10; standard errors adjusted for clustering by cohort specific state of origin.
Sample A: Whites, N=3,348,127; African-American, N=397,448; Sample B: Whites, N=367,335; African-American, N=40,423.

Appendix 1: Assessment of Assumption that Interstate Migrants Received Education in State of Birth (1940 and 1980 Census Data; National Longitudinal Study of Youth Data)

PANEL A: CENSUS ANALYSIS

| | Percent Interstate Migrants | | Estimate of Interstate Migrants Age 37 Who Likely Were Educated in Birth State Age 14 |
	Age 14	Age 37	
1940 Census	11.4%	31.2%	63.5%
1980 Census	21.3%	39.7%	46.3%

PANEL B: NLSY ANALYSIS

| | Percent Interstate Migrants | | Percent Interstate Migrants Age 33-41 Educated in Birth State at Age 14 | |
	Age 14	Age 33-41	All Migrants	Recent Migrants
NLSY-79 Cohort	25.0%	52.8%	57.0%	92.3%

Figure 1: State of Origin Educational Resources and Incarceration Rates of Interstate Migrants (1970-1990)
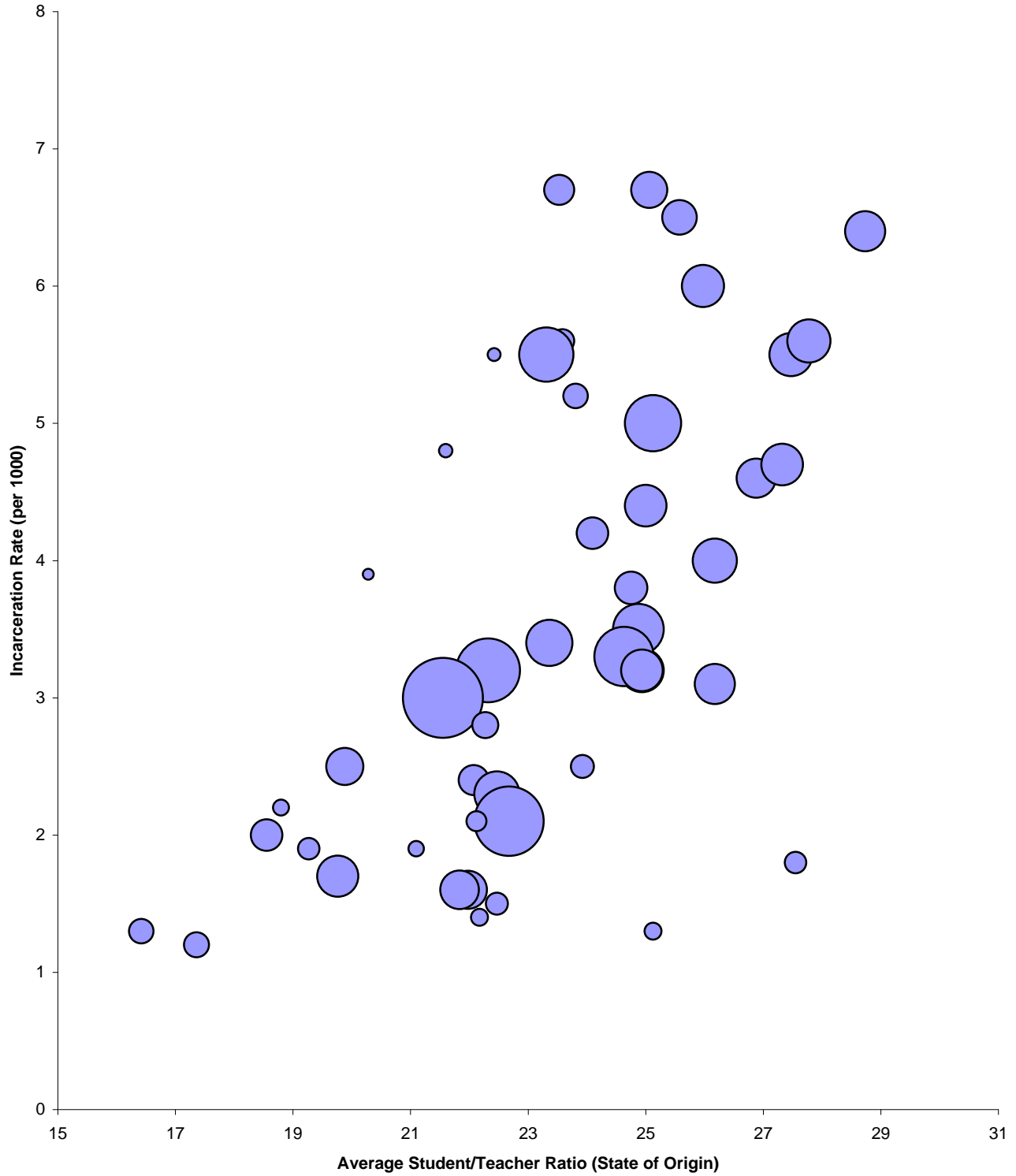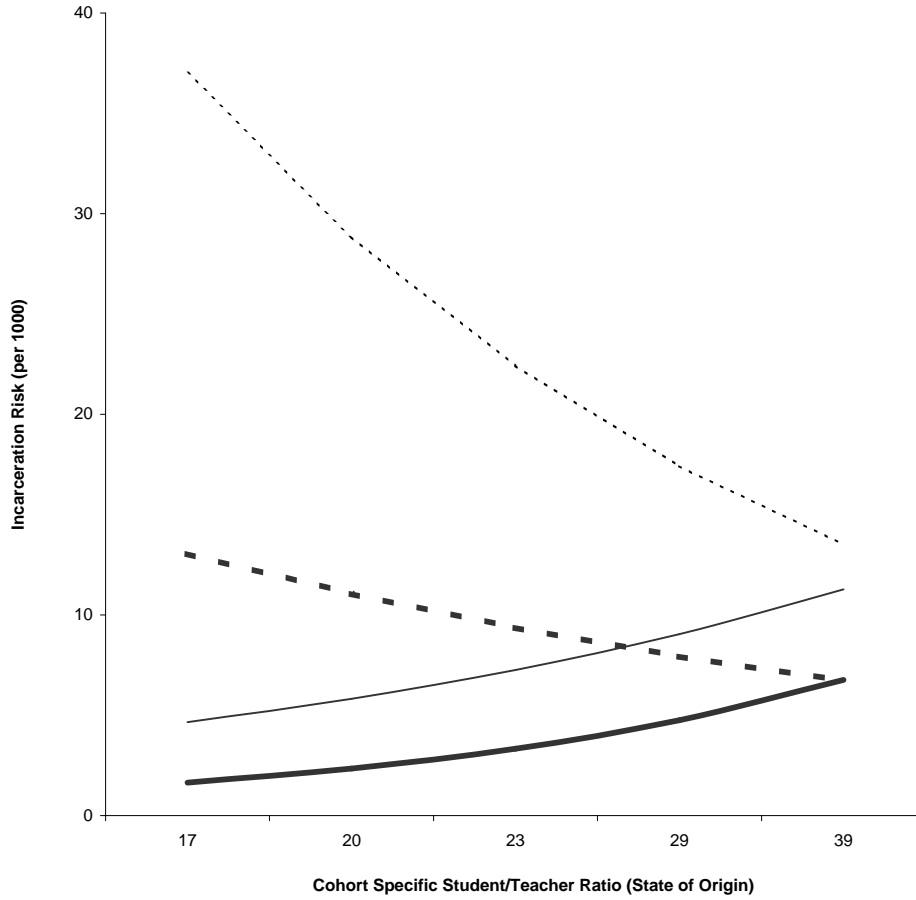
State-level correlation: 0.67 (p<.01) weighted; 0.59 (p<.01) unweighted.

**Figure 2: Incarceration Rate for Non-Native State Residents (1970-1990)**

Incarceration per 100

■ 0.44 to 0.66 (14)
■ 0.38 to 0.44   (9)
■ 0.27 to 0.38 (15)
□ 0   to 0.27 (13)
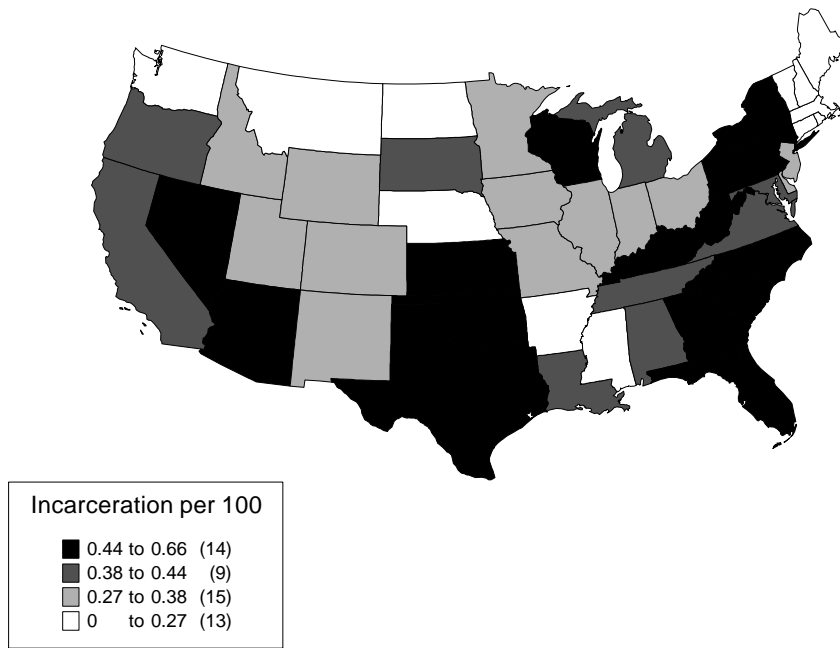
**Figure 3: Effects of High School Graduation on Risk of Incarceration
for Interstate Migrants (1970-1990, Pooled Analysis)**

Figure 4: Effects of High School Graduation on Risk of Incarceration for Interstate Migrants (State Analysis, 1970-1990)
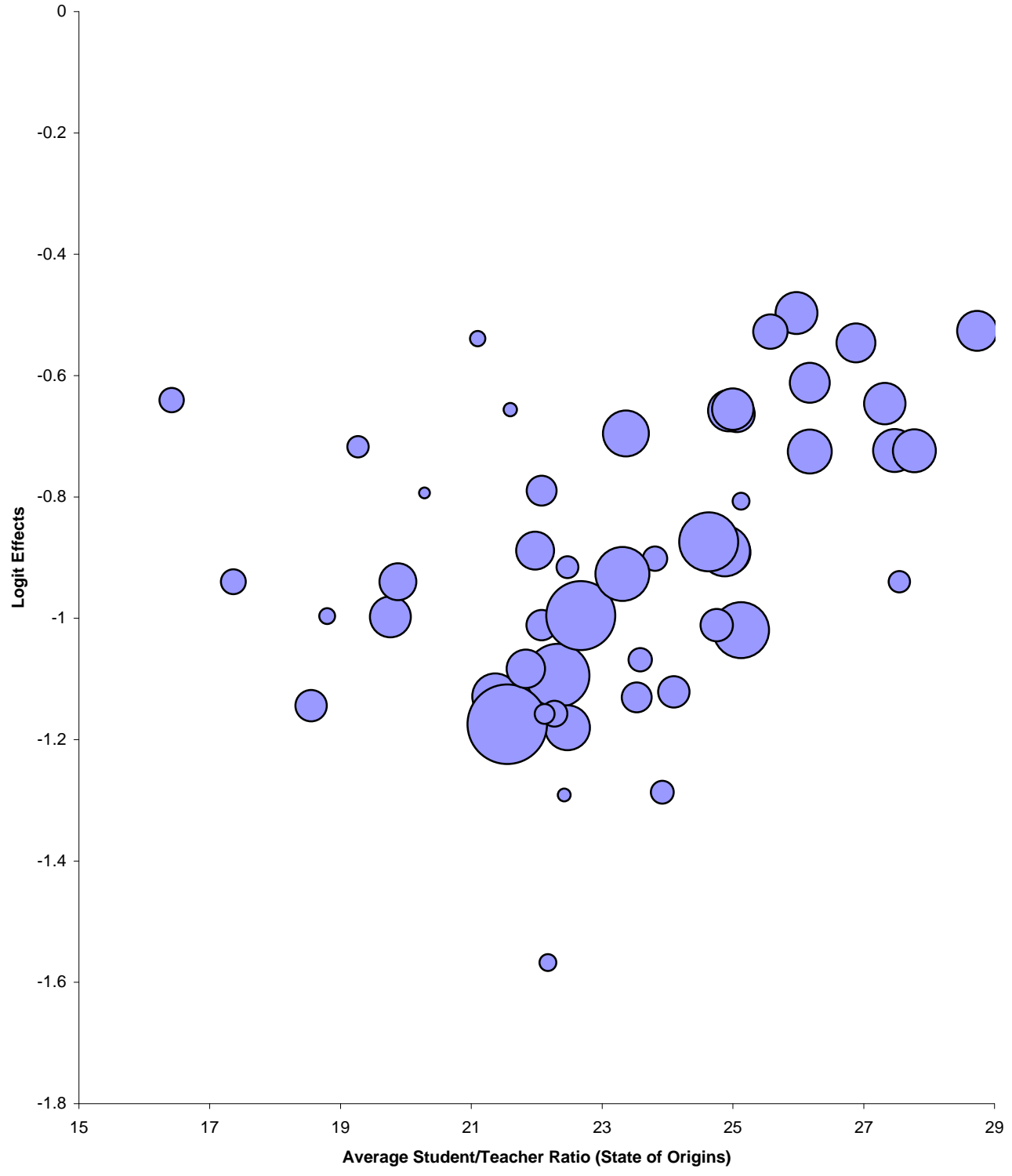
State-level correlation: 0.61 (p<.01) weighted; 0.35 (p<.05) unweighted.

Figure 5: Ratio of African-American/White Incarceration Rates for African-American Recent Interstate Migrants from 1960s and 1970s Birth Cohorts (1980-90 Pooled Analysis)
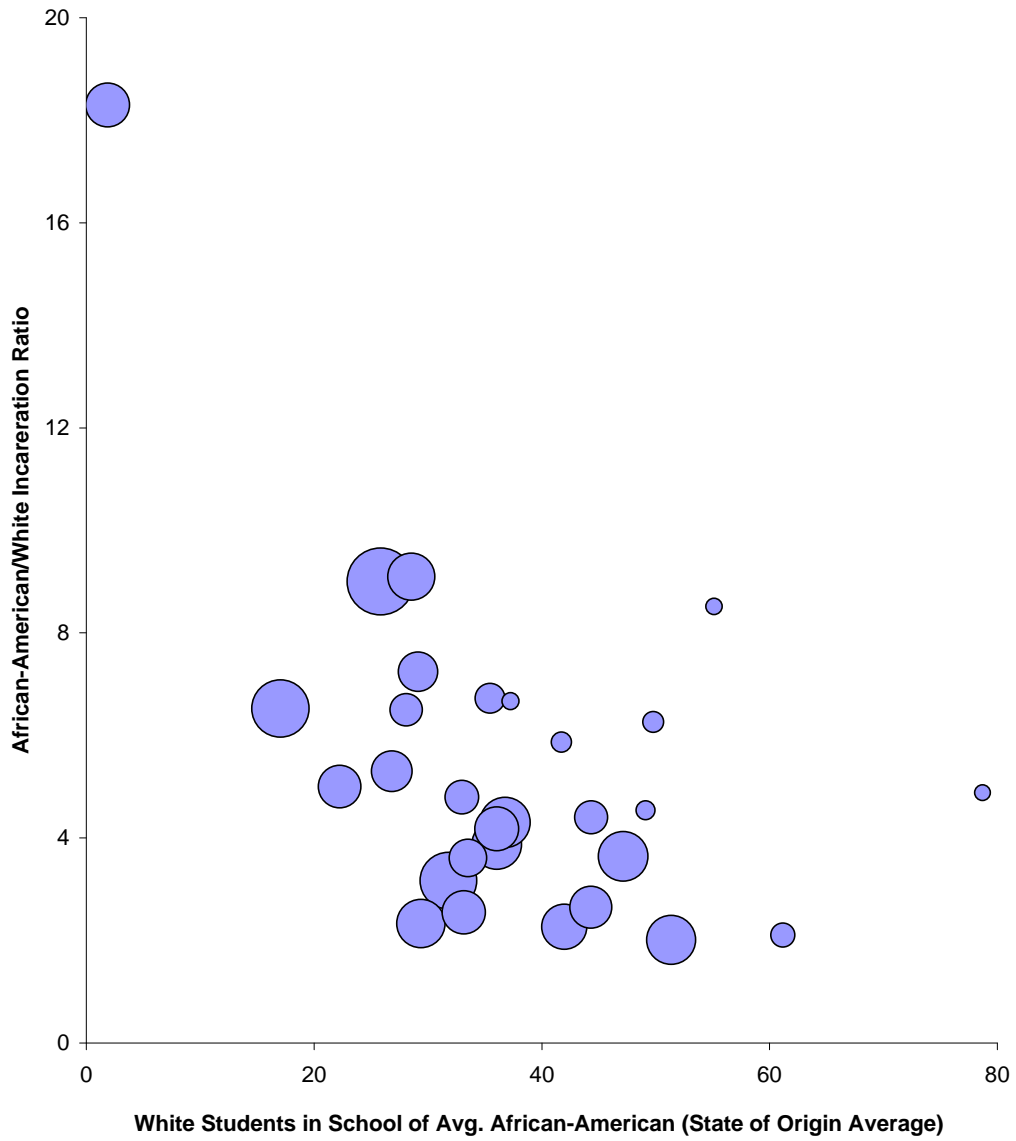
State-level Pearson Correlation Coefficient: 0.69, p<.01 (weighted); 0.51, p<.01 (unweighted).
Analysis includes only states with more than 100 African-American recent interstate migrants

Figure 6: Effects of Racial School Segregation on Risk of Incarceration for African-American Recent Interstate Migrants from 1960s and 1970s Birth Cohorts (1980-1990, Pooled Analysis)
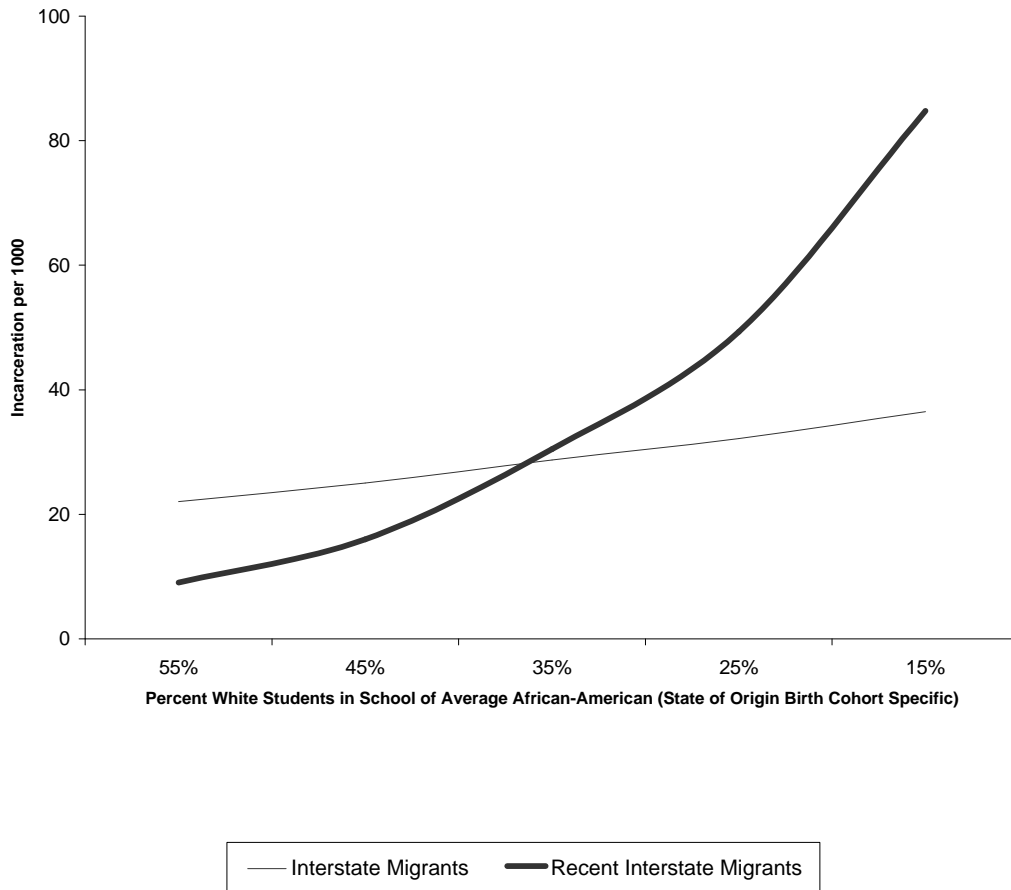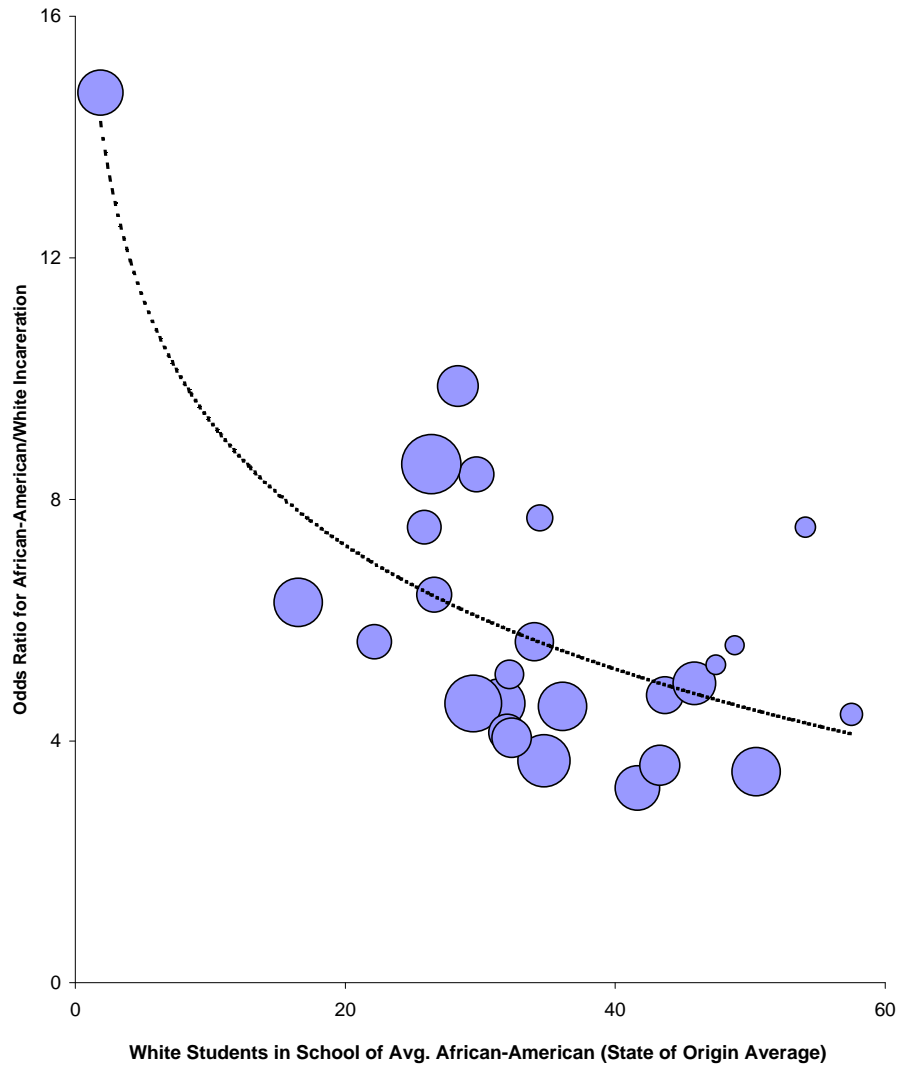

Figure based on Table 5, Models 1 and 5.

Figure 7: Effects of African-American Racial Background on Incarceration Likelihood for Interstate Migrants from 1960s and 1970s Birth Cohorts (1980-90 Pooled Analysis)

Weighted Pearson Correlation Coefficient -0.66 (p<.01); unweighted -0.46 (p<.05)
States with more than 1000 African-Americans in sample.

Figure 8: Effects of Racial School Segregation Over Time on Risk of Incarceration for African-American Interstate Migrants (1970-1990, Pooled Analysis)

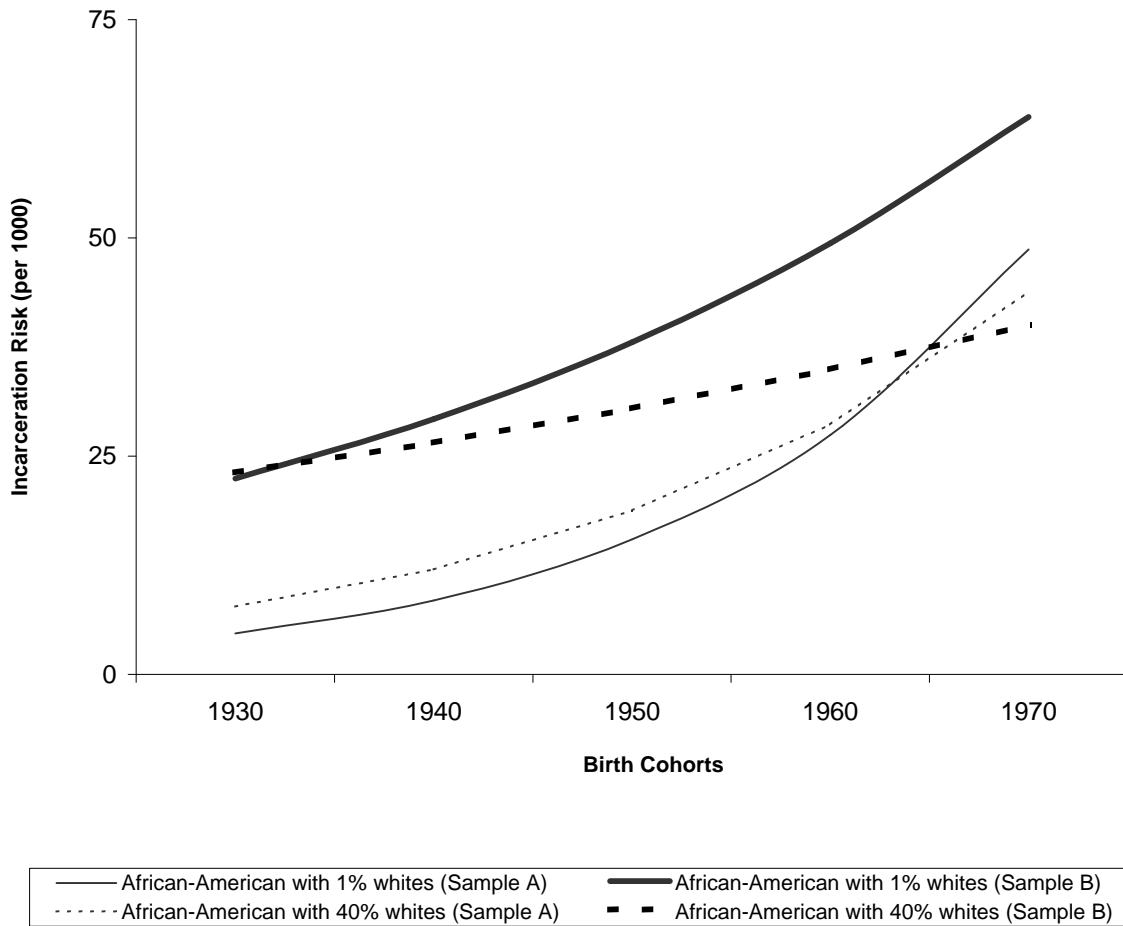| Legend |
|---|
| African-American with 1% whites (Sample A) — African-American with 1% whites (Sample B) |
| African-American with 40% whites (Sample A) — African-American with 40% whites (Sample B) |

Figure based on Table 6; Models 2 and 6.