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Chapter 11

Early Incarceration Spells and the Transition to Adulthood

Steven Raphael

Over the past three decades, the population of U.S. prisons and jails has more than quadrupled. In 1977 roughly 500,000 people were incarcerated in the nation's prisons and jails. As of 2004 this figure was more than 2.1 million, with the lion's share of these inmates incarcerated in state and federal prisons. The risk of incarceration is especially high for minority men. Between 1974 and 2001, the proportion of U.S. adults who were either currently or previously incarcerated increased from approximately 1.2 percent to 2.7 percent. For men the proportion increased from 2.3 percent to 4.9 percent, while for African American men the figure increased from 8.7 percent to 16.6 percent (Bonczar 2003). 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 adulthood. If adulthood is characterized as being law-abiding, becoming economically self-sufficient, living in a stable relationship, and perhaps having children, it is fairly easy to see how early incarceration might 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 them into the homes of their parents or other relatives. In addition, employers are often averse to hiring former inmates, especially for service jobs involving customer contact (Holzer, Offner, and Sorensen 2005). This employer reluctance is compounded in many states and localities by legal restrictions against hiring felons for certain occupations.[1] Moreover, offenders accumulate little non-institu-

tionalized work experience while incarcerated. Although young men and women who enter prison 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. Former inmates also have less to offer to potential spouses, with obvious consequences for marriage prospects.

Therefore, the rising prison and jail incarceration rates over the past three decades may be an increasingly common stumbling block along the path to adulthood, especially for minority men. As the MacArthur Foundation Network on Transitions to Adulthood has found, the path to adulthood has become more protracted and circuitous in recent years for the majority of youth (Settersten, Furstenberg, and Rumbaut 2005). Families are often called on today to support their children into their early twenties as social institutions struggle to catch up to the demographic and cultural shifts. Although many middle- and upper-class families can shoulder this added expense, both in time and money, many low-income or working-class families cannot.

In this chapter, 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 (NLSY-79) from 1979 through 1996, I test for a connection between prior jail or prison time (measured as having been interviewed for the survey while incarcerated) and four conventional markers of adulthood: living independently from parents, marriage, employment (measured as the proportion of the survey year employed), and hourly earnings. The NLSY interviews the same set of individuals each year. In the 1979 survey, the respondents were age fourteen to twenty-two, while in 1996 they were thirty to thirty-eight. Thus, the NLSY-79 provides an ideal dataset for studying the effects of prior incarceration spells during the time period when most youth transition from adolescence to adulthood.

A simple comparison of the four measures of adulthood over time reveals large differences between youth who have ever served time and those who have not, with those who have served time performing poorly on all measures. The key question in this analysis is whether prior incarceration experience causes these differences or is simply a proxy for other factors that might influence outcomes. Although it is quite difficult to establish causality, we can make use of the longitudinal nature of the NLSY to refine the empirical estimates and strengthen the case either way. The repeated annual observations permit us to assess whether serving time increases, say, the likelihood of living with one's parents relative to this likelihood before being incarcerated and to compare the individuals who have had this experience with those who have never been to prison or jail.

Bruce Western (2002) pursues an even more stringent strategy in his analysis of incarceration and wages. Specifically, he restricts his analysis

to a subsample of youth who were at very high risk of incarceration and assesses whether wages for those who were incarcerated early in their adult lives fell behind those of high-risk youths who were incarcerated later or who were never incarcerated. By limiting the study to high-risk youth, Western is able to show that it was not other factors, such as education or income, that made the difference, because all the youth, by virtue of being high-risk, shared these attributes to a certain degree. Western finds a sizable relative decline in the hourly wages of formerly incarcerated high-risk youth relative to those of youth who did not serve time.
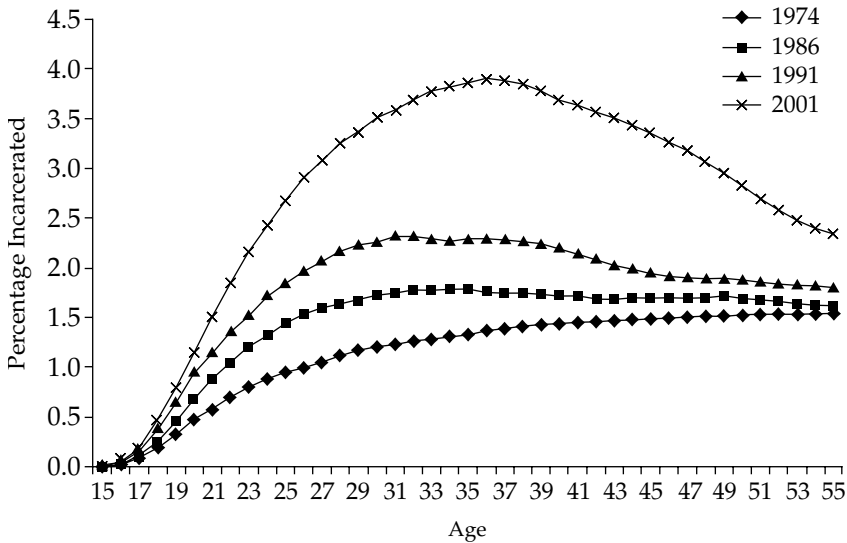
Here I pursue both empirical strategies to assess the effects of prior incarceration spells on key transitions to adulthood. Given that nearly 90 percent of state and federal prison inmates are male, incarceration will present more of a problem with the transition to adulthood for males than females. For this reason, I focus on the effect of incarceration for men only.

To summarize the results, I find large differences between young men with and without a prison record, and those differences widen with time for all four markers of adulthood. Moreover, I find a relative erosion of outcomes that correlates with the timing of the first incarceration spell. In other words, a first-time incarceration corresponds with a worsening of the performance on the outcome analyzed relative to the performance of those who did not experience an incarceration spell. In the more stringent empirical tests that restrict the analysis sample to youth who eventually serve time (à la Western), some of the effects fade. In particular, there is no evidence of an incarceration effect on wages or the likelihood of residing with one's parents. Nonetheless, there are sizable effects of prior incarceration on marriage and annual weeks worked.

Although the impact of incarceration does not survive the most stringent empirical tests on two of the transitions analyzed, the analysis does reveal the relatively poor performance of those who serve time. Those youth involved with the criminal justice system during adolescence and early adulthood are clearly a vulnerable population.

Documenting Recent Incarceration Trends

The rising risk of incarceration since the early 1970s has hardly been evenly distributed. As noted in the introduction, young African American men are particularly susceptible. Figure 11.1 presents estimates from the U.S. Bureau of Justice Statistics (BJS), reported in Bonczar (2003), of the percentage of adults incarcerated by age between 1974 and 2001. In 1974 the percentage incarcerated was 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 subsequent twenty-seven years, incarceration rates
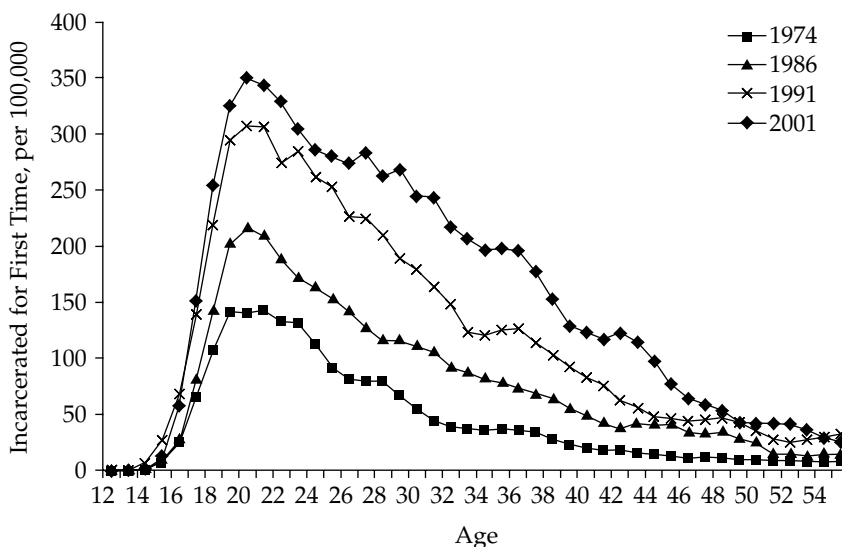
Figure 11.1   Percentage Incarcerated, by Age, 1974 to 2001

Source: Bonczar (2003).

rose disproportionately for young adults in their twenties and thirties. By 2001 the peak of the incarceration age profile occurred at age thirty-five (3.9 percent), while in previous years incarceration increased uniformly with age. There is also a large proportional difference between the incarceration rate at the peak and the rates for younger and older adults between 2001 and 1974.

Figure 11.2 presents first-time incarceration rates by age calculated by the BJS. The first-time incarceration rate nearly tripled between 1974 and 2001 for adults in their early twenties. This pattern is consistent with both a greater proportion of young adults serving time and earlier incarceration spells for those who eventually serve time.

Table 11.1 presents estimates of the proportion incarcerated by race, age, and educational attainment between 1980 and 2000.[2] The table shows that, first, although incarceration rates have increased for all groups, African American men experienced the largest absolute increase, while Hispanic men experienced the largest increase as a percentage of the 1980 level. The overall proportion incarcerated remained constant for white men between 1980 and 2000, while black men experienced a five-percentage-point increase (from 4 to 9 percent), Asian men experienced a one-percentage-point increase (from 0 to 1 percent), and Hispanic men saw a two-percentage-point increase (from 1 to 3 percent).

Figure 11.2   First-Time Incarceration Rates, by Age, 1974 to 2001

Second, table 11.1 shows a strong relationship between education 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, but less-educated black men have the highest incarceration rates. Between 1980 and 2000, the proportion incarcerated among black high school dropouts more than tripled, from 6 to 21 percent. In addition, within education groups, incarceration rates peak for adults in their late twenties and early thirties (comparable to the patterns presented in figure 11.1).

Gauging the population of former prison inmates is more difficult than measuring current incarceration rates owing to the fact that none of the major household surveys in the United States asks 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), the BJS estimates that in addition to the 1.3 million current inmates in 2001, 4.3 million non-institutionalized persons had served a prison term in the past.[3] Combined, current and former prison inmates accounted for 4.9 percent of the adult male population in 2001.

Table 11.1 Proportion of Men Age Eighteen to Fifty-five Incarcerated, by Race-Ethnicity, Age, and 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
Eighteen to twenty-five	0.03	0.04	0.08	0.22	0.02	0.04	0.03	0.04
Twenty-six to thirty-five	0.03	0.07	0.08	0.33	0.01	0.03	0.02	0.04
Thirty-six to forty-five	0.02	0.05	0.03	0.19	0.00	0.01	0.01	0.04
Forty-six to fifty-five	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
Eighteen to twenty-five	0.01	0.02	0.03	0.09	0.01	0.01	0.01	0.03
Twenty-six to thirty-five	0.01	0.02	0.04	0.12	0.01	0.02	0.01	0.04
Thirty-six to forty-five	0.00	0.02	0.02	0.09	0.00	0.01	0.01	0.03
Forty-six to fifty-five	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
Eighteen to twenty-five	0.00	0.01	0.02	0.03	0.00	0.00	0.01	0.01
Twenty-six to thirty-five	0.00	0.01	0.03	0.05	0.00	0.00	0.01	0.02
Thirty-six to forty-five	0.00	0.01	0.01	0.05	0.00	0.00	0.01	0.02
Forty-six to fifty-five	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.01

Note: Figures tabulated from the 1980 and 2000 5 percent PUMS of the decennial Census of Population and Housing.

Of course, there are again 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 11.1). 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 method 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 2.2 percent lifetime likelihood of going to prison. For those born in 2001, the risk had increased to 5.9 percent. For black males, this likelihood had increased from 13.2 percent to 32.2 percent, while for Hispanics the likelihood had increased from 4 percent to 17.2 percent.

There are also large differences within racial groups between less-educated and more-educated men and between groups of men stratified by age, which supports the recent work of Lance Lochner and Enrico Moretti (2004), who find a causal effect of education on the likelihood of going to prison. Although the BJS provides race-specific estimates of the proportion that have ever served time by age, there are no estimates of how this group varies by level of education. Moreover, the results presented earlier indicate that education is a stronger predictor of current incarceration than age; education is therefore 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 2000.[5] I then use the 1997 Survey of Inmates in State and Federal Correction Facilities to estimate the distribution of inmates by age-education within racial and ethnic groups. I use these distribution estimates to allocate the number of unduplicated prisoners within each age-race group across education groups.[6] Dividing these counts by the estimated 2000 California population (institutional plus non-institutional) within each age-race-education group yields estimates of the proportion of males in each group serving a prison term during the 1990s.

Table 11.2 presents these results. The first column presents national estimates of the proportion who ever served 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 columns present

Table 11.2 **Bureau of Justice Statistics Estimates of the Proportion of the Male Population Who Ever Served Time in a State or Federal Prison, by Race-Ethnicity and Age, and California Department of Corrections Estimates of the Proportion Who Ever Served Time in a California State Prison During the 1990s, by Race, Age, and Educational Attainment**

		Estimates for California from CDC Administrative Records				
	Estimates for the Nation[a]	All[b]	High School Dropouts[c]	High School Graduates[c]	College[c]	College or More[c]
Non-Hispanic white males						
Eighteen to twenty-four	0.01	0.01	0.03	0.00	0.00	0.00
Twenty-five to thirty-four	0.03	0.03	0.31	0.03	0.01	0.00
Thirty-five to forty-four	0.04	0.03	0.30	0.04	0.02	0.01
Forty-five to fifty-four	0.03	0.02	0.17	0.02	0.01	0.01
Fifty-five to sixty-five	0.03	0.01	0.04	0.01	0.00	0.00
Non-Hispanic black males						
Eighteen to twenty-four	0.09	0.04	0.19	0.02	0.01	0.00
Twenty-five to thirty-four	0.20	0.19	1.14	0.15	0.05	0.03
Thirty-five to forty-four	0.22	0.19	1.23	0.16	0.07	0.04
Forty-five to fifty-four	0.18	0.15	0.90	0.12	0.06	0.05
Fifty-five to sixty-five	0.13	0.05	0.18	0.04	0.01	0.02
Hispanic males						
Eighteen to twenty-four	0.04	0.01	0.02	0.00	0.00	0.00
Twenty-five to thirty-four	0.09	0.05	0.08	0.03	0.02	0.02
Thirty-five to forty-four	0.10	0.05	0.07	0.04	0.02	0.03
Forty-five to fifty-four	0.10	0.03	0.04	0.03	0.02	0.03
Fifty-five to sixty-five	0.07	0.01	0.02	0.02	0.01	0.01

a. Estimates drawn from Bonczar (2003, table 7).
b. Estimates 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, I calculate how old the prisoner would be in the year 2000. I then calculate counts of prisoners by age and race for 2000. Using the 2000 1 percent PUMS, I 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 calculated as follows: I first calculate the counts of unduplicated prisoners by age and race following the procedures outlined in note b. I 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. I use these estimates to allocate the number of unduplicated prisoners within each age-race cell across the four educational groups. (The CDC administrative data do not contain information on educational attainment.) I then use the 2000 1 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.

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

The tabulations by age indicate that the California and BJS estimates are fairly similar for males between age eighteen and fifty-four. For older males, the California estimates indicate that a smaller proportion had ever served time. This is sensible considering that the California administrative records cover only the 1990s, and that former prisoners over age fifty-four in 2000 were likely to have served time prior to the 1990s. Both sets of estimates indicate that the proportion who ever served time increases with age through the late thirties and early forties and then declines. Black men between age twenty-five and forty-four 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 twenty-five and forty-four, the number of prisoners serving time during the previous decade exceeds census population counts (that is, the ratio is greater than one).[7] Ninety percent of black high school dropouts between ages forty-five and fifty-four are estimated to have served a prison term during the past decade. These figures suggest that for black California high school dropouts, serving time in prison is practically a certainty.

Although ratios in excess of one are clearly too large, Becky Pettit and Bruce Western (2004) estimate that for all African American men born between 1965 and 1969, the portion who had been to prison by 1999 was 20.5 percent overall, 30.2 percent for black men without a college degree, and 58.9 percent for black men without a high school degree. Although their estimates are lower than mine, Petit and Western still find that, by their thirties, black high school dropouts are more likely than not to have served time.

The proportion of blacks who have served prison time in the past decade is considerably lower for those with more education, although the figures for black high school graduates are still quite high (between 12 and 16 percent). By contrast, the comparable fractions of whites and Latinos are smaller for all comparisons.

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 in long-term relationships, that they are likely to be married, and, if they become parents, that they provide economically and emotionally for their chil-

dren. That ex-inmates are delayed in adult transitions (as defined here) is not surprising. The extent to which having served time per se contributes to such arrested development, however, is an open question.

Perhaps the most direct avenue by which prior incarceration may affect the transition to adulthood is via employment prospects. Time in prison may impede an ex-offender's 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 jobs under federal and state law and sometimes under local ordinances (Holzer, Raphael, and Stoll 2004). Examples are private unarmed security guards in many states (Emsellem 2005), jobs involving children and other vulnerable populations (Holzer, Raphael, and Stoll 2004), and trucking jobs involving hazardous materials (Kurlychek, Brame, and Bushway 2006). Although the fraction of jobs that explicitly bar convicted felons is small, such restrictions clearly limit the opportunity set faced by former inmates.

Moreover, many inmates fail to accumulate non-institutionalized work experience while incarcerated. Although the typical inmate in the United States serves 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] Harry Holzer, Steven Raphael, and Michael Stoll (2004, 2006) show that employers of low- and semiskilled workers are quite reluctant to hire ex-offenders, and they are increasingly using formal screening mechanisms (checking criminal history records) and informal mechanisms (discriminating against suspected ex-offenders) in their hiring decisions. Devah Pager (2003) and Pager and Bruce Western (2005) show that job applicants with prior prison time, especially black males, are considerably less likely to receive callbacks from a first interview. As a result, both employment and wages are strongly affected by incarceration (Holzer, Offner, and Sorensen 2005; Western 2002).
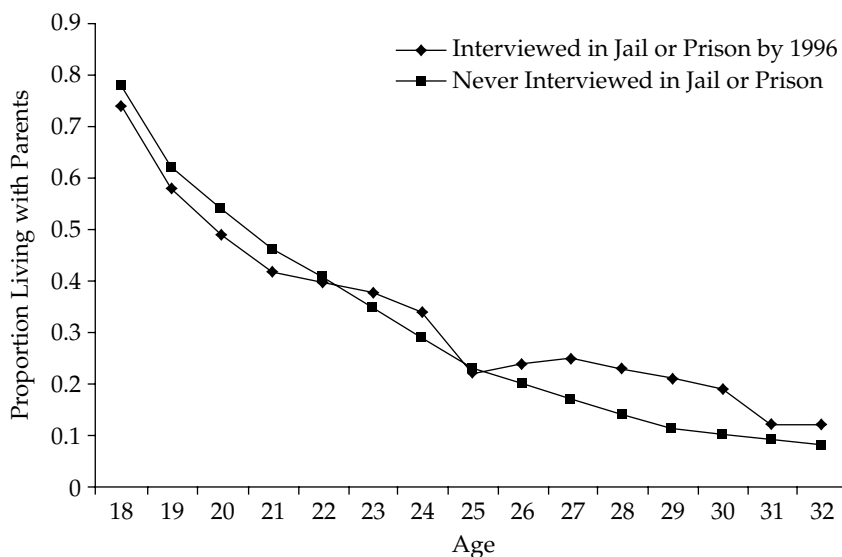
The connections between incarceration and other markers of the transition to adulthood are likely to be mediated in part by these economic prospects. Being unable to procure steady and well-paying employment certainly inhibits economic independence and may lead former inmates to rely more heavily on family and friends. Moreover, having diminished employment prospects is likely to diminish the marriage prospects of former inmates. To be sure, incarceration may influence these transitions through other avenues. To the extent that serving time engenders antisocial attitudes, inhibits emotional development, and fosters violent tendencies, former inmates are likely to have difficulty negotiating non-institutionalized society (above and beyond the difficulty they may have experienced prior to becoming an ex-felon). Such traits may not only

estrange former inmates from their families but also diminish their ability to function independently. In addition, these emotional traits clearly do not enhance the attractiveness of ex-offenders as potential mates.

There is ample evidence in the NLSY-79 that young men who eventually serve time perform poorly on several conventional measures of adulthood. These basic differences are displayed in figures 11.3 to 11.6. The figures compare average outcomes for young men from the NLSY as they age from eighteen to thirty-two. One group was never interviewed in prison or jail, and the other was. I looked at four outcomes: whether the young man still resides with his parents, whether he has ever been married, average annual weeks worked, and the average log hourly wage.[9]
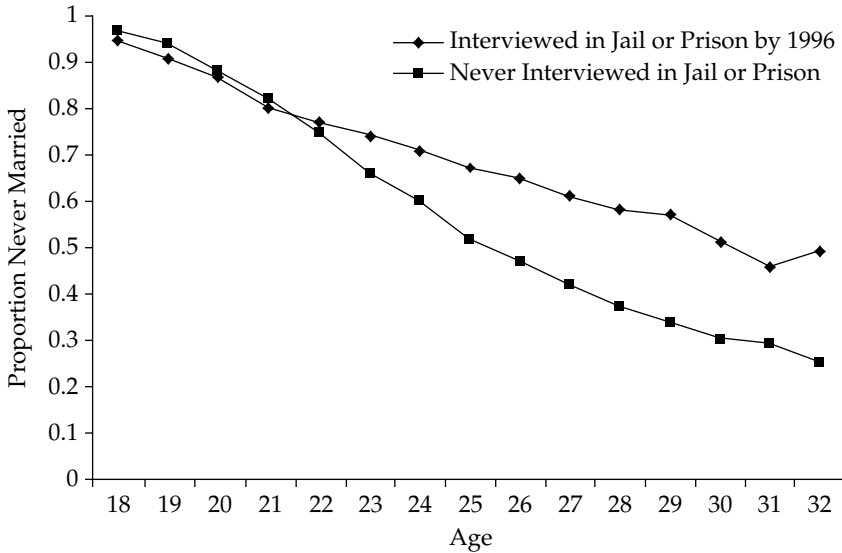
Figure 11.3 shows that although the fraction of young men residing with their parents is initially lower for those who eventually serve time, this proportion increases during their early and late twenties relative to the fraction of youth who have not served time and live with their parents. This disparity rises to a high of ten percentage points by age twenty-nine and then declines.

Figure 11.3   Proportion of NLSY-79 Men Age Eighteen to Thirty-two Living with Their Parents, by Whether They Have Ever Been Interviewed in Jail or Prison

Figure 11.4   Proportion of NLSY-79 Men Age Eighteen to Thirty-two Who Have Never Been Married, by Whether They Have Ever Been Interviewed in Jail or Prison

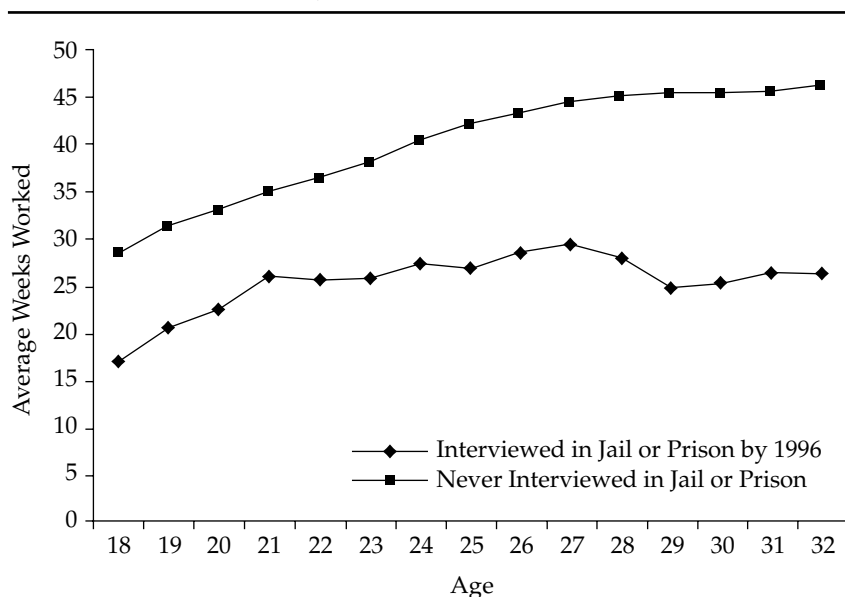*Source:* Author's tabulations of data from the National Longitudinal Survey of Youth 1979.

Figure 11.4 shows trends in marriage. Again, men who serve time and those who do not have similar histories early on, yet large differences emerge and widen quickly. By age thirty-two, men who have served time are twenty-four percentage points more likely to have never married than men who have not served time.

For the two measures of labor market performance, those who eventually serve time perform poorly throughout the time span, with notable disparities from the very beginning. Figure 11.5 shows that the disparity in average weeks worked widens from eleven weeks at age eighteen to nearly twenty weeks by age thirty-two. The initial disparity in hourly wages is considerably smaller yet widens considerably with time: from 0.05 at age eighteen to 0.51 by age thirty-two. Whether these relatively inferior outcomes are a direct function of having served time is an open question to which I now turn.

The Direct Role of Prison in the Transition to Adulthood

The figures above clearly document that ex-inmates perform poorly on each of the displayed outcomes. However, the differences may be driven

Figure 11.5   Average Annual Weeks Worked Among NLSY-79 Men Age Eighteen to Thirty-two, by Whether They Have Ever Been Interviewed in Jail or Prison

Interviewed in Jail or Prison by 1996
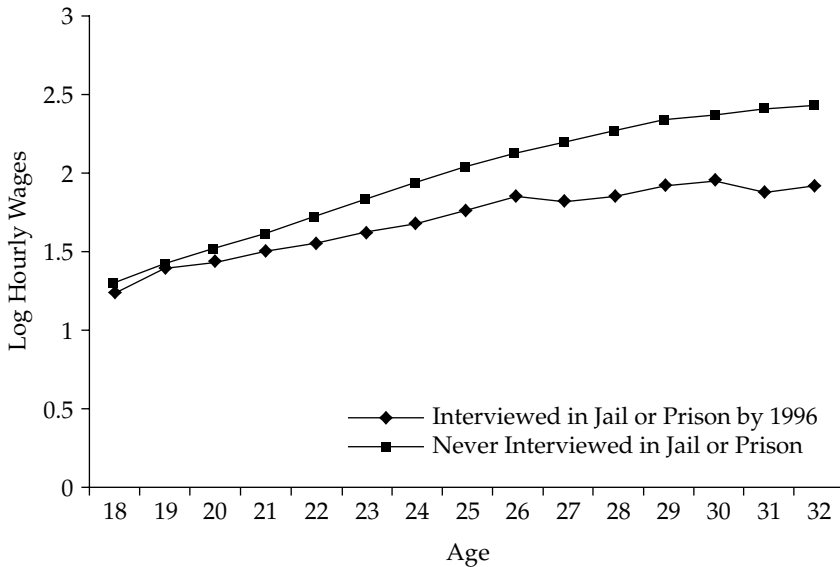Never Interviewed in Jail or Prison

Source: Author's tabulations of data from the National Longitudinal Survey of Youth 1979.

by factors other than incarceration. For example, prolonged involvement in criminal activity will increase both the likelihood of going to prison as well as the likelihood of failing to meet these conventional markers of adulthood. Moreover, the widening of these differences 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 differences that has nothing to do with going to prison.[10]

I therefore created a strategy for obtaining more precise estimates of the effect of a prison record on the four markers of adulthood. Following closely the strategy employed by Western (2002), I exploit the panel aspects of the NLSY-79 to assess whether the timing of the incarceration spells corresponds with a departure in the men's average outcomes compared with those who do not serve time. In particular, I assess whether going to prison corresponds in time with a worsening in the average performance on each of these outcomes relative to those men who have not been to prison. See the appendix for method and details.

Figure 11.6   **Average Log Hourly Wages Among NLSY-79 Men Age Eighteen to Thirty-two, by Whether They Have Ever Been Interviewed in Jail or Prison**

Source: Author's tabulations of data from the National Longitudinal Survey of Youth 1979.

With this method, I am able to capture the person's "fixed effects," adjusting for all personal characteristics that are immutable. I also am able to adjust any common year-to-year changes in conditions that affect the outcomes of interest. In other words, the results show the relative pre-post incarceration change in the outcomes after netting out the effect of being currently incarcerated, the common year effects, and observable time-varying personal characteristics. Thus, the results show whether any relative erosion of the transition markers of living with parents, marriage, wages, and earnings is directly related to the first incarceration of ex-offenders.

I estimate the effects for two groups. The first identifies the effect of having ever been to prison by comparing the pre-post incarceration change in outcomes for those who have and have not been to prison. The second, and more stringent, test restricts the sample, following Western (2002), to youth who are at a high risk of offending. In this case, the high-risk group is the group of those youth who eventually serve time. With this restricted sample, I compare the outcomes for those who served time earlier with those who serve time later in life.

Since many survey respondents in the NLSY have missing observations for specific individual years, I present parallel results throughout that restrict the sample to youth for whom there are complete observations for each year between ages eighteen and thirty-one; I also present results using an unrestricted, yet unbalanced panel. A detailed discussion of the data source and the sample restrictions imposed is presented in the appendix.

Effects of Incarceration on Living Independently

Table 11.3 presents the effects of incarceration on the probability of living with parents. The first specification includes an indicator for ever having been to prison, being employed, being currently incarcerated, dummy variables for educational attainment and for race-ethnicity (black or Hispanic), a third-order age polynomial fully interacted with the race-ethnicity indicators, controls for region of residence and residence 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 male observations in the NLSY with complete data, necessarily resulting in an unbalanced panel. Model 3 reestimates the fixed-effect specification, restricting the sample to men with complete information in each sample year. Finally, the fourth model restricts the sample to all male youth who eventually served prison time by 1996. Given the small sample used to estimate this final model, I do not present estimates for the eventually incarcerated sample restricted to a balanced panel.

The first three models suggest that having served time—but not currently serving time—increases the probability of residing with one's parents. Model 1, which omits individual fixed effects, shows that men who have served time are roughly six percentage points more likely to reside with their parents compared to men who have not, after controlling for the other covariates in the model. Interestingly, adding person fixed effects more than doubles the size of this estimate to thirteen percentage points. The sensitivity of this estimate to the inclusion of person fixed effects suggests that there are unobserved personal traits that are more prevalent among male youth who serve time and that these traits lower the likelihood of living with parents. For example, such youth may be more likely to come from disharmonious families (driven by either parental or youth behavior) or from families with limited resources. Restricting the sample to a balanced panel, the fixed-effects model yields a comparable estimate of sixteen percentage points.

Among the restricted sample of those who eventually serve time, there is little evidence that having ever served time has any impact on living with parents. Although this result may be driven in part by measurement error in the incarceration variable,[11] this more restrictive sam-

Table 11.3   Linear Probability Models of the Likelihood of Residing with One's Parents as a Function of Having Ever Been Interviewed in Jail or Prison

	(1)	(2)	(3)	(4)
Ever been to prison	0.059	0.130	0.161	–0.009
	(0.010)	(0.015)	(0.020)	(0.019)
Employed	–0.010	0.011	0.027	–0.061
	(0.004)	(0.004)	(0.006)	(0.012)
Currently incarcerated	–0.426	–0.472	–0.505	–0.468
	(0.015)	(0.014)	(0.021)	(0.016)
Less than high school	0.122	–0.088	–0.083	–0.149
	(0.006)	(0.013)	(0.018)	(0.104)
High school graduate	0.082	–0.169	–0.168	–0.097
	(0.005)	(0.010)	(0.013)	(0.101)
Some college	0.035	–0.134	–0.134	–0.067
	(0.006)	(0.007)	(0.010)	(0.095)
Person fixed effects	No	Yes	Yes	Yes
Balanced panel	No	No	Yes	No
Sample restricted to former inmates	No	No	No	Yes
Number of observations	64,220	64,220	33,813	5,961

Source: Models estimated using data samples drawn from the National Longitudinal Survey of Youth 1979.
Notes: 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 United States, controls for whether the person resides in a rural, urban, or suburban area, and a full set of year fixed effects.

ple estimates the incarceration trends by comparing the paths of those incarcerated early with the paths of the youth who are perhaps most like themselves (in that they eventually serve time as well). For this reason, I view the results from this final specification as the most rigorous, and thus preferred, test for an incarceration effect.

Effects on Marriage

Table 11.4 presents a set of comparable linear probability models assessing the effects of having served time on marriage. The model specifications are identical to those in table 11.3 with one exception. Here I add an explanatory variable indicating whether the person has ever had a child, on the presumption that having a child with someone may have an independent effect on the likelihood of being currently or previously married.[12]

The results indicate that a prison record increases the likelihood of never having been married. For the first three specifications, those young men who have been incarcerated are roughly fourteen percentage points

Table 11.4   Linear Probability Models of the Likelihood of Having Never Been Married as a Function of Having Ever Been Interviewed in Jail or Prison

	(1)	(2)	(3)	(4)
Ever been to prison	0.147	0.138	0.140	0.062
	(0.008)	(0.011)	(0.015)	(0.012)
Ever had children	–0.469	–0.297	–0.308	–0.192
	(0.003)	(0.004)	(0.005)	(0.012)
Employed	–0.051	0.000	–0.002	–0.024
	(0.003)	(0.003)	(0.004)	(0.008)
Currently incarcerated	0.040	0.007	0.011	0.012
	(0.013)	(0.011)	(0.015)	(0.010)
Less than high school	0.001	0.004	–0.029	0.011
	(0.006)	(0.010)	(0.013)	(0.069)
High school graduate	–0.008	0.034	0.014	0.055
	(0.005)	(0.008)	(0.010)	(0.067)
Some college	0.014	0.046	0.023	–0.038
	(0.005)	(0.006)	(0.008)	(0.064)
Person fixed effects	No	Yes	Yes	Yes
Balanced panel	No	No	Yes	No
Sample restricted to former inmates	No	No	No	Yes
Number of observations	64,211	64,211	33,811	5,959

Source: Models estimated using data samples from the National Longitudinal Survey of Youth 1979.
Notes: 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 United States, controls for whether the person resides in a rural, urban, or suburban area, and a full set of year fixed effects.

more likely to have never been married relative to those with no prison history. This result is not affected by including individual fixed effects or by restricting the sample (to the balanced panel). Restricting the sample to those who have served time lessens the effect, from fourteen percentage points to six percentage points. Here, however, this effect is statistically significant at the 1 percent level of confidence—meaning that there is only a 1 percent chance that the effect was caused by chance.

Effects on Employment and Wages

Tables 11.5 and 11.6 present results for two labor markets outcomes: annual weeks worked and hourly wages. Regarding the weeks worked models in table 11.5, the specifications are comparable to those in tables 11.3 and 11.4, although the dummy variables indicating being employed or ever having had children are dropped. I find a consistent negative effect of having served time on annual weeks worked. The simple ordinary

Table 11.5   Regression Models of the Annual Number of Weeks Worked as a Function of Having Ever Been Interviewed in Jail or Prison

	(1)	(2)	(3)	(4)
Ever been to prison	–13.813	–9.470	–10.642	–6.265
	(0.405)	(0.556)	(0.764)	(0.844)
Enrolled in school	–6.725	–5.255	–5.305	–4.928
	(0.215)	(0.215)	(0.291)	(0.988)
Currently incarcerated	–9.814	–4.559	–3.783	–5.536
	(0.606)	(0.549)	(0.776)	(0.675)
Less than high school	–3.775	–3.358	–3.451	–4.098
	(0.259)	(0.564)	(0.736)	(4.597)
High school graduate	–1.115	–3.725	–3.524	–3.611
	(0.233)	(0.431)	(0.555)	(4.482)
Some college	–0.914	–4.029	–3.763	–1.808
	(0.253)	(0.329)	(0.440)	(4.233)
Person fixed effects	No	Yes	Yes	Yes
Balanced panel	No	No	Yes	No
Sample restricted to former inmates	No	No	No	Yes
Number of observations	64,221	64,221	33,814	5,961

Source: Models estimated using data samples drawn from the National Longitudinal Survey of Youth 1979.
Notes: 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 United States, controls for whether the person resides in a rural, urban, or suburban area, and a full set of year fixed effects.

least squares (OLS) specification in model 1 indicates that those who have been to prison work fourteen fewer weeks per year than those who have not. Adding individual fixed effects to this model reduces this estimate to between 9.4 and 10.6 weeks, indicating that personal characteristics account for some of the effect. For the fixed-effects model using the sample of men who eventually go to prison, a prior incarceration spell reduces annual weeks worked by roughly six weeks per year. All of these point estimates are statistically significant at the 1 percent level. Note further that these effects are net of any effect of being in prison when interviewed on the previous year's weeks worked.

Finally, table 11.6 presents results on wages. By construction, table 11.6 is estimated using only those observations where the individual is employed at some point during the year and where an hourly wage is reported. The results for males indicate large negative 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 specifications differ somewhat. There is no measurable effect in the final specification, in which the

Table 11.6   Regression Models of the Hourly Log Earnings of the Employed as a Function of Having Ever Been Interviewed in Jail or Prison

	(1)	(2)	(3)	(4)
Ever been to prison	−0.217	−0.148	−0.161	−0.026
	(0.012)	(0.021)	(0.028)	(0.029)
Less than high school	−0.373	−0.422	−0.419	−0.010
	(0.008)	(0.021)	(0.026)	(0.177)
High school graduate	−0.244	−0.420	−0.412	−0.053
	(0.007)	(0.016)	(0.019)	(0.172)
Some college	−0.223	−0.372	−0.356	−0.036
	(0.008)	(0.011)	(0.014)	(0.156)
Person fixed effects	No	Yes	Yes	Yes
Balanced panel	No	No	Yes	No
Sample restricted to former inmates	No	No	No	Yes
Number of observations	51,874	51,874	27,482	3,904

Source: Models estimated using data samples drawn from the National Longitudinal Survey of Youth 1979.
Notes: 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 United States, controls for whether the person resides in a rural, urban, or suburban area, and a full set of year fixed effects.

sample is restricted to those who have served time. This contrasts with Western's findings, although his restricted sample is somewhat more inclusive than the one that I employ here.[13]

Does Timing of First Incarceration Matter?

The results thus far suggest that those who serve time perform poorly on the four transition markers, and that the timing of initial incarceration often corresponds to a permanent deterioration in this relative performance. Going beyond these pooled results, we might surmise that the impact of becoming an ex-offender varies by when one first goes to prison. For example, the period of early adulthood (say, between ages eighteen and twenty-five) may be a particularly crucial time period when ties to the labor market and a credit history are established, emotional relationships mature, and independence from parents and other relatives is established. Given the amount of development occurring at this time, we might suspect that a prison spell during this crucial time has particularly severe consequences.

Alternatively, potential employers or spouses may interpret an early prison spell as a youthful indiscretion unlikely to be repeated. In contrast, a first prison spell served after the age of twenty-five, when many

of one's contemporaries have successfully negotiated many traditional markers of adulthood, may be interpreted as signaling some permanent personal deficiencies.

I have explored whether the model results differ when separate models are estimated for older and younger adults. In particular, I have estimated separate models for males between ages eighteen and twenty-five and for those between ages twenty-six and thirty-two. Although there is some evidence of a larger and more robust effect of becoming an ex-offender early in life on the likelihood of living with one's parents and on marriage prospects, these results are generally not statistically distinguishable across subsamples.[14]

Conclusion: Arrested Development

The findings clearly demonstrate that male youth who serve time in prison perform poorly on most conventional markers of the transition to adulthood. They are less likely to be married and 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 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 toward mature and productive adult roles. Moreover, given that current lifetime incarceration probabilities are at historic highs, the size of the vulnerable population is much larger today than in the past and comprises sizable proportions of certain subgroups of U.S. males.

Beyond these descriptive patterns, which basically demonstrate associations, I also find evidence that the effects of serving time on several of the outcomes are likely to be causal. The positive estimated effects of prior prison time on the likelihood of never being married and employment stability survive quite stringent empirical tests. There is also some mixed evidence that serving time increases the likelihood that young adults will continue to reside with their parents and that serving time also diminishes hourly earnings, though these results are not as robust. To be sure, the fixed-effects models estimated here can never establish with certainty the presence of a causal effect of prior prison spells on these outcomes. Nonetheless, the strong partial correlation between serving time and the transition outcomes using the thin, within-person slices of variation in the data suggest strong empirical relationships that merit further research attention and perhaps attention from policymakers interested in the costs (both explicit and collateral) and benefits of incarceration.

Although one potential implication of this research is that reducing incarceration rates would alleviate some of the disparities documented

here, such arguments have historically had little influence on sentencing and parole policies. 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-be-released inmates is far from universal, despite nearly universal need within the prison population (Petersilia 2003). Barring drastic changes in sentencing and parole policies, the reentry efforts of state corrections departments will be increasingly important in facilitating the transition of former offenders into society and into more productive adult lives. More solid evaluation research on which efforts work and which do not is clearly needed.

Appendix: Identifying the Effect of Having Served Time on Adulthood Transitions

Empirical Strategy and Description of the Data

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 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

$$Outcome_{it} = \alpha_i + \beta_t + \delta Ever_{it} + \lambda Prison_{it} + \Gamma' X_{it} + \varepsilon_{it}, \qquad (11A.1)$$

where $Outcome_{it}$ stands for one of the four transition outcomes (living with parents, never married, annual weeks worked, or the log of hourly wages), α_i captures person-specific fixed effects that adjust for all personal characteristics that are immutable with an impact on the outcome that is constant through time, β_t indicates a complete set of year fixed effects that adjust for any common year-to-year changes in conditions that affect the outcome of interest, X_{it} is a column vector of observable time-varying determinants of the outcome, Γ' is a conforming row vector of coefficient parameters to be estimated, δ and λ are additional parameters, and ε_{it} is a mean-zero error term.

The estimates of the effect of having ever been to prison on outcomes as estimated in equation 11A.1 should be interpreted conceptually in the following manner. The parameter δ represents the relative pre-post incarceration change in the outcome of interest 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 ef-

fects of observable time-varying covariates. Thus, the fixed-effects speci-
fication 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 11A.1 for each of the transition outcomes using al-
ternative sample specifications. I first estimate the equation using all ob-
servations in the panel dataset. This inclusive sample identifies the effect
of ever having been to prison by comparing the pre-post incarceration
change in outcomes for those who have been to prison to the time path
of the outcome in question for all youth who have not been to prison.

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. Following West-
ern (2002), I pursue a similar strategy and restrict the sample to those
youth who eventually serve time. Using this restricted sample, the effect
δ is identified by comparing the outcome paths for those who serve time
earlier to those who serve time later.

Table 11A.1 presents tabulations of the proportion of NLSY-79 male
respondents who had been interviewed in prison or jail by the 1996 in-
terview. The table shows the proportion who had ever been incarcerated
by race-ethnicity and by level of education by the end of the panel. Not
surprisingly, the table shows the highest prevalence of a past incarcera-
tion among the least educated and among minorities.

Data and Restrictions

The data for this project come from the NLSY-79, a panel dataset com-
mencing in 1979, with annual follow-ups through 1994 and biannual fol-
low-ups thereafter. Youth in the NLSY-79 were age fourteen to twenty-
two at the start of the panel. The initial sampling frame involved three
sampling strata: a main, nationally representative sample of youth
within the starting age range (age fourteen to twenty-two), a subsample
of youth from low-socioeconomic-status and minority households, and a

**Table 11A.1   Proportion of NLSY-79 Male Respondents Who Have Ever Been
Interviewed in Jail or Prison by 1996, by Race-Ethnicity and
Educational Attainment in 1996**

	Less Than 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

Source: Tabulated from the NLSY-79 using all interview waves from 1979 to 1996.
Notes: The sample excludes the military subsamples and employs the 1996 sample weights.

military subsample that 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 eighteen and thirty-one years of age. Given the initial age range of the panel, this age restriction necessarily creates an unbalanced panel, since youth who were over eighteen in 1979 will have missing observations by design. Moreover, there are many individuals who were not interviewed in all years. To assess whether the estimation results are sensitive to this aspect of the analysis, I present parallel results throughout that restrict the sample to youth for whom there are complete observations for each year between ages eighteen and thirty-one, as well as results using an unrestricted, yet unbalanced panel.

At each interview, the NLSY-79 interviewer asks about the respondent's current residence. Among the possible answers to this question are residence in prison or 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 upward by the inclusion of jail in the definition. Regarding the first source of bias, an individual is sentenced to state or federal prison having been convicted of a felony that carries 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 NLSY-79 youth.

On the other hand, the possibility of being interviewed in jail will overstate prior prison 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 NLSY-79 is interviewing respondents in jail who are being temporarily held for minor infractions, my measure of prior incarceration will be biased upward.

The proportion of youth incarcerated by 1996 in the NLSY-79 is somewhat higher than what we would expect from the lifetime risk of

incarceration figures tabulated by the BJS for this particular age cohort. For example, by 1996, when respondents were between thirty and thirty-eight years of age, roughly 6 percent of males and 1 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 United States 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 11A.1 presents more detailed tabulations of the proportion of NLSY-79 male respondents who were interviewed in prison or jail by the 1996 interview. The table shows the proportion ever incarcerated by race-ethnicity and by level of educational attainment by the end of the panel. Not surprisingly, the table shows the highest prevalence of a past incarceration among the least educated and among minorities. While these figures are, again, slightly higher than what we might expect for this particular age cohort, the figures are clearly in the ballpark of the estimates presented by the BJS.

Notes

1. For example, Megan Kurlychek, Robert Brame, and Shawn Bushway (2006) note that felons are disqualified from unarmed private security jobs in twenty-four states.
2. I calculate these figures with data from the 5 percent public use microdata samples (PUMS) from the decennial Census of Population and Housing, which enumerates both the institutionalized and non-institutionalized population. The PUMS for each census includes a flag for the institutionalized as well as microlevel information on age, education, race, and all other information available for non-institutionalized long-form respondents. Within the institutionalized population, we can separately identify individuals residing in nonmilitary 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 nonmilitary institution as the principal indicator of incarceration. In prior research (Raphael 2005), I show that incarceration population estimates from the PUMS are comparable to those by the Bureau of Justice Statistics. See Kristin Butcher and Anne Morrison Piehl (1998) and Rucker Johnson

and Steven Raphael (2005) for other research using the PUMS to identify the incarcerated.

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 because earlier cohorts faced lower risks of incarceration during the high-criminal-activity portion of their life.

5. Each record contains information on an internal California Department of Corrections (CDC) ID number that can be used to uniquely identify inmates. Thus, the administrative records can be purged of inmates who serve multiple prison spells. See Steven Raphael and David Weiman (2005) for a complete description of this administrative dataset.

6. The prisoner survey estimates of the joint age-education-race density are needed because the California administrative records do not contain information on educational attainment.

7. This does not mean that more than 100 percent of black men in this cell have served time in the past ten 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 either the likely mortality of many of the inmates serving time during the 1990s or 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 California Department of Corrections prisoner identification numbers for subsequent prison terms, thus artificially inflating the number of unduplicated spells. Non-unique prison ID codes, however, are unlikely to be a substantial source of bias given that tabulation on the basis of prisoner Social Security number yields quite similar counts to the tabulations using CDC identification codes.

8. In a previous analysis of administrative data from California (Raphael 2005), I analyzed the total amount of time served and the amount of time that had elapsed between the first admission to prison and the final release observed over a ten-year period for inmates age eighteen to twenty-five who entered prison in 1990. The median inmate in this category served approximately three years over a five-year period. At the seventy-fifth percentile, inmates served approximately five years over a nine-year period.

9. By taking the natural log of wages, the difference between averages at any given point in time can be interpreted as approximately a percentage difference.

10. Although 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 Terrie Moffit (1993, 1994) and Robert Sampson and John 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 types, with the most serious offenders (roughly corresponding with those who eventually serve time in prison) being char-

acterized as life-course persistent offenders who exhibit little evidence of declining activity with time. Sampson and Laub contest this characterization, finding little evidence for a group of life-course persistent offenders in a long panel of offenders and individuals at high risk of offending as youth. Moreover, these authors find evidence that certain life events, such as getting married, having children, or being steadily employed, correspond with desistence in adulthood via a "knifing-off" of the past from the present. The relevance of this debate to the question raised here concerns whether those who serve time are fundamentally different people who would perform poorly on the outcome measures irrespective of a spell in prison. Moffit's typology approach to criminal offenders would suggest so. The emphasis on life-course transitions and the cumulative effects of disadvantage emphasized by Sampson and Laub would suggest otherwise.

11. In analyses of panel data, random measurement error in a key explanatory variable tends to bias the panel data estimate of the variables effect toward zero (for a discussion of attenuation bias to the estimate of union wage effects, see Card 1996; Raphael 2000). Given that the variable I am using to measure prison incarceration in the NLSY is far from perfect, my measure of prior incarceration is certainly measured with error.

12. 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.

13. In particular, Western (2002) includes in his high-risk subsample all individuals with any acknowledged involvement in criminal activity as well as those who eventually serve time, while here I restrict the sample to those who are eventually interviewed in prison.

14. These results are available upon request.

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