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# Early Incarceration Spells and the Transition to Adulthood

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**Abstract**

This paper assesses the effects of having served time on conventional measures of the transition to adulthood. Using data from the 1979 National Longitudinal Survey of Youth (NLSY79) covering the period from 1979 through 1996, I test for an empirical relationship between prior jail or prison time (measured as having been interviewed for the survey while incarcerated) and four conventional markers of adult transition: current residence with one's parents, never having been married, the proportion of the survey year employed, and hourly earnings. A simple comparison of the four measures of adulthood over time reveal large differences between youth that have ever served time and youth who have not, with those who have served time performing poorly on all measures. Moreover, in a series of panel regression models, I document strong within-person correlations between having prior prison time and each of these outcome measures. For example, a comparison of average annual weeks worked for someone that eventually goes to prison reveals a significant and sizable pre-post incarceration decline in weeks worked relative to the time path of weeks worked among those who never go. Similar patterns are observed for living with one's parents, never having been married, and hourly earnings. Restricting the sample to youth who eventually serve time (a la Western (2002)) attenuates many of these empirical estimates. Nonetheless, there are sizable estimated effects of prior incarceration on the likelihood that one has never been married and annual weeks worked, despite the stringency of the empirical test and the likely downward bias associated with measurement error.

## 1. Introduction

Over the past three decades, the population of U.S. prisons and jails has increased considerably. In 1977, roughly 500,000 people were incarcerated in the nation's prisons and jails. As of 2004, this figure has increased to over 2.1 million, with the lion's share of these inmates incarcerated in state and federal prisons.

The risk of first incarceration as well as the likelihood of ever having served time has risen for both men and women, with larger increases for men, and particularly large increases for minority men. For example, between 1974 and 2001 the proportion of adults in the U.S. that were either currently or previously incarcerated increased from approximately 1.2 to 2.7 percent. For men, the proportion with a current or prior prison incarceration increased from 2.3 to 4.9 percent, while for black men, this figure increased from 8.7 to 16.6 percent (Bonczar 2003). Moreover, these increases are even larger for young minority men with relatively low levels of education (Raphael 2005).

Having served time early in one's life may lengthen the time until, or indefinitely forestall, the achievement of conventional markers of the transition into adulthood.[1] Characterizing adulthood as being law-abiding, economically self-sufficient, in a stable relationship, and perhaps having children, it is fairly easy to hypothesize a number of avenues by which an early incarceration experience may arrest one's development. Newly released offenders often have little savings and are barred from receiving federal housing assistance, both factors that are likely to drive new releases into the homes of their parents or of other relatives. In addition, there is ample evidence indicating that employers are averse to hiring former inmates, a factor inhibiting stable employment and economic self-sufficiency. Moreover, ex-

[1] For a strong qualitative analysis of the impact of incarceration on the lives of young men, see Uggen and Wakefield (2005).

offenders do not accumulate non-institutionalized work experience while incarcerated. While young men and women who enter prison at a young age are just as likely to have children as those who do not, the likelihood of ever having been married is much lower for former offenders. While such a pattern may be driven by assortative mating or unobserved heterogeneity, former inmates also have less to offer to potential spouses (with obvious consequences for marriage prospects).

This reasoning in combination with the increase in prison and jail incarceration rates over the past three decades suggests that involvement with the criminal justice system may be an increasingly common stumbling block along the path to adulthood. Moreover, given racial and gender disparities in incarceration rates and the increases in incarceration rates, these factors are likely to be increasingly important for minority men. In this paper, I explore the effect of having served time on conventional measures of the transition to adulthood. Using data from the 1979 National Longitudinal Survey of Youth (NLSY79) covering the period from 1979 through 1996, I test for an empirical relationship between prior jail or prison time (measured as having been interviewed for the survey while incarcerated) and four conventional markers of adult transition: current residence with one's parents, never having been married, the proportion of the survey year employed, and hourly earnings. In 1979, the respondents are 14 to 22 years of age while in 1996 they are 30 to 38 years of age. Thus, the NLSY79 provides an ideal data set for studying the effects of prior incarceration spells during the time period where most transition from adolescence to adulthood.

A simple comparison of the four measures of adulthood over time reveal large differences between youth that have ever served time and youth who have not, with those who have served time performing poorly on all measures. The key empirical issue in this analysis is

to assess whether prior incarceration experience is a causal force in explaining these differentials or simply a proxy for other unobservable determinants of these outcomes. While it is quite difficult to establish causality, one can exploit the panel aspects of the NLSY to refine the empirical estimates and strengthen the case either which way. To start, the repeated annual observations permit estimation of the relationship between incarceration and, say, the likelihood of living with one's parents using only the variation in both variables occurring within individuals.

A more stringent empirical estimation strategy is that pursued by Western (2002) in his analysis of incarceration on wage dynamics. Specifically, Western identifies a sub-sample of youth who are at very high risk of being incarcerated and then exploits differences in timing of actual incarceration spells within person and within this sub-sample to test for incarceration effects.

I pursue both strategies in order to assess the effects of prior incarceration spells measures of the transition to adulthood, presenting separate estimates for young women and young men. To summarize the results, I find large differences between those who have been to prison and those who haven't that widen with time for all four markers of adulthood. Moreover, there are strong within-person correlations between having prior prison time and each of these markers. For example, a comparison of average annual weeks worked for someone that eventually goes to prison reveals a significant and sizable pre-post incarceration decline in weeks worked relative to the time path of weeks worked among those who never go. Similar patterns are observed for living with one's parents, never having been married, and hourly earnings. Restricting the sample to youth who eventually serve time (a la Western (2002)) attenuates many of these empirical estimates. Nonetheless, there are sizable estimated effects of prior

incarceration on the likelihood that one has never been married and annual weeks worked, despite the stringency of the empirical test and the likely downward bias associated with measurement error.

While the impact of incarceration does not survive the most stringent empirical tests on several of the transitions analyzed, the analysis does reveal the relatively poor performance of those who serve time on all dimensions. Thus, those youth involved with the criminal justice system during adolescence and early adulthood are clearly a vulnerable population in this regard.

## 2. Documenting Recent Incarceration Trends

In this section I document recent incarceration trends with an eye on the demographic traits associated with an elevated risk of incarceration. These trends can be succinctly summarized as follows. The fraction of adults incarcerated as well as the proportion ever having been incarcerated has risen sharply since the early 1970s. However, this increase in the risk of incarceration has hardly been evenly distributed across demographic groups. There has been a sharp elevation in first time incarceration rates among young offenders. Moreover, men have experienced much larger increases in the likelihood of incarceration relative to women, with particularly large increases for low-educated men. Finally, the increase in incarceration rates has been heavily concentrated among minority men, in particular African-Americans.

For the overall adult population, incarceration rates have increased at all ages. Figure 1 presents estimates from the U.S. Bureau of Justice Statistics (BJS) reported in Bonczar (2003) of the percent of adults incarcerated by age for four years covering the time period from 1974 through 2001. In 1974, the percent incarcerated is a strictly increasing function of age (reflecting the greater cumulative incarceration risk as one ages as well as the effect of sentence length on

the age-specific incarceration rate). However, over the subsequence 27 years, incarceration rates rise disproportionately for young adults in their 20s and 30s. By 2001, the peak of the incarceration age profile occurs at 35 years of age (3.9 percent), with a large proportional difference between the incarceration rate at the peak and those for younger and older adults.

Moreover, the risk of incarceration has increased considerably for relatively young adults. Figure 2 presents first time incarceration rates by age calculated by the BJS for the time period 1974 to 2001. The first time incarceration rate nearly triples for adults in their early twenties. This pattern is consistent with both a greater proportion of young adults serving time (an increase along the extensive margin) as well as earlier incarceration spells for those who will eventually serve time (an increase along the intensive margin).

To explore the demographic and educational dimensions along which incarceration rates have changed, Tables 1 and 2 present estimates of the proportion incarcerated by gender, race, age, and educational attainment for the years 1980 and 2000. I calculate these figures with data from the 5 percent Public Use Microdata Samples (PUMS) from the decennial Census of Population and Housing.[2] Each table presents estimates for 1980 and 2000 for adults 18 to 55 years of age. Table 1 presents results for men while Table 2 presents results for women.

Table 1 reveals several facts. First, while incarceration rates have increased for all groups, African-American men experienced the largest absolute increase. While the overall proportion incarcerated remained constant for white men between 1980 and 2000, there is a five

[2] The decennial Census of Population and Housing enumerates both the institutionalized as well as the non-institutionalized population. The PUMS for each census includes a flag for the institutionalized as well as micro-level information on age, education, race and all other information available for non-institutionalized long-form respondents. Within the institutionalized population, one can separately identify individuals residing in non-military institutions. This category includes inmates of federal and state prisons, local jail inmates, residents of inpatient mental hospitals, and residents of other non-aged institutions. I use residence in a non-military institution as the principal indicator of incarceration. Raphael (2005) shows that incarceration population estimates from the PUMS are comparable to figures published by the Bureau of Justice Statistics. See Butcher and Piehl (1998) and Johnson and Raphael (2005) for other research using the PUMS to identify the incarcerated.

percentage point increase for black men (from 0.04 to 0.09), a one percentage point increase for Asian men (from 0.00 to 0.01), and a two-percentage point increase for Hispanic men (from 0.01 to 0.03).

Second, there is a strong relationship between educational attainment and incarceration with an apparent interaction between education and race. For all racial and ethnic groups, less educated men are considerably more likely to be incarcerated than more educated men. However, less-educate black men have the highest incarceration rates. Between 1980 and 2000, the proportion incarcerated among black high school dropouts increased from 0.06 to 0.21. In addition, within education groups the tabulated incarceration rates from the PUMS reveals that incarceration rates peak for adults in their late 20s and early 30s (comparable to the patterns presented in Figure 1).

Finally, a comparison of the results for men in Table 1 with those for women in Table 2 demonstrates that incarceration and the increases in incarceration largely affect men. While the racial and educational differences observed for men are to some degree evident for women, very few women are incarcerated by comparison. In fact, in many of the demographic cells presented in Table 2 the incarceration rates are below ½ of one percent. This finding is not too surprising considering that nearly 90 percent of state and federal prison inmates are male. For the purposes of the current inquiry, these tabulations suggest that incarceration will present more of a problem for the transition of adulthood for males relative to females. Nonetheless, I present results for both genders in the analysis below.

For many of the outcomes analyzed below, having a prior incarceration experience is likely to negatively affect the transition to adulthood, perhaps through stigma, but also through the effect of prior prison experience on human capital accumulation and social and psychological

development. Gauging the population of former prison inmates is more difficult than measuring current incarceration rates due to the fact that none of the major household surveys in the United States ask respondents whether they have served time. Using an indirect method that combines population data, birth cohort estimates of the likelihood of entering prison for the first time at each age, and cohort and age-specific mortality rates (Bonczar 2003),[3] the BJS estimates that in addition to the 1.3 million current inmates in 2001 an additional 4.3 million non-institutionalized persons had served a prison term in the past. Combined, current and former prison inmates account for 4.9 percent of the adult male population in 2001.

Of course, there are large differences by race and ethnicity. The same set of estimates indicate that 2.6 percent of non-Hispanic white males, 16.6 percent of non-Hispanic black males, and 7.7 percent of Hispanic males have served prison time (figures that are roughly double the current institutionalization rates listed in Table 1). The comparable figures for whites, blacks, and Hispanics for 1974 were 1.4, 8.7, and 2.3 percent, respectively.

The BJS also uses this methodology to calculate lifetime probabilities of entering either the state or federal prison system. Given that the risk of incarceration has increased over the past three decades, lifetime probabilities should exceed the current proportion of a specific population that is either currently incarcerated or formerly incarcerated.[4] These estimates indicate that a white male born in 1974 faced a lifetime likelihood of going to prison of 2.2 percent. For those born in 2001, the risk increases to 5.9 percent. For black males, this likelihood increases from 13.2 to 32.2 percent, while for Hispanics the likelihood increases from 4 to 17.2 percent.

[3] The likelihood of entering prison is estimated from annual surveys of recent prison admissions while mortality rates are based on mortality rates for the entire population adjusted upwards by a fixed factor to account for observed average differences in mortality rates between ex-offenders and the general population.

[4] This is due to the fact that earlier cohorts faced lower risks of incarceration during the high-criminal-activity portion of their lifecycle.

The analysis of institutionalization rates revealed large differences within racial groups between less educated and more educated men and between groups of men stratified by age. While the BJS does provide race-specific estimates of the proportion that has ever served time by age, there are no estimates of how this proportion varies by level of educational attainment. Moreover, the results presented above indicate that education is a stronger predictor of current incarceration than is age, and thus, education is also likely to be more strongly associated with ever having served time.

I am able to fill this gap to a certain degree with administrative prison data from California. Using administrative records on all prison terms served during the 1990s in a California state prison, I first calculate an unduplicated count of prisoners entering the system during the 1990s, by race and by how old each prisoner would be in the year 2000.[5] I then use the 1997 Survey of Inmates in State and Federal Correction Facilities to estimate the distribution of inmates across age-education cells within racial and ethnic groups. These distribution estimates are then used to allocate the number of unduplicated prisoners within each age-race cell across educational attainment groups.[6] Dividing these counts by the estimated 2000 California population (institutional plus non-institutional) within each age-race-educational attainment cell yields estimates of the proportion of males in each cell serving a prison term during the 1990s.

Table 3 presents these results. The first column presents national estimates of the proportion ever serving time by race/ethnicity and age from the BJS. The second column presents comparable estimates of the proportion serving time in California. The final four

[5] Each record contains information on an internal California Department of Corrections id number that can be used to uniquely identify inmates. Thus, the administrative records can be purged of inmates that serve multiple prison spells. See Raphael and Weimer (2005) for a complete description of this administrative data set.

[6] The prisoner survey estimates of the joint age-education-race density is needed due to the fact that the California administrative records do not contain information on educational attainment.

columns present estimates by level of educational attainment that allot prisoner within race-age cells across education groups according to the estimated educational distributions of inmates during the late 1990s.

The tabulations by age indicate that the California estimates and the BJS estimates are fairly similar for males between the ages of 18 and 54. For older males, the California estimates indicate a smaller proportion ever having served time. This is sensible considering that the California administrative records only cover the 1990s, and that former prisoners over 54 in the year 2000 are likely to have served time prior to the 1990s. Both sets of estimates indicate that the proportion ever having served time increases with age through the late 30 and early 40s and then declines. Black men between 25 and 44 have the highest rates of current or previous incarceration (roughly one-fifth of this group using both the California and BJS estimates).

The estimates by race, age, and education reveal dramatic differences. For black high school dropouts between the ages of 25 and 44, the number of unduplicated prisoners serving time during the previous decade exceeds census population counts (--i.e., the ratio is greater than one).[7] For black high school dropouts between 45 and 54, 90 percent are estimated to have served a prison term during the past decade. These figures suggest that for black high school dropouts, serving time in prison is practically a certainty. The proportion of blacks with prison time in the past decade is considerably lower for those with higher levels of educational attainment, although the figures for black high school graduates are still quite high (between 0.12

[7] To be sure, this does not mean that more than 100 percent of black men in this cell have served time in the past 10 years. There are a number of factors that are likely to bias upwards the count of unduplicated prisoners relative to the 2000 population. First, I calculated prisoner counts by age in 2000 without taking into account neither the likely mortality of many of the inmates serving time during the 1990s nor the likelihood that many of these inmates may have moved to another state after being released. In addition, a prisoner may be assigned additional internal CDC prisoner identification numbers for subsequent prison terms, thus artificially inflating the number of unduplicated spells. This however, is unlikely to be a substantial source of bias since tabulation based on prisoner SSN's yield quite similar counts to the tabulations based on CDC identification codes.

and 0.16). By contract, the comparable fractions of whites as well as Latinos with prison time in the previous 10 years are smaller for all comparisons.

### 3. Incarceration and the Transition to Adulthood

Conventional notions of adulthood generally involve being economically independent, law-abiding, and responsible. With regards to personal responsibility, it is often assumed that functional adults are involved in long-term relationships, are likely to be married, and if one has children, provide economically and emotionally for dependents. That ex-inmates display delayed adult transitions (as defined above) is not surprising. The extent to which having served time per se contributes to such arrested development, however, is an open and debatable question.

Perhaps the most direct avenue by which prior incarceration may impact the transition to adulthood is via the effect of incarceration on the employment prospects of ex-offenders. Time in prison may impact the ability to secure employment as well as the quality of employment through a number of avenues. To start, former inmates are often legally barred from holding certain types of jobs under federal and state law, and sometimes under local ordinances (Holzer, Raphael, and Stoll 2005a). While the fraction of jobs that explicitly bar convicted felons is likely to be small, such restrictions clearly limit the opportunity set faced by former inmates.

Moreover, many inmates fail to accumulate non-institutionalized work experience while incarcerated. While the median inmate in U.S. state and federal prisons is released after serving two years, the majority of inmates serve multiple prison terms on a single conviction and often serve time on multiple convictions. Thus, the prison experience of young offenders is likely to

be characterized by cycling in and out of prison over a fairly lengthy period of time.[8] This delay in the accumulation of work experience is likely to permanently alter the age-earnings profile of ex-inmates and forestall becoming economically independent of friends, family, and perhaps the state.

Existing research strongly suggests that having served time negatively affects the labor market prospects of former inmates. Holzer, Raphael, and Stoll (2005a, 2005b) show that employers of low and semi-skilled workers are quite reluctant to hire ex-offenders, and are increasingly making use of formal screening mechanisms (checking criminal history records) and informal mechanisms (statistically discriminating against suspected ex-offenders) in their hiring decisions. Pager (2003) and Pager and Western (2005) show that in paired audit studies, job applicants with prior prison time are considerably less likely to receive call-backs from a first interview, an effect that is particularly severe for black male applicants. Holzer, Offner, and Sorensen (2005) find strong effects of aggregate incarceration rates on the employment outcomes of black males. Finally, Western (2002) finds strong effects of prior incarceration experience on the hourly wages of former inmates.

The connections between incarceration and other markers of transition to adulthood are likely to be mediated in part through the effect of prior incarceration on one's economic prospects. Being unable to procure steady and well-paying employment certainly inhibits economic independence and may lead former inmates to rely more heavily on family and friends. Moreover, having diminished employment prospects is likely to diminish the marriage prospects of former inmates.

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[8] In a previous analysis of administrative data from California (Raphael 2005), I analyzed the total amount of time served as well as the amount of time that elapsed between the first admission to prison and the final release observed over a ten year period for inmates 18 to 25 years of age that entered prison in the year 1990. The median inmate in this category served approximately three years over a five-year period. At the 75$^{th}$ percentile, inmate served approximately five years over a nine-year period.

To be sure, incarceration may influence these transitions through alternative avenues. To the extent that serving time engenders anti-social attitudes, inhibits emotional development, and fosters violent tendencies, former inmates are likely to have difficulty negotiating non-institutionalized society. While such traits may estrange former inmates from their families, they may also diminish their ability to function independently. In addition, such emotional traits clearly do not enhance the attractiveness of ex-offenders as potential mates.

There is ample evidence in the NLSY79 that those youth who eventually serve time perform poorly on several conventional measures of achieving adulthood. These basic differences are displayed in Figures 3 through 10. The figures present comparisons of average outcomes for youth who never serve time and youth who serve time at some point between 1979 and 1996. The figures display four dependent variables: whether the youth still resides with his or her parents, whether the youth has never been married, average annual weeks worked, and the average log hourly wage.[9] Since respondents are 14 to 22 years of age in 1979, the time period displayed in the figures covers each youth through their twenties and into their thirties.[10]

Figures 3 and 4 show that while the fraction of respondents residing with their parents is initially comparable for those who eventually serve time and those who do not, disparities between the two groups arise during the latter half of the time period. For men, a visible differential opens up around 1983 and widens to the point where by the end of the panel former inmates are roughly five to ten percentage points more likely to reside with their parents. For young women, those who eventually serve time are less likely to reside with their parents early in the panel, but become more likely to reside with their parents later on.

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[9] Theses outcomes represent traditional gauges of transition to adulthood in the extant social science literature Shanahan (2000). For an analysis of these outcomes using the most recent census of the U.S. see Rumbaut (2005).
[10] Respondents are 30 to 38 years old by 1996. Below, I discuss the sample specifications of the NLSY79 in greater detail.

Figures 5 and 6 present similar figures displaying the proportion of youth who have never married. Again, men who serve time and those who do not have similar values at the start of the panel, yet large differentials emerge and widen early in the panel. By the final year of the panel, men who have serve time are 24 percentage points more likely to have never married relative to men who have not served time. For women, a larger proportion of women marry early among those who serve time. However, by the end of the panel the fraction never married declines more for those who do not serve time and a substantial disparity arises.

For the two measures of labor market performance, those who eventually serve time perform poorly throughout the panel, with notable disparities from the very beginning. Figures 7 and 8 present comparisons of the annual average weeks worked. Among men, the disparity in average weeks worked between those who never serve time and those who do widen from seven weeks in 1979 to nearly 22 weeks in 1996. For women this disparity increases from roughly 13 to 18 weeks. The initial disparities in log hourly wages are considerably smaller yet widen considerably with time. Among men, the disparity in log hourly earnings between those who never serve time and those who do is 0.06 in 1979 (Figure 9). By 1996, this disparity increases to 0.53. While women who serve time initially have higher hourly earnings, than those who do not (Figure 10), by the end of the panel, the hourly wage penalty associated with past incarceration increases to 0.68.

Thus, both male and female youth who do time perform poorly on all of these measures. Whether these relatively inferior outcomes are a direct function of having served time is an open question to which I now turn.

## 4. Identifying the Effect of Having Served Time on Adulthood Transitions: Empirical Strategy and Description of the Data

The figures above clearly document that ex-inmates perform poorly on each of the displayed outcomes. Moreover, the differentials between those who have been to prison and those who haven't widen with time. To be sure, these average differentials may be driven by factors other than incarceration. The cross-sectional differences at any point in time are likely to be driven in part by unobserved differences in other characteristics between ex-inmates and others. Moreover, the widening of these differentials may not correspond with the timing of the first incarceration of those who eventually go to prison. In other words, the time trends in the figure may simply reflect a widening of these differentials that have nothing to do with going to prison.[11]

In this section, I present a strategy for obtaining more precise estimates of the effect of having ever been incarcerated on the four outcomes discussed above. Following closely the strategy employed by Western (2002), I exploit the panel aspects of the NLSY79 to assess whether the timing of the incarceration spells for those who eventually serve time correspond to a departure in their average outcomes from the path of those who do not serve time. Specifically, define the variable $Ever_{it}$ as a dummy variable equal to one if person $i$ in year $t$ has ever been to prison or jail and the variable $Prison_{it}$ as a dummy variable indicating that person $i$

[11] While the identification problem explored here pertains to isolating the true causal effect of incarceration on the transition outcomes, the potential endogeneity of having served time is indirectly related to the debate between Moffit (1993, 1994) and Sampson and Laub (1993, 1997, 2003,2005) regarding the existence of life-course persistent offenders. A somewhat crude summary of Moffit's hypothesis is that criminal offenders fit into a discrete set of typologies, with the most serious offenders (roughly corresponding with those who eventually serve time in prison) being characterized as life-course persisters, exhibiting little evidence of declining activity with time. Samspon and Laub contest this characterization, finding little evidence of a group of life-course persisters in a long panel of offenders and individuals at high risk of offending as youth. Moreover, these authors explore whether certain life course events, such as getting married, having children, or being steadily employed correspond to desistence in adulthood (via a "knifing-off" of the past from the present), and find evidence of such desistence. The relevance of this debate to the question raised here concerns the issue of whether those who serve time are simply fundamentally different people who would perform poorly on the outcome measures irrespective of a spell in prison. The typological approach to criminal offenders of Moffit would suggest so. The emphasis on life-course transitions and the cumulative effects of disadvantage emphasized by Sampson and Laub would suggest otherwise.

is incarcerated in year *t*. My estimates of the effect of being an ex-offender on the four transition outcomes derive from various estimates of the equation

(1) $$Outcome_{it} = \alpha_i + \beta_t + \delta Ever_{it} + \lambda \,\mathrm{Pr}\, ison_{it} + \Gamma' X_{it} + \varepsilon_{it},$$

where $Outcome_{it}$ stands for one of the four transition outcomes, $\alpha_i$ captures person-specific fixed effects that adjust for the time-invariant effect of all time-invariant personal characteristics, $\beta_t$ indicates a complete set of year fixed effects, $X_{it}$ is a column vector of observable time-varying determinants of the outcome while $\Gamma'$ is a conforming row vector of coefficient parameters to be estimated, $\delta$ and $\lambda$ are addition parameters, and $\varepsilon_{it}$ is a mean-zero error term.

The estimate of the effect of having ever been to prison on outcomes is identified as follows. The parameter $\delta$ represents the within-person difference between the average in the outcome variable for the observations preceding the person's first incarceration and the observations following the first incarceration, after netting out the effect of being currently incarcerated, the common year effects estimated with all observations (those who serve time and those who do not), and the effects of observable time-varying covariates. Thus, the fixed effect specification above requires that any relative erosion of the outcome for ex-offenders correspond in time with their first incarceration in order to register any measurable effect of being an ex-inmate on the transition variables.

I estimate equation (1) for each of the transition outcomes using alternative sample specifications. I first estimate equation (1) using all observations in the panel data set. This inclusive sample identifies the effect of ever having served time by measuring within-person departures from overall trends in the panel after including person-specific fixed effects.

A more stringent test for an effect of having served time would restrict the sample to youth who are at a high risk of offending. In Western's (2002) analysis of wage determination, the author restricts the sample to youth who eventually serve time or who exhibit risky behavior (particularly, participation in criminal activity at the beginning of the panel) and then estimates a variant of equation (1) with this restricted sample. Following Western's intuition, I pursue a similar strategy and restrict the sample to those youth who eventually serve time. Using this restricted sample, the effect $\delta$ is identified using within-person departures from the overall sample trends corresponding to the timing of the first incarceration. In essence, this identification strategy uses the time path of outcomes for those who serve time later in life as the counterfactual for the time path of outcomes for those who serve time earlier in life.

The data for this project come from the NLSY79. The NLSY79 is a panel data set commencing in 1979 with annual follow-ups through 1994 and bi-annual follow-ups thereafter. Youth in the NLSY79 were 14 to 22 years of age at the start of the panel. The initial sampling frame involved three sampling strata: a main nationally representative sample of youth within this starting age range, a sub-sample of youth from low-socioeconomic status and minority households, and a military sub-sample which was not followed beyond the initial years of the panel.

I restrict the analysis to the first two strata and employ the provided sample weights throughout. I analyze the annual waves between 1979 and 1994 as well as the first biannual follow-up in 1996. To focus on the effect of adult incarceration, I restrict the sample to observations where the surveyed youth are between 18 and 31 years of age. Given the initial age range of the panel, this age restriction will necessarily create an unbalanced panel as youth that

are over eighteen in 1979 will have missing observations by design.[12] To assess whether the estimation results are sensitive to this aspect of the analysis, I present parallel results throughout that restricts the sample to youth that have complete observations for each year between age 18 and age 31, as well as results using an unrestricted, yet unbalanced panel.

At each interview, the NLSY79 includes a question regarding the respondent's current residence. Among the possible answers to this questions are residence in prison/jail at the time of the interview. I use this variable to construct the indicator of current incarceration in any given year and to construct the variable indicating the youth has been incarcerated at some time in the past.

To be sure, this measure of incarceration is imperfect and may be biased downward by the periodicity of measurement and biased upwards by the inclusion of jail in the definition. Regarding the first source of bias, one is sentenced to state or federal prison with the conviction of a felony carrying a prison sentence of at least one year. Thus, assuming that individuals sentenced to at least a year serve at least a year, annual interviews with a marker for being interviewed in prison or jail should capture all first time incarcerations. However, many inmates serve second or higher terms in prison on a given court commitment (usually for violating the conditions of their parole), and time served on these subsequent parole violations is often less than a year (Raphael 2005). Moreover, those youth sentenced to a year or more who are paroled early (for good behavior, for example) may also be missed. Thus, the annual interview is likely to miss some prison terms served by NLSY79 youth.

On the other hand, the possibility of being interviewed in jail will overstate prior incarceration rates. Offenders are held in jail for minor offenses, while awaiting adjudication of a charge, or while serving a sentence of less than a year. To the extent that the NLSY79 is

[12] Moreover, there are many individuals who are not interviewed in all years.

interviewing respondents in jail that are being temporarily held for minor infractions, my measure of prior incarceration will be biased upwards.

The proportion of youth incarcerated by 1996 in the NLSY79 is somewhat higher than what one would expect from the lifetime risk of incarceration figures tabulated by the BJS for this particular age cohort. For example, by 1996 when respondents are between 30 and 38 years of age, roughly six percent of males and one percent of females had been interviewed in prison. Both figures are slightly higher than the proportions of all men and women who were either currently incarcerated or had ever been incarcerated in the U.S. in 2001. By race and ethnicity, roughly 10 percent of male Hispanic respondents, 18 percent of male black respondents, and 4 percent of male white respondents had been interviewed in prison or jail by 1996. Again, these numbers are just slightly higher than the proportion ever incarcerated in 2001.

Table 4 presents more detailed tabulations of the proportion of NLSY79 respondents that are interviewed in prison or jail by the 1996 interview. The table shows the proportion ever incarcerated by race/ethnicity, gender, and level of educational attainment by the end of the panel. Not surprisingly, the table shows the highest prevalence of a past incarceration among men, among the less educated, and among minorities. While these figures are again, slightly higher than what one might expect for this particularly age cohort, the figures are clearly in the ballpark of the estimated presented by the BJS.

## 5. Main Empirical Results

In this section I present my main estimates of equation (1) for the four outcome variables depicted in the figures above. Table 5 begins with a set of linear probability models where the dependent variable is equal to one if the respondent is residing with his or her parents at the time

of the interview. The table shows separate results for men and women and presents four separate model specifications for each. The first specification includes an indicator for ever having been to prison, being employed, being currently incarcerated, dummy variables for educational attainment, dummies for black and Hispanic, a third-order age polynomial fully interacted with the race/ethnicity indicators, controls for region of resident and whether one resides in a rural, urban, or suburban neighborhood, and a full set of year fixed effects. The second specification adds a complete set of person-specific fixed effects. Models (1) and (2) use all observations in the NLSY with complete data, necessarily resulting in an unbalanced panel. Model (3) re-estimates the fixed effect specification restricting the sample to observations with complete information in each sample year. Finally, the fourth model restricts the sample to those who eventually serve prison time by 1996. Given the small samples used to estimate these restricted models (especially for women), I do not present estimates for the eventually-incarcerated sample restricted to a balanced panel.

The first three models for men suggest that having served time has a significant positive effect on the likelihood of residing with one's parents. Model (1) omitting persons specific fixed effects shows that men who have served time are roughly 6 percentage points more likely to reside with their parents relative to men who haven't after controlling for the other covariates in the model. Adding person fixed effects more than doubles the size of this estimate to 13 percentage points. Restricting the sample to a balanced panel, the fixed effect model yields a comparable estimate of 16 percentage points.

Regarding the model restricting the sample to those who eventually serve time, a brief discussion of the strengths and weaknesses of this specification is needed. The main difference between the models using all observations and the model restricted to those who eventually serve

time concerns the group of observation used to construct the counterfactual. In the model using all observations, the time path of the dependent variable against which the change for those who go to prison is compared is constructed using the changes over time for those who never go to prison as well as those who go to prison at later points in their lives. The restricted model uses only those who later serve time to construct the counterfactual. Given that those who serve time and those who don't are likely to differ along a number of observable and unobservable dimensions, one might argue that the restricted comparison is perhaps more accurate.

However, the smaller sample size in the final comparison along with the imperfect measurement of prior incarceration spells is likely to render the final specification particularly sensitive to measurement error. To the extent that measurement error in the variable indicating ever having been to prison is classical, my estimate of $\delta$ will be biased towards zero (a bias similar to that in longitudinal estimates of the union-wage effects analyzed in Card (1996) and Raphael (2000)).

Moreover, measurement error in the key dependent variable is likely to be more severe for those who go to prison later in life. Suppose that more serious offenders are more likely to be consistently involved in one form or another with the criminal justice system. Such offenders are most likely to be registered early as having served time, as their involvement with the law will be gauged early by the annual interviews of the NLSY79. By extension, the incarceration spells of less serious offenders who are less consistently involved with the law may be more likely to be missed by the annual interviews of the NLSY79. To the extent that this is the case, the final model specification may be using youth who have served time (but are measured as not having served time) in constructing the needed counterfactual.

Keeping these qualifications in mind, the final specification for males in Table 5 shows little evidence of an impact of having ever served time on the likelihood that a youth resides with his parents. Thus, for this particular transition outcome the results from the NLSY79 are mixed.

The estimated effects of prior incarceration on residing with one's parents for women are similar to the estimates for men. In the three specifications using both youth that eventually go to prison and youth that do not, there are sizable and generally significant effects (with former inmates more likely to be residing with their parents). Again, the estimated effects from the fixed-effects models are considerably larger than the estimates omitting fixed effects. For women, the point estimate using the restricted sample is still quite large. However, given the small sample size this point estimate is poorly measured and the effect is insignificant.

Table 6 presents a set of comparable linear probability models where the dependent variable is now a dummy variable indicating that the individual has never been married. The model specifications are identical to the model specifications in Table 5 with one exception. Here, I add an explanatory variable indicating that the person has ever had a child based on the presumption that having a child with someone may have an independent effect on the likelihood of being currently or previously married.[13] The results for men indicate a consistent positive effect of having served time on the likelihood of never having been married. For the first three specifications, those who have been incarcerated are roughly 14 percentage points more likely to never have been married relative to those who have never been incarcerated. This result is not affected by the inclusion of person fixed effects or by restricting the sample to the balanced panel. Restricting the sample to those who have served time causes a large drop in this

[13] Of course, having been married is likely to have an impact on whether one has ever had a child and having had a child is likely to be correlated with other unobservable determinants of marriage. I have estimated these models with and without this independent variable and the results are nearly identical.

coefficient estimate from roughly 14 percentage points to 6 percentage points. Here, however, this effect is statistically significant at the one percent level of confidence.

The results for women are comparably strong (though the estimates are less precise). For the three specifications using the more inclusive samples, the estimated effects of having served time range from 12 to 18 percentage points. Moreover, all three effects are statistically significant at the one percent level of confidence. For women, restricting the sample to those who are eventually incarcerated does not appreciably alter the effect size (13.5 percentage points). Similar to the results for males, the effect for this most stringent test is significant at the one percent level of confidence. Thus, for marriage there is consistent evidence across genders and in all specifications of a sizable delaying effect of prior incarceration spells.

Tables 7 and 8 present linear regression results for two labor markets outcomes: annual weeks worked and hourly wages. Regarding the weeks worked models in Table 7 the specifications are comparable to those in Tables 5 and 6, although the dummy variables indicating being employed or ever having had children are dropped. Beginning with the results for men, I find a consistent negative effect of having served time on annual weeks worked. The simple OLS specification in model (1) indicates that those who have been to prison work 14 fewer weeks per year relative to those who haven't. Adding person fixed effects to this model reduces this estimate to between 9.4 and 10.6 weeks. For the fixed effect model using the sample of men who eventually go to prison, we find that a prior incarceration spell reduces annual weeks worked by roughly six weeks per year. All of these point estimates are statistically significant at the one percent level. Note further that these effects are net of any effect of being interviewed in prison in the current year on the previous year's weeks worked.

The results for women are less consistent. In the first specification omitting person fixed effects, there is a large negative effect of prior incarceration on annual weeks worked (roughly eight weeks). However, in the models including person fixed effects as well as the model imposing the various sample restrictions, there are no significant effects.

Finally, Table 8 presents results where the dependent variable is hourly log wages. By construction, Table 8 is estimated using only those observations where the individual is employed at some point during the year and where an hourly wage is observable. The results for males indicate large sizable effects of having served time on hourly wages in the first three specifications (ranging from 17 to 23 percent). These results are nearly identical to those presented in Western (2002), although the model specification differ somewhat. There is no measurable effect in the final specification where the sample is restricted to those who have served time. This result contrasts with the comparable estimate presented in Western (2002), although Western's restricted sample is somewhat more inclusive than the one that I employ here.[14]

The wage models for women yield poorly measured estimates of the effect of prior incarceration and are mixed at best. The initial model omitting person fixed effects yield a large negative effect of prior incarceration on hourly wages (with a negative and significant coefficient of -0.215). Adding fixed effects yields a comparable effect of -0.155 that is marginally significant. In the fixed effects model with a balanced panel, I find no evidence of a wage effect for women. Finally, the model estimated with the sample restricted to women who go to prison yields no evidence of a wage effect, though the estimate is quite imprecise.

[14] In particular, Western includes all individuals with any acknowledged involvement in criminal activity as well as those who eventually serve time in his high-risk sub-sample while here I restrict the sample to those who are eventually interviewed in prison.

**6. Do These Effects Vary by Age?**

The results thus far suggest that those who serve time perform poorly on the four transition markers analyzed here and that the timing of initial incarceration often corresponds to a permanent deterioration in this relative performance. While the analysis thus far has pooled all youth observations where respondents are between 18 and 32 years of age, one might surmise that the impact of becoming an ex-offender may vary by when one first goes to prison. For example, the period of early adulthood (say, corresponding to the age range between 18 and 25) may be a particularly crucial time period where ties to the labor market and a credit history are established, emotional relationships mature, and youths establish their independence from parents and other relatives. Given the amount of development occurring at this time, one might suspect that a prison spell served during this crucial time may have particularly severe consequences.

Alternatively, serving a prison spell during early adulthood may be more likely to be interpreted by employers or a potential spouse as a youthful indiscretion unlikely to be repeated. In contrast, a first prison spell served after the age of 25 when most of one's contemporaries have successfully negotiated many traditional markers of adulthood may be interpreted by others as signaling some permanent personal deficiencies.

In this section, I explore whether the effect of becoming an ex-offender depends on the age when one initially serves time. To do so, I re-estimate the models presented in Table 5 through 8 above after stratifying the sample into two sub-samples: (1) the sample of observations where the NLSY79 youth are between 18 and 25 year of age, and (2) the sub-sample where the youth are between 26 and 32. Table 9 presents these additional results for men. The table presents the coefficient estimates on the variable "Ever been to prison" for each outcome and

each of the four specifications used above. The first column presents results for the 18 to25 year old sub-sample while the second column presents results for the 18 to 31 year old sub-sample.

While the differences across the age ranges are not uniform, there are some notable patterns suggesting larger negative effects among older offenders for two of the four outcomes and larger effects for younger offenders for one. While the differences are slight, older first time offenders seem to be more likely to end up living with their parents as a result in three of the four model specifications. In addition, the negative effects of having served time on weeks worked are somewhat larger for the older cohort. There is a noticeably smaller effect of serving time later in life on the likelihood of never having been married. This is sensible considering that first-time inmates during the latter period have five extra years to form relationships before entering prison. There is little consistent evidence of a differential impact on wages.

Table 10 presents comparable results for women. Here, there is stronger evidence of larger adverse effects for younger women. Regarding the effects on likelihood of living with one's parents, the point estimate for younger women are considerably larger than the estimates for older women, although in each case they are measured imprecisely. Moreover, having served time has a more consistent effect on the likelihood of never having been married among in the younger sample. For annual weeks worked and hourly wages, the coefficient estimates are generally more negative for the model estimated with the younger sample, yet few of these coefficients are significant and the differences in results are not.

## 7. Conclusion

The results of this study are several. First, data from the NLSY79 clearly demonstrate that youth that eventually serve time in prison perform poorly on most conventional markers of

the transition to adulthood. They are less likely to be married, more likely to reside with their parents, work less per year, and earn less when they do work. In addition, previous work on recidivism (Raphael and Weiman 2005) and life-course criminal activity (Sampson and Laub 2005) finds that many of these youth persist to engage in criminal activity well into early adulthood. Regardless of whether prison exerts a causal influence on these outcomes, the data reveal a population of mostly young minority men who fail to advance in a timely manner towards mature and productive adult roles. Moreover, given that current lifetime incarceration probabilities are at historic highs, the size of this vulnerable population is much higher today than in the past and comprise sizable proportions of certain sub-groups of U.S. males.

Beyond these descriptive patterns, I also find strong evidence that serving time permanently impacts several outcomes such as the likelihood of ever being married and employment stability. There is also some yet mixed evidence that serving time increases the likelihood that young adults continue to reside with their parents and diminishes hourly earnings. To be sure, the fixed-effect models estimated above can never establish with certainty the presence of a causal effect of prior prison spells on theses outcomes. Nonetheless, the strong partial correlation between serving time and the transition outcomes using thin slices of variation in the data occurring within person suggest strong empirical relationships that merit further research attention and perhaps attention from policy makers interested in the costs (both explicit and collateral) and benefits of incarceration.

The descriptive patterns and more formal model results paint a clear portrait of a sub-population of largely young men who's development has been stunted, with the model results suggesting a potential impact of prison in retarding their economic independence and relational maturity. While one potential implication of this research is that reducing incarceration rates

would alleviate some of the disparities documented here, such arguments regarding the collateral consequences of incarceration have historically had little influence on sentencing and parole policies (the main policy determinants of overall incarceration rates). However, the research does suggest a potentially important role for workforce development activities and basic educational programs in prisons. Current participation in prison education programs is quite low, especially considering the low-levels of educational attainment among inmates (Raphael and Stoll 2004). Moreover, participation in substance abuse programs and reentry programs designed for soon-to-released inmates is far from universal, despite near universal need (Petersilia 2003). Barring drastic changes in sentences and parole policies, the reentry efforts of state corrections departments will be increasingly important in facilitating the transition of former offenders into non-institutionalized society and hopefully into more productive adult lives. More solid evaluation research on which such efforts work and which do not is clearly needed.

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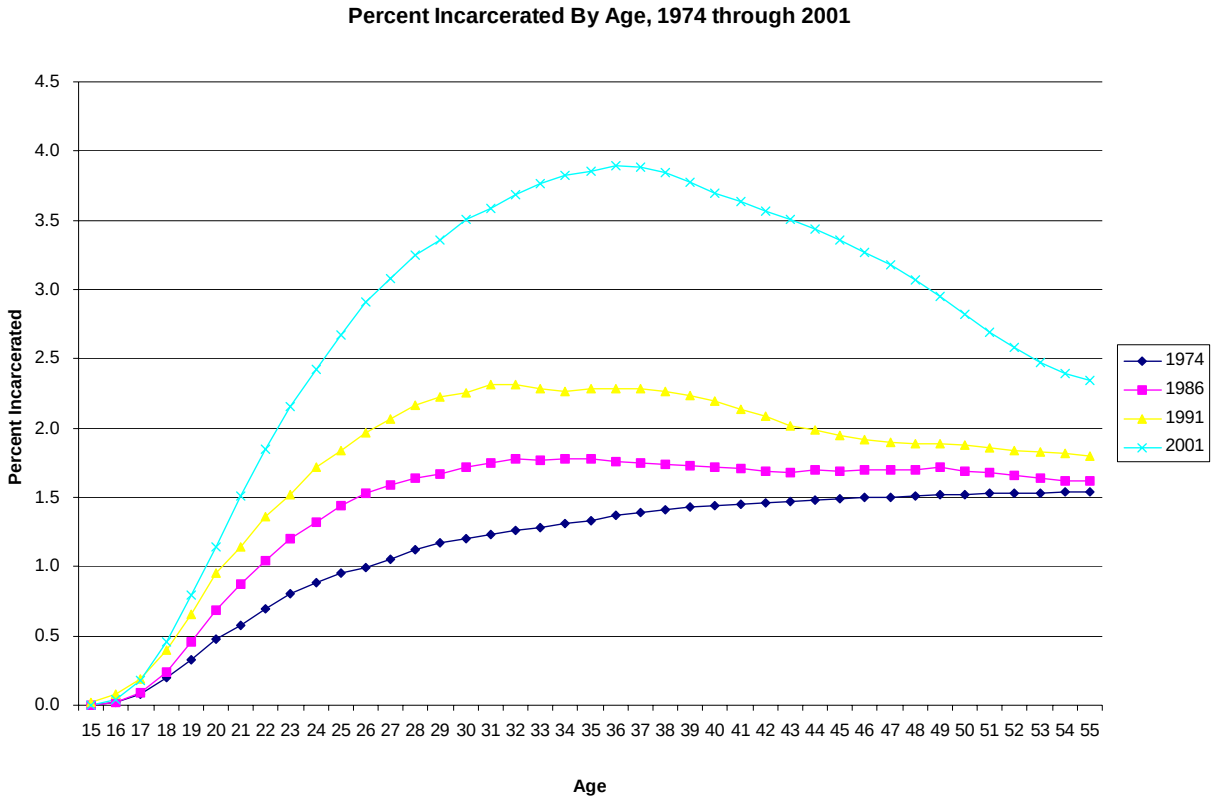
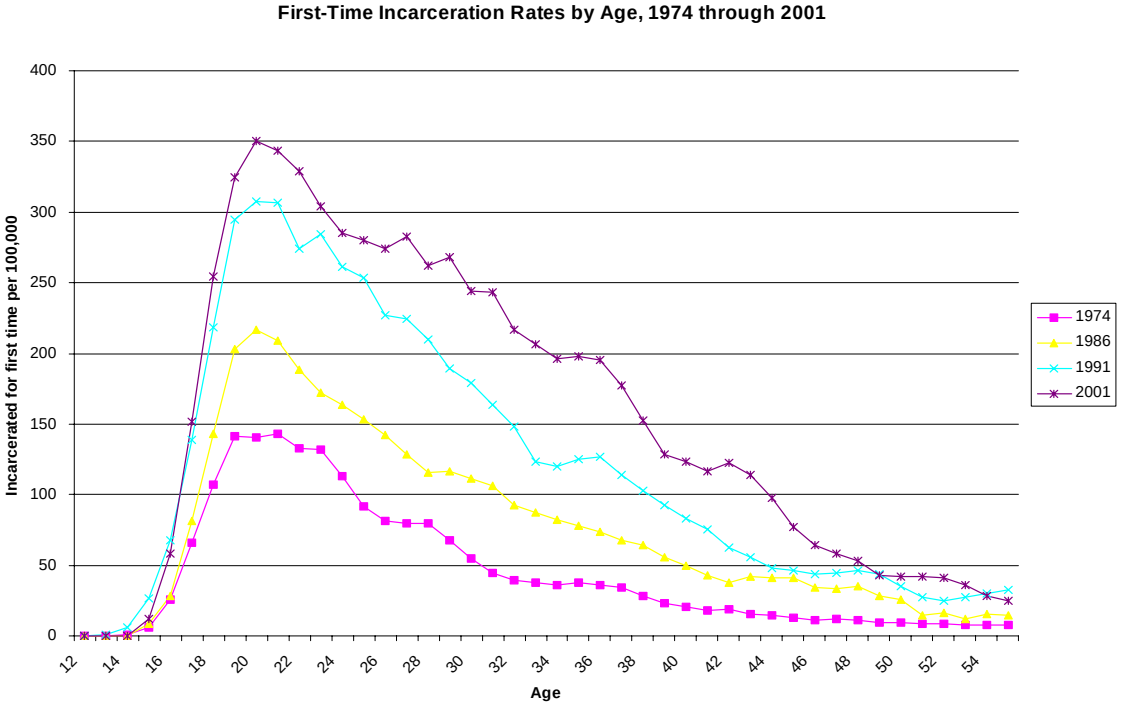
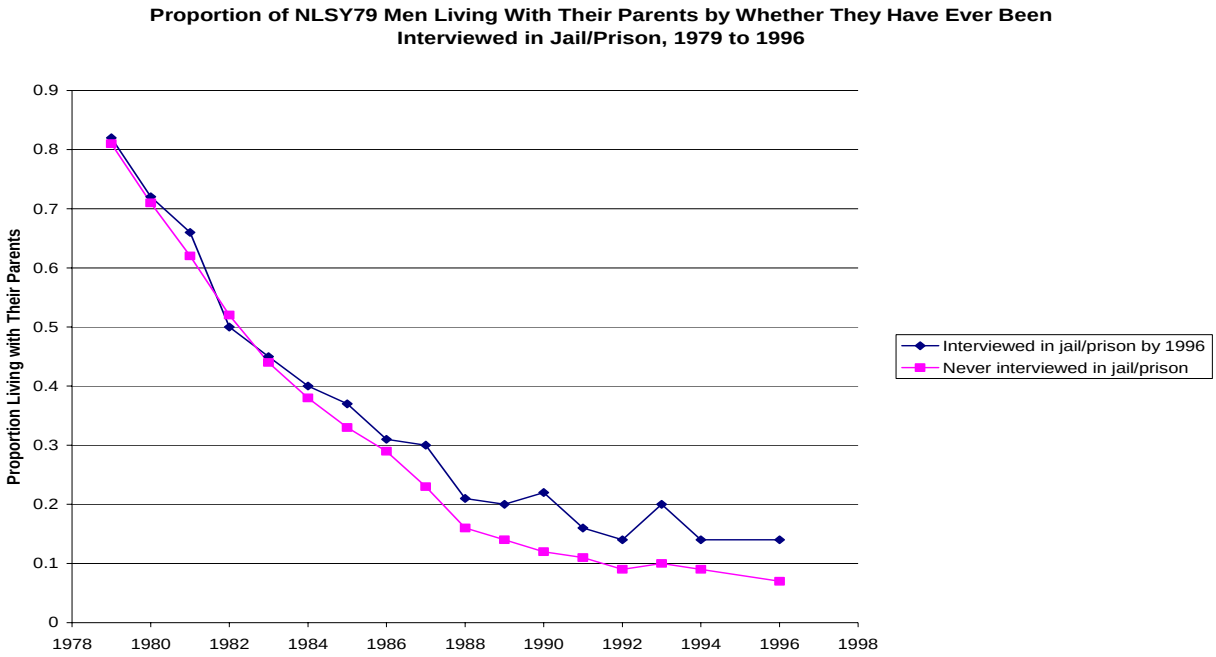
## Figure 1




## Figure 2



## Figure 3

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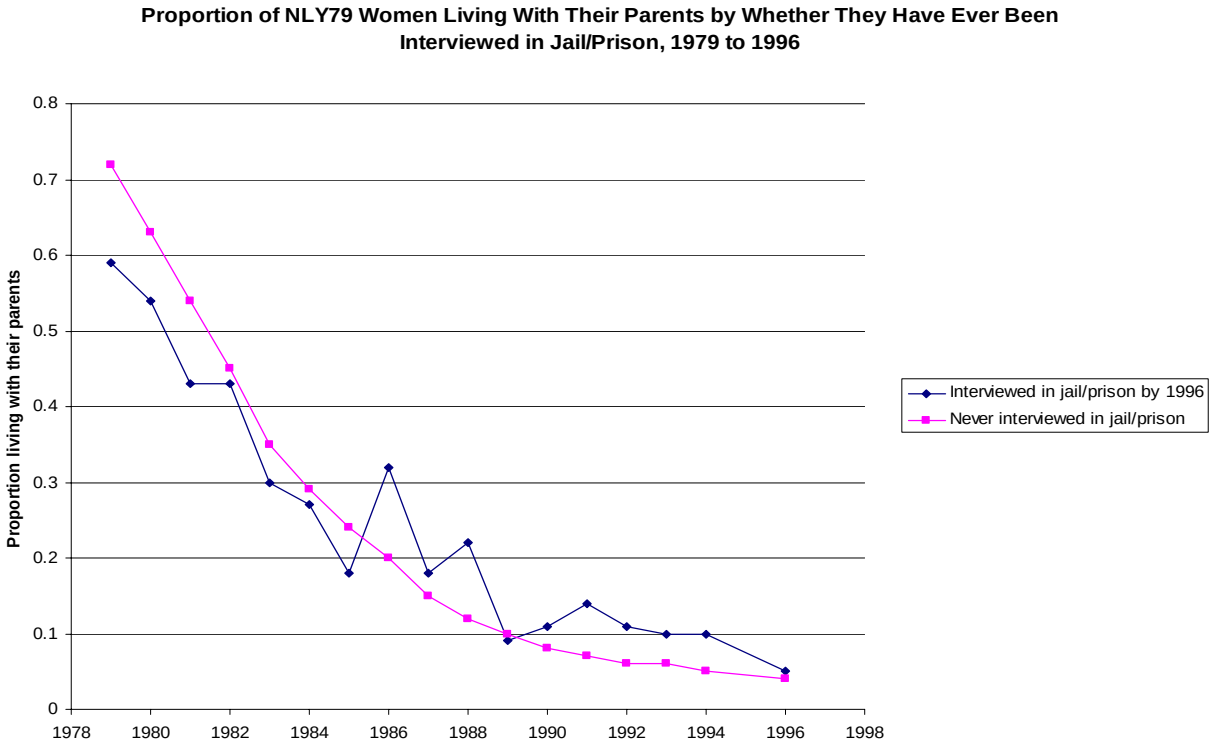

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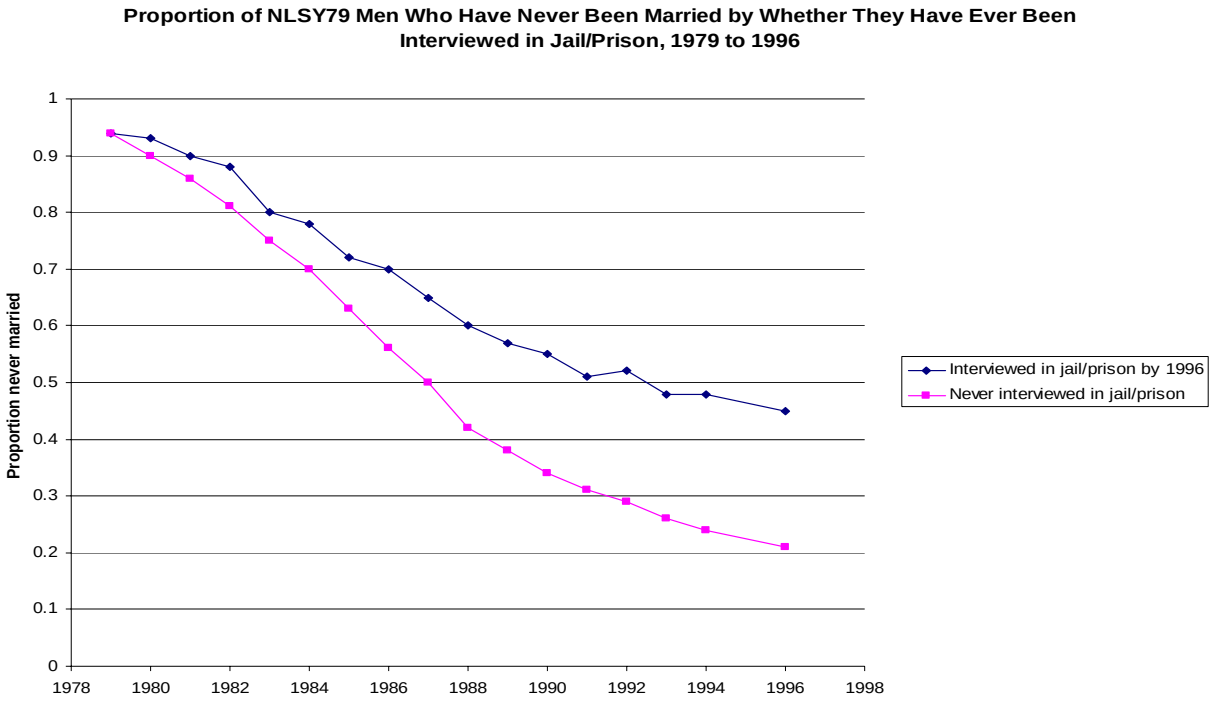


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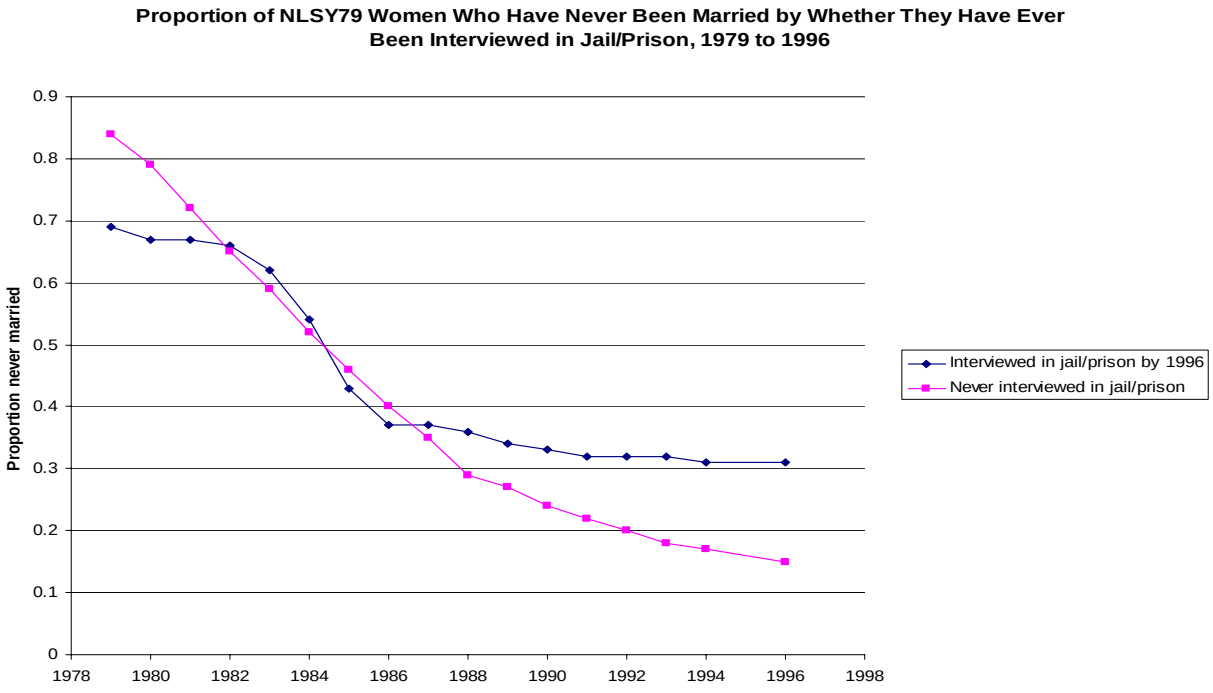
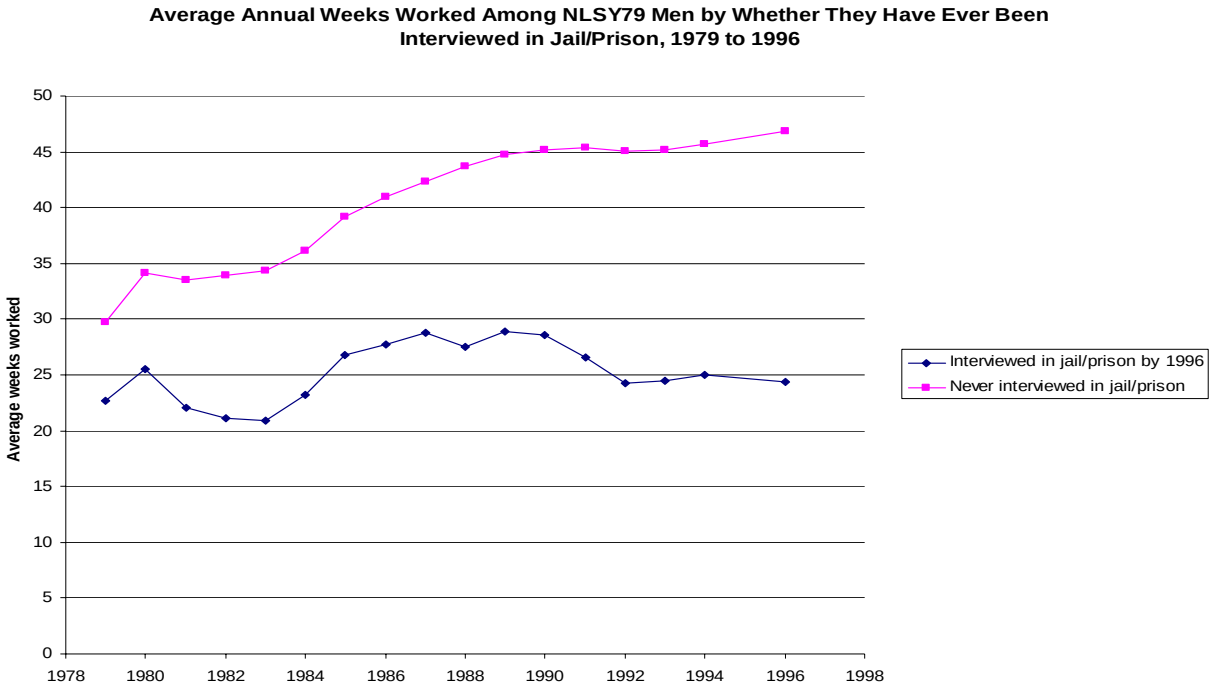


## Figure 7

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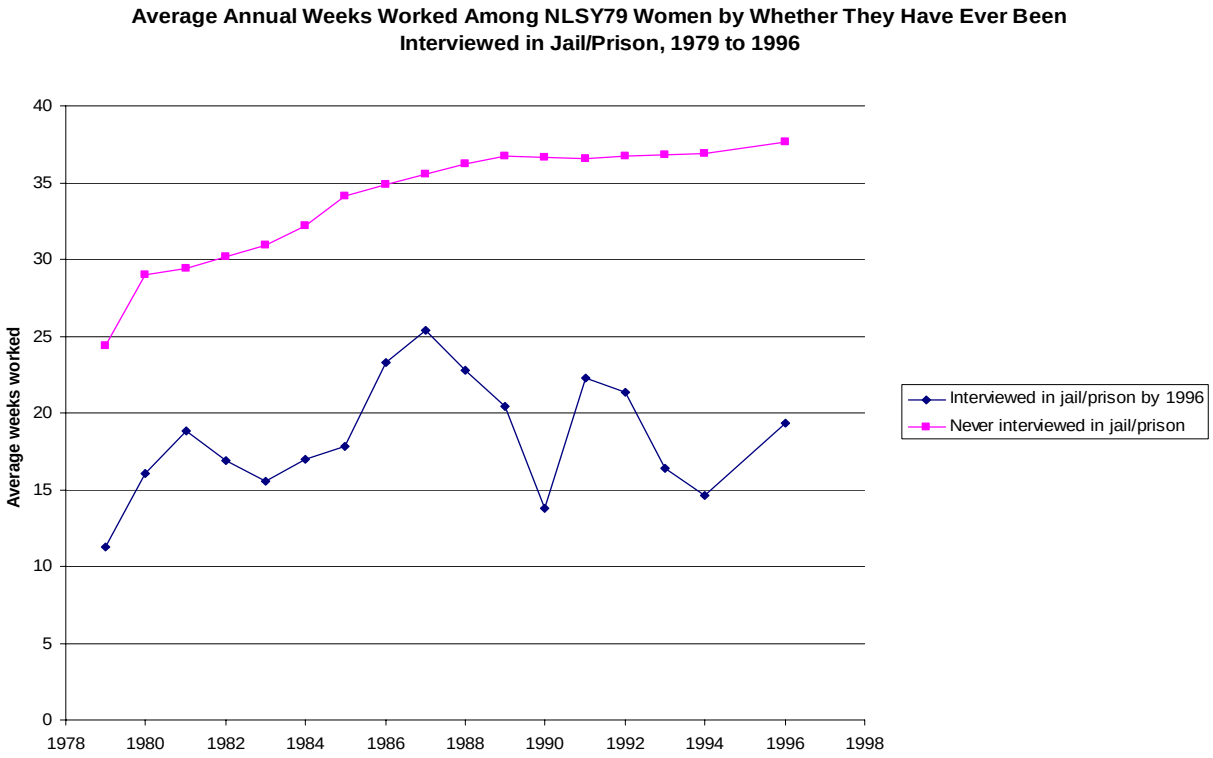
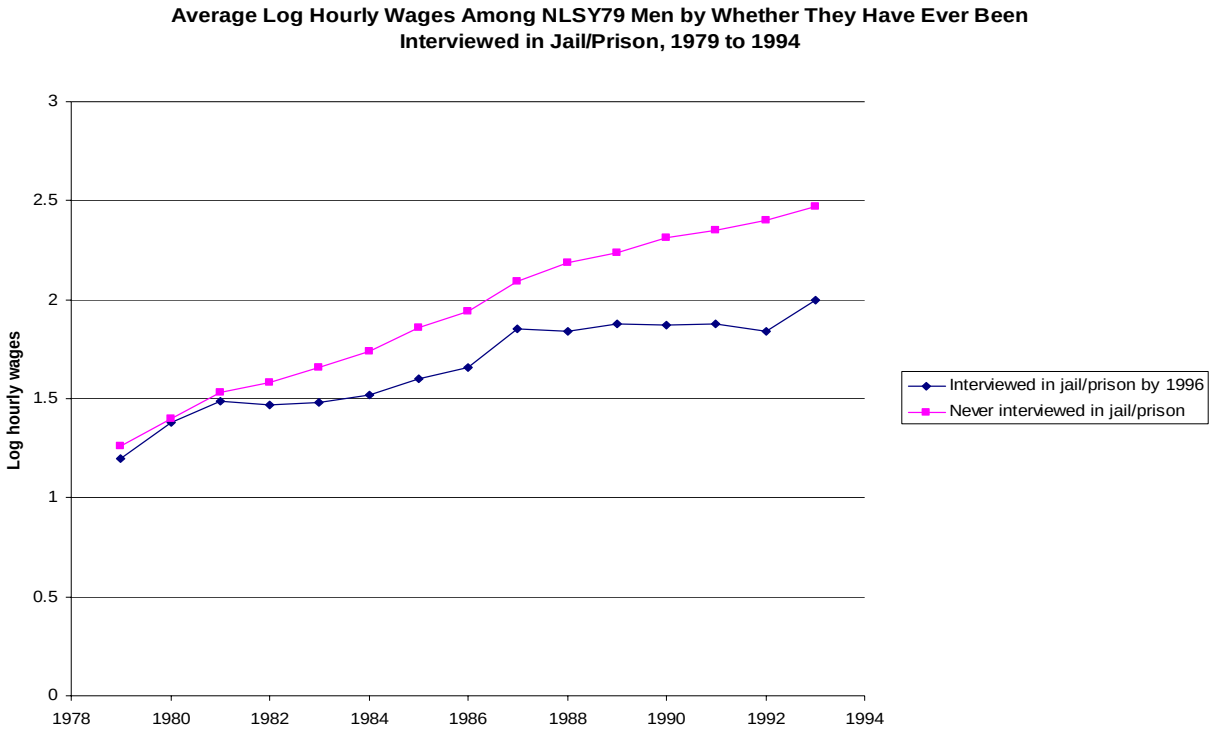


## Figure 9




## Figure 10

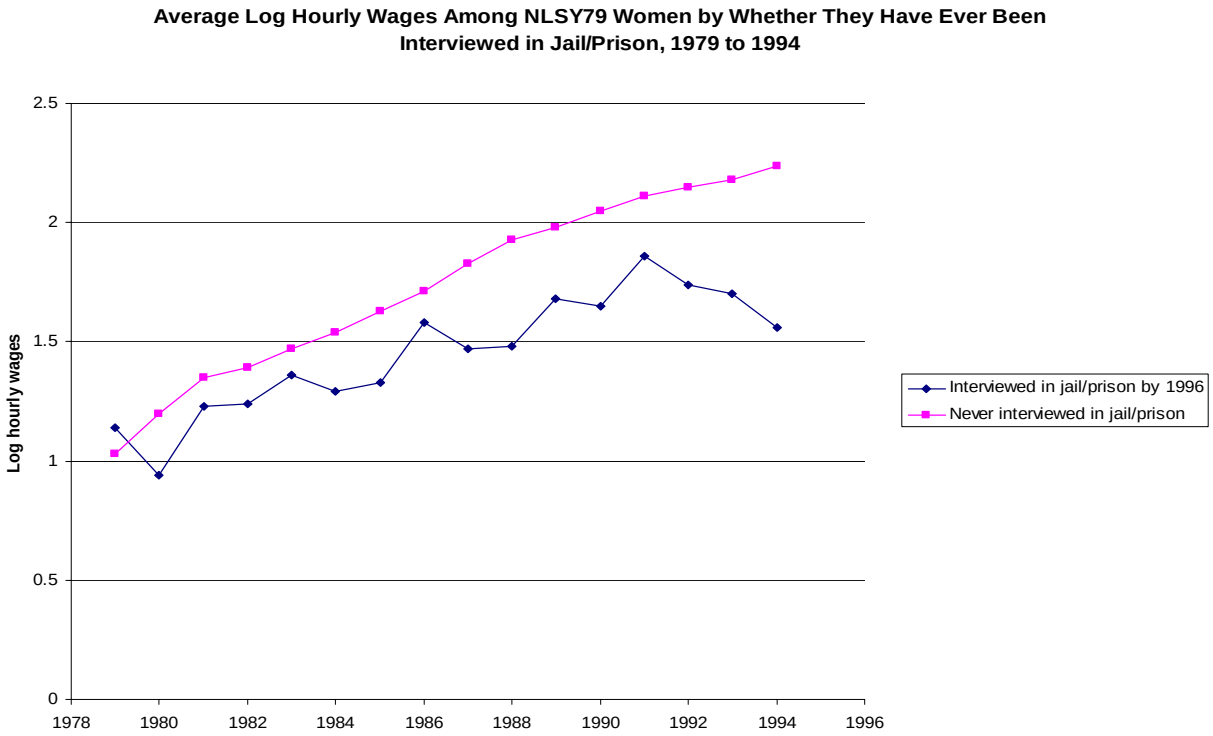


**Table 1**
**Proportion of Men 18 to 55 Years of Age Incarcerated by Race/Ethnicity, Age, and Level of Educational Attainment**

| | White | | Black | | Asian | | Hispanic | |
|---|---|---|---|---|---|---|---|---|
| | 1980 | 2000 | 1980 | 2000 | 1980 | 2000 | 1980 | 2000 |
| All Men | 0.01 | 0.01 | 0.04 | 0.09 | 0.00 | 0.01 | 0.01 | 0.03 |
| Less than high School | 0.02 | 0.05 | 0.06 | 0.21 | 0.01 | 0.02 | 0.02 | 0.04 |
| 18-25 | 0.03 | 0.04 | 0.08 | 0.22 | 0.02 | 0.04 | 0.03 | 0.04 |
| 26-35 | 0.03 | 0.07 | 0.08 | 0.33 | 0.01 | 0.03 | 0.02 | 0.04 |
| 36-45 | 0.02 | 0.05 | 0.03 | 0.19 | 0.00 | 0.01 | 0.01 | 0.04 |
| 46-55 | 0.01 | 0.03 | 0.02 | 0.08 | 0.00 | 0.01 | 0.01 | 0.02 |
| High School Graduate | 0.01 | 0.02 | 0.03 | 0.09 | 0.01 | 0.01 | 0.01 | 0.03 |
| 18-25 | 0.01 | 0.02 | 0.03 | 0.09 | 0.01 | 0.01 | 0.01 | 0.03 |
| 26-35 | 0.01 | 0.02 | 0.04 | 0.12 | 0.01 | 0.02 | 0.01 | 0.04 |
| 36-45 | 0.00 | 0.02 | 0.02 | 0.09 | 0.00 | 0.01 | 0.01 | 0.03 |
| 46-55 | 0.00 | 0.01 | 0.01 | 0.04 | 0.00 | 0.01 | 0.01 | 0.02 |
| More Than High School | 0.00 | 0.01 | 0.02 | 0.04 | 0.00 | 0.00 | 0.01 | 0.02 |
| 18-25 | 0.00 | 0.01 | 0.02 | 0.03 | 0.00 | 0.00 | 0.01 | 0.01 |
| 26-35 | 0.00 | 0.01 | 0.03 | 0.05 | 0.00 | 0.00 | 0.01 | 0.02 |
| 36-45 | 0.00 | 0.01 | 0.01 | 0.05 | 0.00 | 0.00 | 0.01 | 0.02 |
| 46-55 | 0.00 | 0.00 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.01 |

Figures tabulated from the 1980 and 2000 5 % Public Use Microdata Samples of U.S. Census of Population and Housing.

**Table 2**
**Proportion of Women 18 to 55 Years of Age Incarcerated by Race/Ethnicity, Age, and Level of Educational Attainment**

| | White | | Black | | Asian | | Hispanic | |
|---|---|---|---|---|---|---|---|---|
| | 1980 | 2000 | 1980 | 2000 | 1980 | 2000 | 1980 | 2000 |
| All Women | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Less than high School | 0.01 | 0.01 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18-25 | 0.01 | 0.01 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26-35 | 0.01 | 0.01 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36-45 | 0.01 | 0.01 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46-55 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| High School Graduate | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18-25 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26-35 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36-45 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46-55 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| More Than High School | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18-25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26-35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36-45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 46-55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Figures tabulated from the 1980 and 2000 5 % Public Use Microdata Samples of U.S. Census of Population and Housing.

**Table 3**
**BJS Estimates of the Proportion of the Male Population Ever Having Served Time in a State or Federal Prison by Race/Ethnicity and Age and Estimates of the Proportion Serving Time in a California State Prison During the 1990s, by Race, Age and Educational Attainment**

| | BJS estimates for the nation[a] | Estimates for California from CDC Administrative Records | | | | |
|---|---|---|---|---|---|---|
| | | All[b] | High school dropouts[c] | High school graduates[c] | Some college[c] | College plus[c] |
| **Non-Hispanic White Males** | | | | | | |
| 18 to 24 | 0.01 | 0.01 | 0.03 | 0.00 | 0.00 | 0.00 |
| 25 to 34 | 0.03 | 0.03 | 0.31 | 0.03 | 0.01 | 0.00 |
| 35 to 44 | 0.04 | 0.03 | 0.30 | 0.04 | 0.02 | 0.01 |
| 45 to 54 | 0.03 | 0.02 | 0.17 | 0.02 | 0.01 | 0.01 |
| 55 to 65 | 0.03 | 0.01 | 0.04 | 0.01 | 0.00 | 0.00 |
| **Non-Hispanic Black Males** | | | | | | |
| 18 to 24 | 0.09 | 0.04 | 0.19 | 0.02 | 0.01 | 0.00 |
| 25 to 34 | 0.20 | 0.19 | 1.14 | 0.15 | 0.05 | 0.03 |
| 35 to 44 | 0.22 | 0.19 | 1.23 | 0.16 | 0.07 | 0.04 |
| 45 to 54 | 0.18 | 0.15 | 0.90 | 0.12 | 0.06 | 0.05 |
| 55 to 65 | 0.13 | 0.05 | 0.18 | 0.04 | 0.01 | 0.02 |
| **Hispanic Males** | | | | | | |
| 18 to 24 | 0.04 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 |
| 25 to 34 | 0.09 | 0.05 | 0.08 | 0.03 | 0.02 | 0.02 |
| 35 to 44 | 0.10 | 0.05 | 0.07 | 0.04 | 0.02 | 0.03 |
| 45 to 54 | 0.10 | 0.03 | 0.04 | 0.03 | 0.02 | 0.03 |
| 55 to 65 | 0.07 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 |

a. Estimates drawn from Table 7 of Bonczar (2003)

b. Estimates in this column are calculated as follows. The administrative term-records for all terms served in California were sorted by a CDC internal id number. The first term for each unique id was selected out to construct a sample of unduplicated prisoners. For each prisoner, we calculate how old the prisoner would be in the year 2000. We then calculated counts of prisoners by age and race for 2000. Using the 2000 one percent PUMS, we then estimate the California population size for each age/race cell listed in the table. The figures in the table are the ratio of the prisoner counts to the 2000 census population estimate for each cell.

c. Estimates in this column are calculated as follows. We first calculate the counts of unduplicated prisoners by age and race following the procedures in note b. We then use data from the 1997 Survey of Inmates in State and Federal Corrections Facilities to estimate the educational attainment of prison inmates in the United States by race/ethnicity and age. We use these estimates to allocate the number of unduplicated prisoners within each age-race cell across the four educational groups (the CDC administrative data does not contain information on educational attainment). We then use the 2000 one percent PUMS to estimate the California population size of each age/race/education cell in the table. The figures in the table are the ratio of the prisoner counts hypothetically allocated across education groups to the 2000 census population estimate for each cell.

**Table 4**
**Proportion of NLSY79 Respondents Who Have Ever Been Interviewed in Jail/Prison by 1996, by Gender, Race/Ethnicity, and Level of Educational Attainment in 1996**

**Panel A: Men**

| | Level of Educational Attainment in 1996 | | | |
|---|---|---|---|---|
| | Less then High School | High School Graduate | Some College | College Graduate |
| Black | 0.33 | 0.20 | 0.11 | 0.01 |
| Hispanic | 0.18 | 0.10 | 0.06 | 0.01 |
| Not black or Hispanic | 0.12 | 0.05 | 0.04 | 0.00 |

**Panel B: Women**

| | Level of Educational Attainment in 1996 | | | |
|---|---|---|---|---|
| | Less then High School | High School Graduate | Some College | College Graduate |
| Black | 0.06 | 0.01 | 0.01 | 0.00 |
| Hispanic | 0.01 | 0.03 | 0.01 | 0.00 |
| Not black or Hispanic | 0.03 | 0.00 | 0.00 | 0.00 |

Tabulated from the NLSY79 using all interview waves from 1979 to 1996. The sample excludes the military sub-samples and employs the 1996 sample weights.

**Table 5**
**Linear Probability Models of the Likelihood of Residing with One's Parents as a Function of Having Ever Been Interviewed in Jail/Prison**

| | Men | | | | Women | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Ever been to prison | 0.059 | 0.130 | 0.161 | -0.009 | 0.056 | 0.190 | 0.245 | 0.091 |
| | (0.010) | (0.015) | (0.020) | (0.019) | (0.031) | (0.045) | (0.064) | (0.067) |
| Employed | -0.010 | 0.011 | 0.027 | -0.061 | 0.049 | 0.034 | 0.034 | 0.060 |
| | (0.004) | (0.004) | (0.006) | (0.012) | (0.003) | (0.003) | (0.005) | (0.038) |
| Currently Incarcerated | -0.426 | -0.472 | -0.505 | -0.468 | -0.205 | -0.265 | -0.278 | -0.243 |
| | (0.015) | (0.014) | (0.021) | (0.016) | (0.057) | (0.054) | (0.087) | (0.065) |
| Less than high school | 0.122 | -0.088 | -0.083 | -0.149 | -0.023 | -0.015 | 0.021 | -0.126 |
| | (0.006) | (0.013) | (0.018) | (0.104) | (0.006) | (0.012) | (0.017) | (0.250) |
| High school graduate | 0.082 | -0.169 | -0.168 | -0.097 | 0.000 | -0.082 | -0.069 | -0.212 |
| | (0.005) | (0.010) | (0.013) | (0.101) | (0.005) | (0.009) | (0.013) | (0.239) |
| Some college | 0.035 | -0.134 | -0.134 | -0.067 | 0.021 | -0.077 | -0.064 | -0.311 |
| | (0.006) | (0.007) | (0.010) | (0.095) | (0.000) | (0.007) | (0.009) | (0.225) |
| Person fixed effects | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Balanced panel | No | No | Yes | No | No | No | Yes | No |
| Sample restricted to former inmates | No | No | No | Yes | No | No | No | Yes |
| N | 64,220 | 64,220 | 33,813 | 5,961 | 67,834 | 67,834 | 36,670 | 676 |

Standard errors are in parentheses. Along with the explanatory variables listed, each model includes dummy variables for black and Hispanic, a third order polynomial in age and interactions between the age variables and the race dummies, controls for region of residence in the U.S., controls for whether the person resides in a rural, urban, or suburban area, and a full set of year fixed effects.

**Table 6**
**Linear Probability Models of the Likelihood of Never Being Married as a Function of Having Ever Been Interviewed in Jail/Prison**

| | Men | | | | Women | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Ever been to prison | 0.147 | 0.138 | 0.140 | 0.062 | 0.182 | 0.119 | 0.162 | 0.135 |
| | (0.008) | (0.011) | (0.015) | (0.012) | (0.032) | (0.036) | (0.053) | (0.046) |
| Ever had children | -0.469 | -0.297 | -0.308 | -0.192 | -0.378 | -0.224 | -0.222 | -0.149 |
| | (0.003) | (0.004) | (0.005) | (0.012) | (0.004) | (0.004) | (0.006) | (0.047) |
| Employed | -0.051 | 0.000 | -0.002 | -0.024 | -0.024 | 0.024 | 0.022 | -0.003 |
| | (0.003) | (0.003) | (0.004) | (0.008) | (0.059) | (0.002) | (0.003) | (0.026) |
| Currently Incarcerated | 0.040 | 0.007 | 0.011 | 0.012 | 0.025 | 0.004 | -0.017 | -0.026 |
| | (0.013) | (0.011) | (0.015) | (0.010) | (0.059) | (0.044) | (0.070) | (0.044) |
| Less than high school | 0.001 | 0.004 | -0.029 | 0.011 | -0.035 | 0.107 | 0.124 | -0.144 |
| | (0.006) | (0.010) | (0.013) | (0.069) | (0.006) | (0.011) | (0.014) | (0.171) |
| High school graduate | -0.008 | 0.034 | 0.014 | 0.055 | -0.059 | 0.128 | 0.134 | -0.190 |
| | (0.005) | (0.008) | (0.010) | (0.067) | (0.005) | (0.008) | (0.010) | (0.163) |
| Some college | 0.014 | 0.046 | 0.023 | -0.038 | 0.010 | 0.142 | 0.152 | -0.094 |
| | (0.005) | (0.006) | (0.008) | (0.064) | (0.005) | (0.006) | (0.008) | (0.154) |
| Person fixed effects | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Balanced panel | No | No | Yes | No | No | No | Yes | No |
| Sample restricted to former inmates | No | No | No | Yes | No | No | No | Yes |
| N | 64,211 | 64,211 | 33,811 | 5,959 | 67,830 | 67,830 | 36,667 | 676 |

Standard errors are in parentheses. Along with the explanatory variables listed, each model includes dummy variables for black and Hispanic, a third order polynomial in age and interactions between the age variables and the race dummies, controls for region of residence in the U.S., controls for whether the person resides in a rural, urban, or suburban area, and a full set of year fixed effects.

**Table 7**
**Regression Models of the Annual Number of Weeks Worked as a Function of Having Ever Been Interviewed in Jail/Prison**

| | Men | | | | Women | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Ever been to prison | -13.813 | -9.470 | -10.642 | -6.265 | -8.489 | -2.444 | -0.527 | 1.407 |
| | (0.405) | (0.556) | (0.764) | (0.844) | (1.553) | (2.051) | (2.898) | (2.676) |
| Enrolled in school | -6.725 | -5.255 | -5.305 | -4.928 | -3.186 | -3.567 | -3.143 | 3.131 |
| | (0.215) | (0.215) | (0.291) | (0.988) | (0.236) | (0.226) | (0.298) | (3.090) |
| Currently Incarcerated | -9.814 | -4.559 | -3.783 | -5.536 | -8.030 | -6.128 | -12.639 | -7.168 |
| | (0.606) | (0.549) | (0.776) | (0.675) | (2.840) | (2.485) | (3.880) | (2.576) |
| Less than high school | -3.775 | -3.358 | -3.451 | -4.098 | -22.138 | -9.693 | -9.705 | -0.761 |
| | (0.259) | (0.564) | (0.736) | (4.597) | (0.291) | (0.623) | (0.795) | (10.582) |
| High school graduate | -1.115 | -3.725 | -3.524 | -3.611 | -8.873 | -7.406 | -7.392 | 8.183 |
| | (0.233) | (0.431) | (0.555) | (4.482) | (0.252) | (0.467) | (0.590) | (10.051) |
| Some college | -0.914 | -4.029 | -3.763 | -1.808 | -3.911 | -6.281 | -6.067 | -1.607 |
| | (0.253) | (0.329) | (0.440) | (4.233) | (0.269) | (0.354) | (0.461) | (9.451) |
| Person fixed effects | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Balanced panel | No | No | Yes | No | No | No | Yes | No |
| Sample restricted to former inmates | No | No | No | Yes | No | No | No | Yes |
| N | 64,221 | 64,221 | 33,814 | 5,961 | 67,834 | 67,830 | 36,670 | 676 |

Standard errors are in parentheses. Along with the explanatory variables listed, each model includes dummy variables for black and Hispanic, a third order polynomial in age and interactions between the age variables and the race dummies, controls for region of residence in the U.S., controls for whether the person resides in a rural, urban, or suburban area, and a full set of year fixed effects.

**Table 8**
**Regression Models of the Hourly Log Earnings of the Employed as a Function of Having Ever Been Interviewed in Jail/Prison**

| | Men | | | | Women | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Ever been to prison | -0.217 | -0.148 | -0.161 | -0.026 | -0.215 | -0.155 | 0.021 | -0.159 |
| | (0.012) | (0.021) | (0.028) | (0.029) | (0.048) | (0.083) | (0.125) | (0.136) |
| Less than high school | -0.373 | -0.422 | -0.419 | -0.010 | -0.562 | -0.358 | -0.385 | -0.049 |
| | (0.008) | (0.021) | (0.026) | (0.177) | (0.009) | (0.022) | (0.028) | (0.419) |
| High school graduate | -0.244 | -0.420 | -0.412 | -0.053 | -0.383 | -0.382 | -0.399 | -0.201 |
| | (0.007) | (0.016) | (0.019) | (0.172) | (0.007) | (0.016) | (0.019) | (0.375) |
| Some college | -0.223 | -0.372 | -0.356 | -0.036 | -0.271 | -0.358 | -0.375 | -0.144 |
| | (0.008) | (0.011) | (0.014) | (0.156) | (0.008) | (0.011) | (0.014) | (0.342) |
| Person fixed effects | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Balanced panel | No | No | Yes | No | No | No | Yes | No |
| Sample restricted to former inmates | No | No | No | Yes | No | No | No | Yes |
| N | 51,874 | 51,874 | 27,482 | 3,904 | 49,007 | 49,007 | 27,051 | 331 |

Standard errors are in parentheses. Along with the explanatory variables listed, each model includes dummy variables for black and Hispanic, a third order polynomial in age and interactions between the age variables and the race dummies, controls for region of residence in the U.S., controls for whether the person resides in a rural, urban, or suburban area, and a full set of year fixed effects.

**Table 9**
**Estimates of the Effects of Ever Having Served Time on the Four Markers of Transition to Adulthood by Age for Men**

| | 18 to 25 years of age | 26 to 31 years of age |
|---|---|---|
| Living with parents | | |
| Specification (1) | 0.027 (0.018) | 0.067 (0.010) |
| Specification (2) | 0.104 (0.025) | 0.076 (0.018) |
| Specification (3) | 0.075 (0.041) | 0.082 (0.038) |
| Specification (4) | 0.002 (0.030) | 0.058 (0.036) |
| Never been married | | |
| Specification (1) | 0.115 (0.013) | 0.151 (0.012) |
| Specification (2) | 0.139 (0.018) | 0.038 (0.019) |
| Specification (3) | 0.127 (0.027) | 0.037 (0.027) |
| Specification (4) | 0.072 (0.018) | 0.009 (0.019) |
| Annual Weeks Worked | | |
| Specification (1) | -13.439 (0.719) | -13.893 (0.461) |
| Specification (2) | -7.731 (0.973) | -11.382 (1.060) |
| Specification (3) | -11.388 (1.532) | -13.153 (1.453) |
| Specification (4) | -6.500 (1.219) | -8.872 (1.678) |
| Log hourly wages | | |
| Specification (1) | -0.178 (0.018) | -0.225 (0.017) |
| Specification (2) | -0.134 (0.033) | -0.114 (0.049) |
| Specification (3) | -0.050 (0.056) | -0.178 (0.066) |
| Specification (4) | -0.053 (0.043) | -0.029 (0.059) |

Standard errors are in parentheses. The model specifications for each dependent variable correspond to those used in Tables 5 through 8.

**Table 10**
**Estimates of the Effects of Ever Having Served Time on the Four Markers of Transition to Adulthood by Age for Women**

| | 18 to 25 years of age | 26 to 31 years of age |
|---|---|---|
| Living with parents | | |
| Specification (1) | 0.024 (0.054) | 0.078 (0.031) |
| Specification (2) | 0.262 (0.107) | -0.050 (0.059) |
| Specification (3) | 0.182 (0.144) | 0.021 (0.083) |
| Specification (4) | 0.142 (0.135) | -0.071 (0.106) |
| Never been married | | |
| Specification (1) | 0.161 (0.049) | 0.182 (0.041) |
| Specification (2) | 0.092 (0.078) | -0.021 (0.043) |
| Specification (3) | 0.234 (0.107) | -0.064 (0.061) |
| Specification (4) | 0.023 (0.085) | 0.049 (0.054) |
| Annual Weeks Worked | | |
| Specification (1) | -10.380 (2.352) | -7.145 (2.084) |
| Specification (2) | -4.193 (4.355) | -1.103 (3.291) |
| Specification (3) | 6.536 (5.765) | 2.903 (4.566) |
| Specification (4) | -2.473 (4.949) | -0.698 (5.186) |
| Log hourly wages | | |
| Specification (1) | -0.197 (0.068) | -0.205 (0.067) |
| Specification (2) | -0.123 (0.150) | -0.006 (0.172) |
| Specification (3) | -0.115 (0.233) | -0.007 (0.217) |
| Specification (4) | -0.142 (0.215) | 0.145 (0.264) |

Standard errors are in parentheses. The model specifications for each dependent variable correspond to those used in Tables 5 through 8.