

The Demographic Implications of the Prison Boom:
Evidence of a “Third Demographic Transition”?

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Abstract

The growth of the prison system over the last three decades represents a critical institutional intervention in the lives of American families. The massive buildup in the size of the penal population has not been due to large scale changes in crime or criminality. Instead, a host of changes at the local, state, and federal levels with respect to law enforcement and penal policy are implicated in the expansion of the prison system. Such a dramatic change in criminal justice policy – and rapid growth in the prison system – raises questions about its demographic effects. In this paper we combine data on the non-institutionalized population with data from surveys of inmates to examine the demographic implications of the prison boom. The massive growth of the penal system is notable not only for its size, but also for its disproportionate effects on minority and low-skill men. Results indicate that growth in the prison population over the past 30 years has been accompanied by low fertility, high morbidity due to communicable diseases, and high rates of involuntary population mobility among inmates and expansion of the prison system obscures the extent of racial inequality in demographic outcomes. We argue that the prison boom marks a “third demographic transition” representing growing institutional involvement in the lives of disadvantaged Americans.

Introduction

The growth of the prison system over the last three decades represents a critical institutional intervention in the lives of American families. Between 1980 and 2005 the number of Americans in prison or jail quadrupled and recent estimates suggest nearly 2.4 million Americans are incarcerated (BJS 2007). It is quite striking, though increasingly clear, that the massive buildup in the size of the penal population has not been due to large scale changes in crime or criminality. Instead, a host of changes at the local, state, and federal levels with respect to law enforcement and penal policy are implicated in the expansion of the prison system. Law enforcement agencies have stepped up policing, prosecutors have more actively pursued convictions, and there have been myriad changes in sentencing policy that now mandate jail or prison time (Mauer 1999; Tonry 1995; Western 2006).

Such a dramatic change in criminal justice policy – and rapid growth in the prison system – raises questions about its demographic effects. How have changes in exposure to the criminal justice system affected fertility patterns? How does spending time in prison affect morbidity and mortality? How does the prison system and the enumeration of prisoners influence our understanding of internal migration streams and population shifts? It is unclear whether or to what extent legislators or criminologists anticipated the far-reaching effects of changes in police practices and sentencing policies since the mid-1970s yet previous research has documented how growth in the penal population has fundamentally affected accounts of social, economic, and political inequality in the United States (Clear 2007; Western 2006; Manza and Uggen 2006). However, little attention has been paid to the role the criminal justice system plays in American demography or race and educational inequalities in key demographic processes.

Penal growth is notable not only for its size, but also for its disproportionate effects on minority and low-skill men. Growth in the prison population and race and class differences in incarceration compel attention to the importance of the criminal justice system in accounts of demographic inequalities. Research implicates the prison system in explanations for declines in teenage fertility among young black women (Mecholan 2006), growing racial inequality in single parenthood (Wilson 1987; Ellwood and Jencks 2004; Edin and Kefalas 2005), and racial disparity in HIV-AIDS (Johnson and Raphael forthcoming).

In this paper, we combine data from household-based surveys of the non-institutionalized population with census data and data from periodic surveys of inmates to generate a demographic portrait that includes the incarcerated population and draws attention to its influence on estimates of race and class inequality in demographic outcomes. We document growing race and class inequality in enumeration in prison and jail and exclusion from household-based sample surveys between 1970 and 2006. Intensified concentration of incarceration among low-skill black men and growing bias associated with the categorical and systematic exclusion of the institutionalized population from conventional demographic accounts has significant consequences for contemporary portrayals of the demographic condition of the population and racial inequality within it. Our results confirm the growing salience of the criminal justice system in the lives of the disadvantaged and suggest that growth in the penal institution may portend a “third demographic transition” characterized by growing institutional involvement in the lives of disadvantaged Americans.

Theories of demographic transition

Demographic transition theory was first developed in the 1940s in order to explain declines in fertility and mortality in industrialized societies in the 18th and 19th centuries (Davis 1945; Notestein 1945)¹ Initial conceptualizations of the demographic transition emphasized the central importance of economic development for demographic change. Shifts from agricultural to industrial production and the movement into waged work were generally recognized as important determinants of declines in mortality and fertility in North America and Europe (Notestein 1945). Subsequent explanations for the demographic transition recognized the general relevance of modernization theory for the demographic transition, but also featured education (Caldwell 1980) and cultural ideology (Lesthaeghe 1977; Lesthaeghe and Surkyn 1988) in explanations for the near-universal though variably-timed transition from high fertility and mortality to low fertility and mortality. By the early 20th century most industrialized nations had completed what is now called the first, or original, demographic transition although some less-developed nations still have not completed the once-thought-universal transition. Some countries have maintained high fertility rates even in the face of mortality declines, others have witnessed mortality increases due to infectious diseases (e.g., HIV/AIDS), while others include sub-groups that have not exhibited the transition (e.g., American Indians).

Even before all countries had made the first demographic transition, demographers identified the markings of a second demographic transition (Lesthaeghe and Van de Kaa 1986; Lesthaeghe 1995). In the mid-20th century many countries – including much of Europe, North America, and Japan

¹The study of the demographic transition certainly pre-dates the work of Davis and Notestein yet they are generally recognized for coining the term “demographic transition.”

– exhibited extremely low fertility, persistent low mortality, and increased migration. The second demographic transition was also characterized by increased cohabitation and nonmarital childbearing and declines in marriage and marital fertility (McLanahan 2004). The second demographic transition was initially conceptualized as a product of ideational shifts including normative changes associated with freedom and personal choice (Lesthaeghe 1995). The political empowerment of women and women’s economic independence have been particularly prominent explanations for the demographic shifts labeled the second demographic transition.

Massive growth in the U.S. prison system since 1970 represents an institutional intervention that may have significant import for American demography and may portend a “third demographic transition” at least among disadvantaged Americans. Other government policies and practices have undoubtedly affected portraits of American demography. Slavery (McDaniel 1995) and federal support for discriminatory lending practices (Massey and Denton 2004) had important effects on the fertility, mortality, and migration patterns of African Americans, for example. The contemporary expansion of the criminal justice system is particularly striking as it has largely been fueled by shifts in criminal justice policy and practice – not increases in crime – and it has accompanied claims of decreased federal involvement in the lives of Americans (Western 2006). The expansion of the U.S. criminal justice system since the early 1970s now means that 1 in 100 U.S. adults is incarcerated in a correctional facility (PEW 2008). The risks of spending time in prison are not equally distributed across the adult population and spending time in prison has become a normative experience for low-skill black men: On any given day over 10 percent of black men are in prison or jail and nearly 60 percent of black men without a high school diploma can expect to spend

time in a state or federal prison (Pew 2008; Pettit and Western 2004).

As the prison system removes individuals from the general population and confines them for a specified period of time it may have both direct and indirect effects on fertility, morbidity, and migration and population enumeration. The incapacitative effect of spending time in prison may depress fertility by reducing heterosexual contact and spending time in prison may impose stigma on inmates making them less attractive or desirable mates. Criminal confinement may affect morbidity by placing men in close proximity with others who are known to be at high risk of a number of communicable diseases such as tuberculosis (TB), hepatitis C (HEP-C), and human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS). High rates of imprisonment within particular subgroups may also fuel disease transmission outside of prison by increasing circulation of infected individuals within otherwise healthy communities. Incapacitation is also likely to affect migration and enumeration as prisoners are often relocated to serve prison sentences outside of their own communities and in disproportionately rural areas. Serving time, therefore, may require involuntary migration and result in increased enumeration in non-metro areas.

Fertility

The direct effects of spending time in prison combined with race and class inequality in exposure to the criminal justice system may also have consequence for accounts of racial inequality in fertility, morbidity, and migration and population enumeration. It is commonly observed that almost a third (27 percent in 2000) of children in the U.S. live in single parent families. But, vastly more black children live in single parent families (Ellwood and Jencks 2004). By the end of the 1990s over 60 percent of black children were living

with only one parent. While separation and divorce remain the modal reason for single parenthood among white children, never married motherhood is the primary source of living with a single parent for black children (as it has been since about 1983). What is often overlooked, however, is that growing rates of single parenthood have been accompanied by generalized declines in fertility since the Baby Boom. The total fertility rate among American women has fallen dramatically from its peak of almost 4 births per woman in mid-century to close to 2 births per woman since the mid-1970s. Rates of childlessness continue to grow and declines in fertility have been most acute among black women.

The reasons for fertility declines and racial differences in single parenthood between blacks and non-blacks are controversial and not well-understood (Ellwood and Jencks 2004). Earning power, sex ratios, gender roles, attitudes and social norms have all been used to explain fertility and marriage decisions. The expansion of the criminal justice system is a likely culprit for declines in fertility, growth in non-marital fertility, and racial inequality in both processes. Although the data sources are few, a growing body of evidence supports this claim. For example, research shows that men who are incarcerated are less likely to be fathers than men who are not incarcerated (Western 2006, p. 137). In addition, fathers who have been incarcerated are much less likely to be cohabiting or married a year after their babies birth (Western, Lopoo, and McLanahan 2004). Incarceration is likely to affect fertility and marriage both directly through its incapacitative effect and indirectly through its implications on economic opportunities and social stigma (see, for example, Edin and Kefalas 2005).

Morbidity

While in general the health of the American population has improved over the past few decades, not all Americans have benefited equally. Racial inequalities in health and mortality in the U.S. are persistent and it is commonly observed that blacks have worse health outcomes and higher mortality at younger ages than whites. Some racial and ethnic groups have not only not experienced advances in health outcomes, but some socio-demographic groups have recently witnessed the introduction or re-introduction of illnesses and disease which may have critical implications for racial inequalities in health and mortality over the life course. Despite substantial declines in the overall risk of TB in the U.S., blacks are 8 times more likely to have TB than whites and even black children have an extraordinarily high prevalence of TB (MMWR 2004). At the same time racial (and class) homophily in sexual partnerships means that racial and class inequalities in the prevalence of HIV/AIDS and hepatitis C in the incarcerated population is mirrored in the non-incarcerated population. Research suggests that blacks are more likely than whites to have hepatitis C (CID 2000). And while HIV/AIDS ranks as the 5th leading cause of death nationwide among women and men 25-44, HIV/AIDS infection was the leading cause of death for African American men aged 35-44 and the leading cause of death for African American women aged 25-34 by 2004. Among African American women, the primary transmission mechanism was high risk heterosexual sex (CDC 2006).

Explanations for enduring racial disparities in health abound yet research has paid relatively little attention to how patterns of institutionalization affect health and how differential levels of incarceration may exacerbate inequalities in measures of morbidity. Inmates and former inmates exhibit extraordinarily high rates of tuberculosis, hepatitis C, and HIV/AIDS. Al-

though the research is limited, the available estimates are quite startling. Some estimates place the TB infection rate among prisoners close to 25% (compared with less than .01 percent in the general population). Hepatitis C infection rates range from 20-40% in the penal population (compared to close to 2% of the general population). And, estimates place the HIV/AIDS infection rate of prisoners 10 times higher than that of non-prisoners (Restum 2005). Imprisonment may have direct implications for health outcomes through infections acquired in prison or jail (especially communicable diseases such as TB, hepatitis C, and HIV/AIDS), but also have indirect implications by setting men (and women) on a “trajectory of cumulative disadvantage” (London and Meyers 2006). Even short term stints in jail have implications for TB exposure, and probation/parole may influence individuals’ use of public health initiatives like needle exchanges (e.g., not use facilities and then inject in unsafe ways). Moreover, the removal of large segments of particular sub-groups of the population may have implications for disease transmission among the non-incarcerated (Johnson and Raphael forthcoming).

Migration

Incarceration also may have important effects on accounts of and theories about migration and population distribution. Evidence suggests general stability in the percentage of Americans moving each year at least since World War II. While Americans were more likely to move out of cities through the 1970s, there is evidence of renewed urbanization and some movement to more rural areas in the 1980s and 1990s (Frey 1995). Students of the U.S. Census have recognized small, but growing, communities of color in suburban and rural locations across the country, yet even careful scholars may need remind-

ing that some of these population shifts may not reflect voluntary migration but instead result from the growth of the prison system. A growing fraction of communities of color in rural and suburban locations represent the relocation of disproportionately poor and black urban residents into suburban and rural prisons.

The involuntary migration associated with imprisonment is inconsistent with prevailing explanations for trends in migration within the U.S. There is relatively little attention – at least within the demographic literature – to the explanations for or implications of involuntary migration. Population redistribution generated by incarceration may not only affect accounts of population distribution and trends in racial residential segregation. As other research has shown, even more minor contacts with the criminal justice system can trigger fairly dramatic restrictions on individuals’ geographic mobility (Beckett and Herbert 2008). It is increasingly recognized that moving prisoners outside of their home communities disrupts family relationships, social networks, and economic contacts. Furthermore, locational restrictions on probationers or parolees can also have profoundly disruptive effects – not only for potential criminal contacts – but also for connections to other individuals and organizations vital to maintain families, health, and employment.

Data and Method

This paper considers how the growth in incarceration since the 1970s affects the measurement of demographic and health outcomes, and specifically, racial inequality in those outcomes. Unfortunately there is no obvious data source to answer these questions because the non-institutional household sampling frames for the major demographic and health surveys exclude the incarcerated. Moreover, identifying participants through their attachment

to households may mean current and former prisoners who have weak attachments to households are underrepresented in key reports of the health of the nation – including efforts to estimate health disparities and the contributions of factors thought to cause them (London and Myers 2006). For example, the National Survey of Family Growth (NSFG) and the National Health and Nutrition Examination Survey (NHANES) – two major demographic and health tracking studies – began in the early 1970s when rates of incarceration were exceptionally low. At that time it was unlikely that a focus on a non-institutionalized population would compromise overall estimates of the demographic condition of the population or racial inequality within it. However as the incarcerated population has grown and race and class inequality in incarceration rates have increased, it is quite likely that results from household based surveys of the non-institutionalized population are subject to biases associated with sample selection.

In order to estimate the demographic implications of imprisonment among men in the U.S., we construct a series of weighted averages of key demographic outcomes including data on the non-institutionalized and institutionalized populations. We examine six demographic outcomes: 1) ever having a biological child; 2) the number of biological children (among fathers); 3) positive tuberculosis test, or latent TB; 4) positive HIV test; 5) migration; and 6) enumeration in a non-metro area. We analyze data from surveys of the non-institutionalized population, Census data, and correctional surveys of inmates. For the non-institutionalized population, fertility data come from the National Survey of Family Growth (NSFG) which first interviewed men in 2002; morbidity data come from the National Health and Nutrition Examination Survey (NHANES) conducted in 1999-2000 (TB) and again between 2001-2006 (HIV); and migration data come from the decennial census con-

ducted in 2000. Data on inmates come from the Surveys of State and Federal Inmates conducted periodically since the 1970s and from the Survey of Inmates of Local Jails also conducted since the early 1970s. Table 1 includes a summary of all the data we use to construct estimates of the demographic condition of American men in 2000.

The analysis is restricted to non-Hispanic white and black men in the age group 25-44. We exclude those under age 25 and those over age 44 to minimize the number of students in the sample and for consistency across surveys. While we would like to use more refined age categories we present results aggregated over the age distribution because of sample size limitations. We examine demographic outcomes by education divided into three categories: (1) less than a high school diploma or equivalent, (2) high school diploma or GED, (3) at least some college.

Within race-education groups we construct means for each outcome for the non-institutionalized, institutionalized, and total populations. For example, using data from the NSFG we estimate the proportion of non-institutionalized black men aged 25-44 who have ever had a biological child. We construct similar estimates of ever having a child within race-education groups for the institutionalized population by pooling estimates from surveys of federal, state, and local inmates weighted in proportion to their contribution to the size of the inmate population. We combine these data to construct an adjusted total population mean (or pooled mean) using information from the decennial Censuses and American Communities Survey (ACS) on counts of individuals within race-education groups observed in the non-institutionalized household population and those observed institutionalized during enumeration. For the purposes of this paper we ignore men in the military and other group quarters.

Uncertainty surrounding our estimates is incorporated in the calculation of standard errors and confidence intervals using several methods. Standard errors for estimates of fertility, morbidity, and migration among non-institutionalized and incarcerated men are generated from survey data. Standard errors of pooled estimates for the total population are generated by combining the variability associated with sampling in each of the surveys weighted in proportion to the relative size of civilian and inmate populations. We employ this weighted variance strategy for measures of fertility and morbidity. Estimates of uncertainty surrounding migration are generated directly from the Census data.

In supplementary analyses (available upon request) we specify a subjective probability interval for the adjusted mean for each of the demographic outcomes of interest. A prior distribution of the adjusted mean is scaled to reflect the means and standard deviations for the samples of civilians and inmates and to reflect the proportion of civilians and inmates in the population. We simulate a posterior distribution of the adjusted mean for all (white or black men) by taking random draws from the prior distribution. We randomly draw from the prior mean distribution, taking 5,000 random draws, to generate a posterior distribution. The simulated values are used to construct Bayesian credible intervals. Substantive conclusions are identical to those presented below.

Our estimates of variability incorporate error associated with sampling. However, there is also reason to believe that nonsampling error which results from different methods of data collection may affect claims of statistical inference. Quantifying nonsampling error represents a particularly difficult methodological challenge and for the purposes of this paper we assume that nonsampling error is trivial. Therefore, the standard errors reported in the

paper may be too small particularly if variability associated with differences in data collection between the non-institutionalized and inmate samples is large.

[Insert Table 1 Here]

The demographic implications of imprisonment

The growth of the prison system since the 1970s has been dramatic and prison expansion has been highly concentrated among low-skill and minority men. Table 2 shows the percent of men between the ages of 25-44 enumerated in prison or jail during the decennial censuses from 1970-2000 and the American Community Survey in 2006. In 1970, prior to the massive build-up of the criminal justice system in the U.S, 0.4% of white men between the ages of 25-44 were incarcerated in prisons or jails. In 2006, and after decades of prison expansion, 1.6% of white men were incarcerated. Incarceration rates are much higher among African-American men than among whites. In 1970, 2.9 percent of black men between 25-44 were in prison or jail. By 2000, that number had exceeded 10 percent and it remained close to 10 percent through the middle of the decade.

Table 2 confirms educational stratification in incarceration and indicates educational inequalities in incarceration have widened over the period. In 1970, 0.1 percent of white men who attended some college were in prison or jail while 0.9 percent of high school dropouts were incarcerated. By 2006, the gap in incarceration between white college attenders and high school dropouts had increased 700%. In 2006, while 0.6 percent of white men with some college were in prison or jail, 6.2 percent of high school dropouts were enumerated behind bars. Educational disproportionality in incarceration is

even more dramatic among black men. In 1970, the gap in incarceration between black men with some college education and those who dropped out of high school was 3.0 percentage points (0.8% compared with 3.8%). By 2006, the gap had grown over seven-fold. While 3.7% of black men who had attended some college were incarcerated, 26.4% of black men who dropped out of high school were in prison or jail.

[Insert Table 2 Here]

Growth in the prison system and increasing race and class inequality within it has significant implications for estimates of the demographic condition of men in the U.S. at the turn of the 21st century. Tables 3-8 detail fertility, morbidity, and migration among non-institutionalized and inmate men. Inmates demonstrate higher rates of childlessness, higher migration, and a higher likelihood of being enumerated in a non-metro area compared with non-institutionalized men. Further comparisons by race-education groups indicates that growth in the prison system and exclusion of inmates from sample surveys obscures racial inequality in demographic outcomes. Time series data, though limited, demonstrate the growing importance of incarceration for the demographic condition of the population.²

Fertility

Tables 3 and 4 show that inmates exhibit much higher rates of childlessness than non-inmates and there are some important differences in the number of children inmate and non-institutionalized fathers report. According to data

²Because of data limitations, time series analyses are currently limited to migration and non-metro enumeration. Those results are available upon request. We are unable with existing data to generate time series analyses of fertility or morbidity.

from the NSFG (2002), among the non-institutionalized population 64.0% of non-Hispanic white men and 71.7% of non-Hispanic black men between 25-44 report having at least one biological child. Inmates – both white and black – are much less likely to report having children. Surveys of inmates suggest that just over half of white men and 65.3% of black men have at least one child. Lower rates of fatherhood among inmates combined with the sizeable inmate population generates combined estimates of childlessness .2 percentage points higher among white men and .7 percentage points higher among black men than found among the civilian population.

Perhaps more striking, however, is how estimates of fatherhood are affected by incarceration within race-education groups. Among high school dropouts in the NSFG approximately three quarters of both white and black men report having a child. Fatherhood is cut by 28% among white inmates and 17% among black inmates. Barely half of white inmates with less than a high school diploma report ever having a child and 63.4% of black inmates without a high school diploma report being fathers. Including inmates lowers estimates of fatherhood among white high school dropouts by 1.3 percentage points, and among black high school dropouts by 3.6 percentage points. The effects are attenuated among men with higher levels of education but lower rates of fatherhood are found for all race-education groups except black men with some college.

The final column of Table 3 indicates that contemporary estimates of racial differences in fertility that do not include the incarcerated population overstate racial inequality in fertility outcomes by as much as 180%. Combining differences in incarceration rates between whites and blacks and differences in childlessness suggest that while conventional wisdom places the ‘fatherhood’ gap between blacks and whites at about 8%; it is likely to be smaller

than that by about 6%. Our estimates combining the non-institutionalized and institutionalized population imply that black men are more likely than whites to report fatherhood, but not by as much as surveys of the non-institutionalized population suggest.

The effect of incarceration on accounts of racial differences in fertility also varies by education. Among men who have dropped out of high school, ignoring inmates leads researchers to claim that African Americans have higher fertility rates than whites. Including inmates, we find lower rates of fatherhood among African American low-skill men. Incorporating incarcerated men into fertility estimates of higher educated men generates a 11.5% larger race gap in fatherhood than conventional estimates suggest; fertility rates of black and white inmates with at least some college are even more discrepant than those within the non-institutionalized population.

Table 4 investigates the effects of incarceration on the number of children fathers report. Table 4 shows that ignoring inmates does not have a significant influence on the mean number of children reported by white or black fathers. Estimates from the NSFG (2002) suggest that white fathers report, on average, 2.01 children and black fathers report 2.28 children. Among inmates, white fathers report 2.05 children and black fathers report 2.46 children, on average. These differences are both substantively and statistically small; adjusted means that include the incarcerated population are not statistically significantly different from estimates generated in surveys of the non-institutionalized.

However, there are some interesting differences in the relationship between education and number of children within race groups. Among non-inmates there is a negative association between education and the number of children fathers report for both whites and blacks. Among inmates there is a

U-shaped relationship between education and fertility for whites and blacks: Higher numbers of children are reported for both the least and most educated men. Among blacks, however, inmates with the highest levels of education report more children than those with less education, a clear reversal of the trend found among the non-institutionalized.

Estimates suggest that not including the incarcerated population has almost no effect on racial inequality in the average number of children among fathers. Estimates from the NSFG (2002) posit that black fathers have .27 more children, on average, than white fathers. Including the incarcerated population suggests black fathers have .29 more children. However small, this increase is driven almost entirely by higher numbers of children reported by black inmates with at least a high school diploma. Including inmates in estimates of fertility differentials leads us to find smaller differences in the number of children reported by low-skill black and white fathers and larger differences among more educated fathers. Among low-skill men, whites report more children than blacks while among high skill men blacks report more children than whites.

[Insert Table 3 & 4 Here]

Morbidity

Tables 5 and 6 show that white inmates are at much greater risk of morbidity due to infectious diseases than white men in the non-institutionalized population. Differences in disease prevalence are less striking between black inmates and civilians.³ Data from national sample surveys show that white inmates have rates of latent TB 26% higher than civilians and black inmates

³We are concerned that estimates of TB and HIV in the inmate population are too low. Estimates generated from local surveys and estimates focused on state inmates alone find

report latent TB rates 6% lower than those found in the non-institutionalized population. HIV rates are 240% higher among white and 7% lower among black inmates compared with civilians.

According to data from the NHANES (1999-2000) 3.9% of white men and 10% of black men between the ages of 25-44 have ever tested positive for TB. Positive TB tests, or latent TB, are more common among whites and less common among blacks in the incarcerated population; estimates place rates of latent TB at 4.9% of white and 9.4% of black inmates. Combining estimates of latent TB among the non-institutionalized and inmate population generates estimates of latent TB virtually unchanged – among both whites and blacks – from those generated by data from the non-institutionalized population except among low-skill whites where rates of latent TB are substantially higher among inmates than among civilians. While previously established negative relationships between education and TB are not fully replicated with these data (particularly among civilians), inmates of low education groups exhibit higher rates of latent TB than found in the civilian population. Among those with less than a high school diploma, latent TB rates among inmates are significantly higher than among non-inmates.

Differences between inmates and non-inmates are also found when we investigate HIV though again differences are smaller than previous local studies would suggest and are generally larger for whites than blacks. Data from the NHANES (1999-2006) indicate 0.5% of white men and 3.3% of black men between 25-44 have ever tested positive for HIV the virus that causes AIDS.

much higher rates of TB and HIV among the inmate population. We are working to find, and possibly collect, better data to answer these questions. However, we suspect that the estimates of TB and HIV generated from self-reported TB and HIV status in the surveys of inmates (and reported in this paper) provide a very conservative test of the influence of incarceration on national-level prevalence estimates.

Rates of HIV infection are substantially higher in all education groups of white inmates and among highly educated black inmates. It is unclear why black inmates with low levels of education should exhibit lower levels of HIV than non-incarcerated men, though differences in survey methodology may account for some of the discrepancy. While the NHANES employs an HIV test to generate estimates of HIV status in the population, correctional surveys rely on inmate self-reports of HIV status. There are a number of reasons to suspect that inmates either do not know or will not report their HIV status. In short, these numbers are likely very conservative estimates of HIV within the inmate population.

These data suggest that contemporary estimates of racial differences in morbidity that do not include the incarcerated population typically overstate racial inequality in health outcomes. Combining differences in incarceration rates between whites and blacks and differences in latent TB suggests that incarceration has little effect on the overall TB gap, but reduces the gap among poorly educated men by as much as 3.5%. Breaking the numbers down by education level suggests that race gaps in TB are persistent across education though the effects of incarceration are particularly acute among men with low levels of education and high levels of incarceration. Perhaps surprisingly, HIV rates are relatively higher among white inmates compared with non-inmates than among black inmates compared with non-inmates except among the most highly educated. Ignoring inmates, then, leads to a somewhat mixed set of effects on health outcomes by race, but clearly suggests that we need to pay closer attention to inmates in national accounts of morbidity.

[Insert Table 5 & 6 Here.]

Migration

Finally we turn our attention to the effects of incarceration on estimates of migration and non-metro enumeration in Tables 7 and 8. Data from the 2000 census indicates that men who are incarcerated exhibit substantially higher rates of migration than men who are not enumerated in a correctional facility. The percentage of white men who indicated a move in the last 5 years jumps from 59.1% among the non-institutionalized to 65.9% among inmates. The numbers are similar among black men: Estimates of migration range from 58.4% of the civilian population to 64.8% of the inmate population. Differences between inmates and non-inmates are found across education levels although gaps in migration between the non-institutionalized and inmate population are largest among men who have low levels of education. Among high school dropouts 54.9 percent of white civilian men report moving in the past 5 years compared with 63.5% of low-skill white inmates. Among black men without a high school diploma estimates of migration among civilians understate migration of inmates by more than 10 percentage points.

Differences in non-metro enumeration between civilians and inmates are perhaps most striking. Among non-inmates less than 4 percent of both white and black men between 25-44 report living in a non-metro area (using the 2000 Census definition). The likelihood of being enumerated in a non-metro area is two to three times higher among inmates. Combining higher rates of non-metro enumeration among inmates with high rates of incarceration among blacks generates substantially higher estimates of non-metro enumeration among black men than data from the civilian population would suggest. The effect of including inmates in accounts of non-metro enumeration is particularly acute for black men with low levels of education.

Tables 7 and 8 show that contemporary estimates of racial differences in

migration and non-metro enumeration that do not include the incarcerated population typically overstate racial inequality in migration by as much as 105% and enumeration in non-metro areas by up to 207%. For example, among the general population, roughly 6 in 10 white and black men will indicate that they have moved in the past 5 years. Whites are typically more likely to report having moved than blacks and there is generally more mobility among both low-educated and high-educated individuals. Among inmates, mobility patterns are more evenly distributed both by race, and by education. Therefore, including inmates in estimates of migration generates estimates that show similar migration rates between whites and blacks. Including inmates in accounts of migration suggests that black men with low levels of education are actually more likely to have moved in the past five years than are similarly educated white men. Including the incarcerated population in accounts of race differences in non-metro enumeration suggests that, on average, black men are more likely to be living in non-metro areas than whites. This pattern is also found among men who have dropped out of high school, where blacks are 15% more likely to be living in non-metro areas than whites. The reversal in race differences in non-metro enumeration is driven entirely by the census enumeration of black men in rural prisons.

[Insert Table 7 & 8 Here.]

Discussion and Conclusion

The first demographic transition was characterized by a shift from high fertility and mortality rates to low fertility and mortality rates. Explanations for the first demographic transition have emphasized the central importance of economic advancement and modernization. The second demographic tran-

sition involved the movement to very low fertility, even lower mortality, and increased migration. Explanations for the second demographic transition have centered on increasing autonomy and the consequences associated with cultural norms of independence and self-control. We argue that increasing institutional involvement in the lives of the disadvantaged has the markings of a “third demographic transition”. Exceptionally low fertility, high morbidity due to infectious and communicable diseases, and high involuntary migration and enumeration in non-metro areas among prisoners may represent a new cleavage between the demographic lives of inmates and those at risk of incarceration from the non-institutionalized population.

The growth of the prison system offers evidence in support of an institutional explanation for demographic outcomes. Since the 1970s an increasing proportion of American men have been removed from the civilian population to spend a fixed amount of time in the custody of penal authorities. Prison time is likely to reduce heterosexual contacts and possibly confer enduring stigma resulting in lower fertility; spending time in prison is associated with heightened exposure to and higher risks of communicable diseases including TB and HIV/AIDS; and going to prison often necessitates involuntary migration, sometimes to rural prisons. Moreover, racial disproportionality in incarceration rates suggests that the prison system is a key suspect in accounts of racial inequality in demographic outcomes.

The full extent of the prison system’s influence on demographic outcomes is obscured by conventional surveys that categorically ignore and systematically undercount inmates and former inmates. Piecing together information from surveys of the non-institutionalized population, the Census and ACS, and surveys of inmates suggests that the demographic condition of non-inmates is significantly different from that of inmates in some important

respects. Moreover, racial inequality in accounts of fertility, morbidity, and migration are hidden by the rise of the prison population and its disproportionate concentration among low-skill black men. The exclusion of inmates from conventional demographic estimates leads to overstatements of racial inequalities in fertility, mixed effects on racial inequalities in health, and overstatements of racial differences in migration and enumeration in non-metro areas.

The underrepresentation of inmates and ex-inmates in surveys and the census through sample design or systematic undercounting not only has implications for descriptive accounts generated by these data, but also may influence explanations for key demographic processes. If inmates and ex-inmates differ from men included in survey samples – not only on observable characteristics, but also with respect to behavioral processes – omitting them from survey populations leads to increasingly acute sample selection bias. As we have shown, descriptive accounts of the demographic condition of the population are substantially altered by the inclusion of the incarcerated population. We suspect, though can not examine with available data, that differences in the demographic experiences of inmates and non-inmates result from exposure to the prison system. Growth in the prison system, therefore, may not only influence descriptive accounts of racial inequality in demographic outcomes, but also impact the mechanisms undergirding key population processes.

Although the behavioral implications of spending time in prison are not horribly well understood, it is clear that the demographic effects of a burgeoning criminal justice system extends well beyond those directly involved. Children, partners, and whole communities are affected by the growing penal system. On any given day, estimates suggest that upwards of 1.5 million

children have a parent in prison or jail (Mumola 2000). Furthermore, given racial and educational homophily in mating (and marriage) racial and educational inequalities in exposure to the criminal justice system among adults are transmitted to their children. Recent estimates by Wildeman (forthcoming) suggest that 1 in 5 black children has had a parent in prison (compared to 1 in 40 white children) and just as exposure to the criminal justice system is stratified by education, children of high school dropouts are much more likely than children of those with more education to have either a mother or father in prison. Moreover, as mentioned previously, high rates of TB and HIV uniquely characterize African American communities and the prison system has been implicated in racial inequality in HIV/AIDS (Johnson and Raphael forthcoming).

This paper contributes to a growing body of research documenting the growth of the prison system since the 1970s and its implications for inequality in a host of domains. The massive increase in the criminal justice system – and its disproportionate effects on low-skill minority men – has already been shown to have fundamentally altered both our perceptions of, and shifts in, the American economic and political landscape. We argue that the demographic implications of the prison boom are equally profound although we are only beginning to understand their magnitude. A more complete understanding of the demographic effects of the prison boom will require future surveys to include the institutionalized population. Nonetheless, the prison system must be considered as a key explanation for recent demographic trends and more carefully considered in accounts of demographic inequality.

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Table 1. Surveys of Demographic and Health Outcomes (Non-Institutionalized and Inmate Population)

Survey	Years Included	Sampling Frame	Related Studies
National Survey of Family Growth	2002	Household non-institutionalized	Carlson and Furstenberg (2006); Guzzo and Furstenberg (2007)
National Health and Nutrition Examination Survey	1999-2006	Household non-institutionalized	Lynch and Brown (2005); Ferraro et. al (1997)
Census	1970-2000	Population	Numerous
American Communities Survey	2006	Population	Farley and Alba (2002); Quigley and Raphael (2004)
Survey of Inmates of Federal Correctional Facilities	1997 and 2004	Federal inmates	Maruschak (2004)
Survey of Inmates of State Correctional Facilities	1997 and 2004	State inmates	Maruschak (2004); Patterson and Preston (2008)
Survey of Inmates of Local Jails	1996 and 2002	Inmates in local jails	Maruschak (2006)

Notes: Men were first surveyed in Cycle 6 of the NSFG in 2002.

Individuals in group quarters were first included in the ACS in 2006.

Table 2. Percent of men 25-44 enumerated in prison or jail, 1970-2006, by education.

	1970	1980	1990	2000	2006
<u>Non-Hispanic White</u>					
Less than High School	0.9	2.6	3.9	6.0	6.2
High School Diploma	0.3	0.6	1.3	2.2	2.5
Some College	0.1	0.3	0.6	0.7	0.6
Total	0.4	0.8	1.1	1.6	1.6
<u>Non-Hispanic Black</u>					
Less than High School	3.8	6.3	14.9	26.8	26.4
High School Diploma	2.0	3.2	6.2	10.1	10.2
Some College	0.8	2.1	4.4	4.6	3.7
Total	2.9	3.8	7.0	10.2	9.4

Table 3. Percent with Children, Men 25-44, by education (2000).

	Non-institutional		Inmate		Total		Percent Change
	White	Black	White	Black	White	Black	
HS Dropout*	75.3 (0.0003)	76.6 (0.0006)	54.3 (0.0279)	63.4 (0.0182)	74.0 (0.0069)	73.0 (0.0096)	-180.6
HS	74.5 (0.0001)	81.2 (0.0003)	51.7 (0.0246)	65.5 (0.0213)	74.0 (0.0036)	79.6 (0.0068)	-16.7
Some College	56.7 (0.0001)	60.6 (0.0004)	46.5 (0.0397)	68.7 (0.0386)	56.6 (0.0034)	61.0 (0.0083)	11.5
All	64.0 (0.0001)	71.7 (0.0002)	51.0 (0.0288)	65.3 (0.0233)	63.8 (0.0036)	71.0 (0.0075)	-5.9

Standard errors are shown in parentheses.

* indicates reversal in sign of race differences.

Data for Non-institutionalized come from the NSFG (2002); Data for inmates come from the SISFCF (1997; 2004) and the SILJ (1996; 2002).

Table 4. Mean Number of Children, Fathers 25-44, by education (2000).

	Non-institutional		Inmate		Total		Percent Change
	White	Black	White	Black	White	Black	
HS Dropout	2.55 (0.0011)	2.43 (0.0024)	2.21 (0.1168)	2.46 (0.0928)	2.53 (0.0290)	2.44 (0.0489)	-24.8
HS	2.10 (0.0004)	2.27 (0.0010)	1.97 (0.0822)	2.44 (0.1112)	2.10 (0.0122)	2.29 (0.0357)	12.2
Some College	1.85 (0.0003)	2.25 (0.0014)	2.00 (0.1431)	2.51 (0.1902)	1.85 (0.0121)	2.26 (0.0410)	2.7
All	2.01 (0.0003)	2.28 (0.0008)	2.05 (0.1054)	2.46 (0.1185)	2.01 (0.0133)	2.30 (0.0381)	6.8

Standard errors are shown in parentheses.

Data for non-institutionalized come from the NSFG (2002); Data for inmates come from the SISFCF (1997; 2004) and the SILJ (1996; 2002).

Table 5. Latent TB, Men 25-44, by education (2000).

	Non-institutional		Inmate		Total		Percent Change
	White	Black	White	Black	White	Black	
HS Dropout	0.0 (0.0000)	9.8 (0.0003)	6.6 (0.0121)	10.0 (0.0106)	0.4 (0.0030)	9.9 (0.0056)	-3.5
HS	2.5 (0.0001)	13.0 (0.0004)	4.7 (0.0086)	9.4 (0.0112)	2.5 (0.0013)	12.6 (0.0036)	-4.0
Some College	5.3 (0.0001)	8.7 (0.0002)	3.5 (0.0119)	8.1 (0.0175)	5.3 (0.0010)	8.7 (0.0038)	-0.4
All	3.9 (0.0000)	10.0 (0.0002)	4.9 (0.0103)	9.4 (0.0121)	3.9 (0.0013)	9.9 (0.0039)	-1.2

Standard errors are shown in parentheses.

Data for non-institutionalized come from the NHANES (1999-00); Data for inmates come from the SISFCF (1997; 2004) and the SILJ (1996; 2002).

Table 6. HIV positive, Men 25-44, by education (2000).

	Non-institutional		Inmate		Total		Percent Change
	White	Black	White	Black	White	Black	
HS Dropout	0.0 (0.0000)	4.5 (0.0001)	1.9 (0.0108)	2.9 (0.0090)	0.1 (0.0027)	4.0 (0.0047)	-12.3
HS	0.2 (0.0000)	3.1 (0.0001)	1.2 (0.0046)	2.9 (0.0095)	0.3 (0.0007)	3.1 (0.0030)	-1.6
Some College	0.7 (0.0000)	2.6 (0.0001)	2.7 (0.0191)	3.7 (0.0211)	0.8 (0.0016)	2.6 (0.0046)	2.0
All	0.5 (0.0000)	3.3 (0.0000)	1.8 (0.0095)	3.0 (0.0114)	0.5 (0.0012)	3.2 (0.0037)	-1.6

Standard errors are shown in parentheses.

Data for non-institutionalized come from the NHANES (2001-06); Data for inmates come from the SISFCF (1997; 2004) and the SILJ (1996; 2002).

Table 7. Moved in last 5 years, Men 25-44, by education (2000).

	Non- institutional		Inmate		Total		Percent Change
	White	Black	White	Black	White	Black	
HS Dropout*	54.9 (0.0003)	52.4 (0.0007)	63.7 (0.0013)	63.5 (0.0011)	55.4 (0.0003)	55.5 (0.0006)	-105.1
HS	51.9 (0.0002)	55.5 (0.0004)	65.5 (0.0011)	64.7 (0.0010)	52.2 (0.0002)	56.4 (0.0003)	16.7
Some College	63.3 (0.0001)	62.6 (0.0003)	68.7 (0.0013)	67.6 (0.0014)	63.3 (0.0001)	62.8 (0.0003)	-28.6
All	59.1 (0.0001)	58.4 (0.0002)	65.9 (0.0007)	64.8 (0.0007)	59.2 (0.0001)	59.1 (0.0002)	-85.7

Standard errors are shown in parentheses.

* indicates reversal in sign of race differences.

Data for non-institutionalized and inmates come from the Census (2000).

Table 8. Non-metro enumeration, Men 25-44, by education (2000).

	Non-institutional		Inmate		Total		Percent Change
	White	Black	White	Black	White	Black	
HS Dropout*	6.2 (0.0002)	5.3 (0.0003)	10.8 (0.0008)	13.3 (0.0008)	6.5 (0.0002)	7.5 (0.0003)	-207.0
HS	5.0 (0.0001)	3.9 (0.0001)	8.5 (0.0006)	10.4 (0.0007)	5.0 (0.0001)	4.6 (0.0001)	-60.7
Some College	3.0 (0.0000)	1.8 (0.0001)	5.4 (0.0006)	9.6 (0.0009)	3.0 (0.0004)	2.2 (0.0001)	-36.7
All*	3.8 (0.0000)	3.1 (0.0001)	8.3 (0.0004)	11.3 (0.0004)	3.9 (0.0000)	4.0 (0.0001)	-114.3

Standard errors are shown in parentheses.

* indicates reversal in sign of race differences.

Data for non-institutionalized and inmates come from the Census (2000).