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Welfare Programs Before and After
Jail and Prison: Does Prison Cause
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Jail and Prison: Does Prison Cause Welfare Dependency?**

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Abstract

Prior studies indicate that incarcerated women are among the most economically disadvantaged populations in the U.S. An important difference between them and male offenders is that these women are usually custodial parents. Therefore, the consequences of incarceration for their well being are especially important because of its effect on children. In this paper we focus on the links between incarceration and use of the social welfare system. Is prison, for example associated with increased welfare dependency? To better understand this relationship, we examine the temporal pattern of social welfare receipt for 45,000 female offenders from Cook County, Illinois, the second most populated county in the United States. We find that this group does in fact have high rates of social welfare receipt, especially if they were incarcerated in state prison rather than in county jail. But incarceration is associated with modestly lower rates of social welfare receipt, especially for the less advantaged among the population of offenders. Further, bans on TANF receipt for drug felons enacted as part of welfare reform have not significantly affected this population's attachment to the social welfare system.

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I. Introduction

Incarcerated women are among the most economically disadvantaged populations in the United States (Greenfeld and Snell, 2000). Many assume that these women's interaction with the criminal justice system serves to deepen that economic disadvantage and increase welfare dependency. For example, a term of incarceration may hurt women's employment prospects either through stigma or depreciation of skills. Further, although male prisoners are also usually poor, the consequences of both their economic disadvantage and their incarceration may be different. Women prisoners are often custodial parents at the time of their incarceration, while men are not (Mumola, 2000). Department of Justice statistics indicates that on any given day there are nearly 150,000 women in U.S. jails or prisons and that these women are mothers to more than 250,000 children. Most of these children are less than ten years old (Greenfeld and Snell, 2000; Mumola, 2000).

These women's role as caregivers, their prospects for economic self-sufficiency, and their subsequent links to the social welfare system after leaving prison or jail are important considerations when assessing the social consequences of incarcerating women. If female incarcerations increase welfare dependency, this may constitute another cost of prison to taxpayers and another of prison's effects on their children. Accordingly, we examine how incarceration affects women's use of social welfare programs, whether incarceration is associated with increased welfare dependency, and how these assessments changed during the post-welfare reform environment when policy makers limited some felons' access to welfare.¹

¹ In August 1996, Congress passed and President Clinton signed the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA). Among other things, this legislation ended the Aid to

To better understand the ties between incarceration and use of social welfare programs, we examine the social welfare histories of more than 50,000 female offenders from Cook County, Illinois.² We use a unique data set created from merged administrative records that allows us to examine incarceration and social welfare use over a ten-year period. In particular, we can examine social welfare use years prior to and years after a term of incarceration. We find that incarceration does not increase welfare dependency, and indeed, over the long term, use of social welfare programs after prison is about 6 percentage points, or 15 percent, lower.

Our results emphasize the importance of using data that allow one to examine women's social welfare use over a long period of time. Women who will eventually go to prison have higher rates of social welfare use than women who will only go to jail, so if one does not adequately control for welfare use prior to the prison term, one may incorrectly interpret their higher welfare use as an impact of prison. In addition, there is a pronounced temporal pattern to welfare use around the time of a woman's first incarceration. Welfare use begins to drop several months prior to her arrest, she is ineligible for social welfare during her period of imprisonment, and then her welfare use begins to rebound after her release from prison, eventually rising to near previous levels. This temporal pattern means that without a very long panel, it would be easy to mistakenly conclude that prison increases welfare use. This is very similar to findings in the literature on the impact of training programs on workers' subsequent wages: wages frequently are aberrantly low in the months immediately preceding workers' participation in training

Families with Dependent Children program (AFDC) that had been first established as part of the Social Security Act of 1935. It replaced this program with another cash assistance program entitled Temporary Assistance to Needy Families (TANF).

² According to the 2000 Census of Population and Housing, Cook County's population is 5.4 million. It is the most populous county in Illinois and the second most populous county in the United States. Its largest city, Chicago, has 2.9 million residents. The county's racial and ethnic composition is 26 percent black, 47 percent white, 21 percent Hispanic, and 5 percent Asian. Median household income was \$45,239 or about 8 percent above the national median. The county's poverty rate stood at 12.3 percent about 1 percentage point above the national rate. See U.S. Bureau of the Census web site www.census.gov.

programs, and the subsequent rebound may not be entirely due to the contents of the training programs.

We investigate potential reasons for the drop in social welfare dependency for formerly incarcerated women. Our analysis reveals considerable heterogeneity in the effects of incarceration on social welfare usage. In general, we find that variables associated with lower levels of life skills or functioning also are associated with larger reductions in use of the social welfare system following incarceration. By contrast, among the best-educated women in the sample, incarceration is associated with modestly higher subsequent rates of social welfare receipt. Thus, the mechanism through which prison leads to lower subsequent social welfare receipt is unlikely to be improvements in these women's economic circumstances such that they are no longer eligible.

Finally, we also explore whether our findings are influenced by new rules excluding some drug offenders from receipt of cash benefits through the Temporary Assistance for Needy Families (TANF). In the Personal Responsibility and Work Opportunities Reconciliation Act (PRWORA), Congress proscribed TANF benefits for drug felons for life, but gave states the option to opt out or modify this policy. Illinois bans only serious drug felons from TANF benefits and they remain eligible for Food Stamps. Although our analysis finds that TANF receipt rates of drug felons fell, we find little evidence that this drop was the result of policy changes due to welfare reform. Instead, this decline can be explained by the general decline in the Food Stamp and TANF caseloads experienced by all welfare recipients, including felons unaffected by the rules proscribing TANF for serious drug felons. Once again, without a data set that allowed one to construct a comparison group, and compare pre- and post- prison use of

these programs over a long period of time, it would be easy to conclude that welfare reform had a bigger effect on drug offenders' use of social welfare programs than it likely did.

We organize the remainder of this paper as follows. In section II, we summarize the status of social welfare policy for felons. In section III, we discuss our database and present some summary statistics and descriptive analyses. In section IV, we present a statistical model and describe our comparison group strategies for identifying the causal effect of jail or prison on social welfare receipt. Our empirical results and discussion based on this model are found in section V. Some concluding remarks follow in section VI.

II. Social Welfare Policy and Ex-offenders

When Congress enacted PRWORA in 1996, it banned individuals convicted of drug felonies from receiving either TANF or Food Stamps for life.³ Other felons and felons arrested for drug-related offenses prior to August 22, 1996 remained eligible for these benefits. However, Congress also allowed states to opt-out of this provision of the law. Eight years after welfare reform, 17 states continue to deny both TANF and Food Stamp benefits to felons convicted of drug-related offenses that occurred after August 21, 1996. In Illinois, as in 32 other states, the legislature modified or opted out of these bans on TANF and Food Stamp assistance.

Felons' Eligibility for Welfare in Illinois

³ PRWORA refers to Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (Public Law 104-193). Temporary Assistance for Needy Families (TANF) replaced the former AFDC program, which was part of the Social Security Act.

In 1997, Illinois limited lifetime welfare bans to individuals convicted of serious drug-related crimes.⁴ Felons convicted of a Class X or Class 1 drug law violations that occurred after August 21, 1996 are ineligible for TANF benefits. The ban has been modified, but not lifted, for those convicted of less serious drug-law violations. Drug offenders who have been convicted of Class 2 through Class 4 felonies may not receive TANF benefits for 2 years after the date of their conviction. However, this 2 year ban may be lifted when an offender is enrolled in or completes a drug treatment program or participates in an aftercare program, such as Alcoholics Anonymous or while waiting for a slot in a drug treatment program to become available (State of Illinois, 2003).

Under Illinois law all felons remain eligible for Food Stamps and all non-drug-related felons remain eligible for TANF. Further, despite any bans or limits on her own participation, a woman's children remain eligible to receive TANF depending on their mother's or any other household members' income and assets (State of Illinois, 2003).

Eligibility Criteria and Welfare Benefit Levels in Illinois

Many female parolees from Illinois prisons likely meet the income and asset thresholds necessary to qualify for Food Stamps or TANF (Cho and LaLonde, 2005). For Food Stamps, these thresholds require that eligible household units have less than \$2,000 in "liquid" assets and to have less than \$973 in monthly income. The monthly income threshold rises when there are more adults in the household. When a household unit

⁴ Estimates from one study suggest that the Illinois ban on TANF benefits for serious drug felons affected more than 10,000 women from Cook County during the 3 years following PRWORA's passage (Allard, 2002).

satisfies these and other eligibility criteria, monthly Food Stamp benefits range up to a maximum of \$371 for a unit of three.⁵

The income and asset thresholds for TANF eligibility in Illinois differ somewhat from those used for Food Stamps. Family assets for a family of 3 must be less than \$3,000. But this amount excludes some durable goods such as one motor vehicle, personnel furnishings and clothes. In addition, monthly family income, excluding that of children, must be less than the Monthly Assistance Level plus \$90. Once eligibility is established, additional earnings are disregarded at a rate of \$2 for each \$3 earned. TANF participants in Cook County receive \$396 monthly if they are in a family of 3, with one adult head of household. A comparable child-only case would receive \$107 monthly (State of Illinois 2003).

III. The Sample of Incarcerated Women and their Social Welfare Histories

To construct the sample used in this study, the Chapin Hall Center for Children at the University of Chicago matched administrative records from the Illinois Department of Corrections (IDOC), and Cook County Department of Corrections (CCDOC), to the Illinois Integrated Database (IDB) using probabilistic matching (Goerge, Van Voorhis, and Lee, 1994).⁶ The IDOC and CCDOC records from 1990 to June 30, 2001 used in this analysis consist of more than 52,000 women from Cook County.⁷ The data in the

⁵ Under welfare reform, when an applicant is childless, as might happen if an ex-offender has had her parental rights terminated, she is eligible to receive food stamp benefits without working for up to three months. The USDA allows states to exempt a significant percentage of such recipients and leaves it to state policy makers to determine who in this group is to be exempted from this work requirement. During 2005, monthly benefits for a household unit of one could range up to a maximum of \$152.

⁶ The IDB on Child and Family Services is a multi-service integrated database constructed out of administrative data gathered by public agencies serving children and families. Researchers at Chapin Hall Center for Children at the University of Chicago have been working on the database since the mid-1980s (Goerge, Van Voorhis and Lee, 1994).

⁷ The women in the sample may not be residents of Cook County, but instead they committed the offenses that lead their incarcerations in Cook County. Our analysis of information available to us on women's street

IDB file comes mainly from two sources: the Illinois Department of Human Services (DHS) and Illinois Department of Children and Family (DCFS) services. The DCFS records provide information on whether a woman or her children were ever in the foster care system or were ever involved in a substantiated charge of neglect or abuse.⁸ They provide information on foster care spells from 1975 through 2001. The DHS records provide information on the incidence and duration of Food Stamps, AFDC/TANF, and Medicaid spells covering the period from 1990 through 2001.

The match rate between the IDOC records from Cook County for women committed to state prison and the IDB files was approximately 78 percent. The vast majority of these women had at least one spell on Food Stamps. This high match rate is consistent with the literature stating that female offenders consist of largely economically disadvantaged women.⁹ The match rate among women who spent time in Cook County jail, but not in state prison during the sample period was lower at about 50 percent. This lower percentage suggests that women who have jail spells, but not prison spells, are less economically disadvantaged than women who have prison spells. Overall, however, these women, who constitute the population of incarcerated women in Cook County, have very high rates of contact with the social or child welfare systems relative to the general population, and even relative to the population of single women with minor children.

addresses at the time they entered Cook County jail, during 2001 and 2002, indicate that it is reasonable to characterize our sample as consisting of Cook County residents.

⁸ Information on foster care spells is available from 1975 through 2001.

⁹ Below we examine the correlation between being on welfare and having been incarcerated. This relationship may be biased toward zero to the extent that our measures of being on and off welfare are misclassified. We have no evidence on its extent other than misclassification rates should vary across people and not across time. Also we expect misclassification rates to be low among persons who we match and higher among the non-matches.

In this study, we focus on participation in social welfare programs prior to and subsequent to a woman's first prison spell between 1993 and 2001. We also examine this same relationship for jail spells.¹⁰ Although our incarceration data begin before 1993, we limit the analysis to those who we first see in prison after January 1993, in order to ensure that the spell we record as the first term of incarceration is indeed the first. Of particular interest are short jail spells (lasting less than one month) which are the modal incarceration spell in our data and for which incarceration would not necessarily be associated with cessation in benefits. In some of our analyses, we treat woman who had only one of these short spells during the time period studied as a comparison group.¹¹

Our social welfare records extend back at least three years prior to the first incarceration spell in our sample. Our sample used in the analysis below consists of more than 36,000 observations. This sample is smaller than the population of 52,000 women that were incarcerated during this period, (i) because we exclude women who were incarcerated in jail or prison during or after 1993, but who were admitted to prison for the first time prior to that year, and (ii) because we exclude women with missing values for

¹⁰ Individuals sentenced for felonies lasting more than one year usually are incarcerated in state prison; all other felons are incarcerated in county jail. Time served is almost always less than the sentence. Median time served in prison among women in our sample is about 9 months. Our sample of women incarcerated in county jail includes women who were never convicted for a crime, but were detained in Cook County facilities following their arrest.

¹¹ Another reason for our separate interest in the association between incarceration in Cook County jail and social welfare dependency is that when these women are in jail they usually are relatively close to their communities and families. The jail campus is located within the city of Chicago and is accessible by public transportation. By contrast, a woman in state prison will spend more time incarcerated and reside in a place far removed from her community, family and other familiar social networks. Links to her family and children while incarcerated may be a factor influencing social welfare usage by a woman when she is released back into her community. The Cook County jail is located in the city of Chicago and is relatively easily accessible by public transportation. By contrast, the three main prison facilities for women, Dwight, Decatur, and Lincoln are located 74, 168, and 177 miles, respectively, from the Cook County jail and are less accessible. In June 2005, the Greyhound web site quoted the daily round trip fare from Chicago to Decatur at \$69 per adult and \$41 per child.

the demographic variables used in our analysis.¹² Finally, in order to make the statistical analyses tractable, we take a 75 percent random sub sample of women who have jail spells, but no prison spells. We retain the complete sample of women with prison sentences. We create weights to adjust for this sampling.

We present the characteristics of female offenders from Cook County in Table 1. The numbers in the table underscore the point made earlier that incarcerated women constitute a disadvantaged population. As shown by the figures on the left side of the table, these women are disproportionately high school dropouts. Nearly 60 percent of them had received Food Stamps at least once between 1990 and 2001; about 47 percent had received TANF/AFDC during the period. About 75 percent are African-American even though African-Americans constitute only 25 percent of the county's population. Further these women are mothers. The average number of children reported by these women when they were admitted to jail or prison was 2.3. (Not shown in the table is that more than 80 percent of these incarcerated women report that they had at least one child.) Administrative records indicate that about 13 percent of these women had children in the foster care system between 1975 and 2001. This percentage was higher among women incarcerated in prison compared to women only incarcerated in jail.¹³

Table 1 also indicates that most incarceration spells are very short. Many jail spells last only a few days. Prison spells lasted on average about nine months, with a median of 8 months. Statistics, not shown in the table, indicate that these women usually committed drug-related offenses. About one-half of the women admitted to Illinois state

¹² Our file of prison spells contains all admissions and exits starting July 1, 1989. We exclude from our sample women who had a prison spell prior to January 1, 1993. Therefore, when we analyze the connection between prison and social welfare spells, the prison spells are likely to be the first spell ever for these women. We have no records on jail spells prior to October 1992.

prison during the 1990s had committed a drug law violation. This fact underscores the potential for PRWORA and Illinois welfare policy toward drug offenders to have important effects on social welfare receipt by female offenders. The potential importance of welfare reform for drug offenders is magnified because women convicted of these violations are more disadvantaged than other women. They are more likely to be high school dropouts, to have had children in the foster care system, and to report having three or more children. Among women admitted to county jail, the percentage arrested for drug law violations is smaller but still substantial (about 30 percent).

The statistics on the right side of Table 1 present the sample means for the approximately 5.1 million person-month observations covering the time period from 1990 to 2001. As shown by the first row, during any given month about 35 percent of these women were either on Food Stamps, Medicaid, or TANF/AFDC. The percentage on TANF/AFDC during any given month averaged approximately 20 percent. Being on welfare during any given month was more common than being incarcerated even for this sample of women. Women in our sample were incarcerated in jail about 2.5 percent of the time and were incarcerated in prison about 1.4 percent of the time.¹⁴

Figures 1 through 4 show the temporal pattern of monthly rates of social welfare receipt (Figure 1); AFDC/TANF receipt (Figure 2); Food Stamp receipt (Figure 3); and Medicaid receipt (Figure 4) for our sample of female offenders.¹⁵ We define monthly social welfare receipt as a dummy variable indicating whether a woman received any

¹³ At any point in time approximately 0.7 percent of U.S. children are in foster care (Child Trends, 2005).

¹⁴ These percentages understate the likelihood of incarceration between 1990 and 2001, because our jail incarceration data begins in January 1993. This suggests that scaling up the percentage of time in jail and prison by about 25 percent.

combination of Food Stamps, Medicaid, or TANF/AFDC during the current month. The patterns of receipt appear to mimic trends in social welfare receipt for the general population. Among these women, monthly welfare receipt rates rise from about 35 percent in 1990 to about 41 percent by the mid-1990s, before falling steadily to a low of about 28 percent by 2000. During the last year covered by the sample, social welfare receipt rates rose slightly.¹⁶ In our empirical work below, we control for this temporal pattern in social welfare receipt rates by including dummy variables for year (and calendar month) of the observation.

The next three figures (Figures 2 through 4) reveal that (1) the temporal pattern of social welfare usage is driven by the Food Stamp and Medicaid receipt rates and (2) that welfare reform as well as other forces likely had a marked impact on female offenders' TANF/AFDC receipt rates. In 1990, about 27 percent of our sample of female offenders received these cash benefits in any given month, but by 2000 this rate had fallen to only five percent. Food Stamp and Medicaid receipt rates also fell during the period, from about 36 percent in 1991 to about 23 percent in 2000. In contrast to the series for TANF/AFDC, Food Stamp and Medicaid receipt rates started to rise again around 2000.

IV. A Statistical Model of Incarceration and Social Welfare Receipt

To investigate the relationship between incarceration and social welfare usage, we specify a very flexible statistical model that can account for the variety of possible ways that prison or jail could influence social welfare receipt. A priori, it is unclear how incarceration will affect subsequent use of social welfare programs. If incarceration

¹⁵ These figures were created using the full sample of about 52,000 women who were incarcerated at least once in jail or prison during the period, rather than the smaller sub-sample used for the regression analyses.

¹⁶ The data also suggest that during 1992 there was a temporary decline in receipt rates. As seen by comparing Figures 2 through 4, this decline results from an anomaly in the Food Stamp and Medicaid data.

adversely affects offenders' employment prospects, it could increase the likelihood that these women subsequently receive social welfare benefits. Alternatively, if incarceration increases the chances that an individual will be incarcerated in the future, incarceration could be associated with reduced use of social welfare programs.

Other possibilities also imply that incarceration is associated with lower participation rates in social welfare programs. First, incarceration may be an indicator of declining life skills. These declining life skills may be associated with either increasing or declining welfare take-up rates prior to incarceration and this trend could continue even after parole. The possibility that these women's life skills are declining prior to prison is compelling in this study, because of evidence of high rates of substance abuse

Second, as already discussed above, Illinois law, after the implementation of welfare reform, denies TANF benefits to serious drug felons and limits it to less serious drug felons. This policy suggests that the temporal pattern of receipt may differ for different types of felons, and before and after the implementation of welfare reform. Further, this policy also could adversely affect non-drug related felons' chances of receiving welfare benefits to the extent that there is confusion about the rules among potential applicants, community organizations, and caseworkers. Finally, incarceration could also be associated with the loss of parental rights among custodial parents. Such a loss could be associated with a decline in social welfare benefits, especially TANF/AFDC benefits.

To sort out the foregoing issues, we focus on the temporal pattern of social welfare usage around the time of the first jail and prison spells observed during our sample period. We model the temporal pattern of social welfare receipt by examining the

relationship between the numbers of the months that the current month is from the month of a woman's first incarceration and a dummy variable indicating whether she received social welfare benefits during the current month. We present estimates from a statistical model that has the following form:

$$(1) \quad Y_{it} = \mathbf{X}_{it}\boldsymbol{\beta} + \delta_t(S_i, \mathbf{Z}_i) * f(R_i(t; S_i, \mathbf{Z}_i)) + \gamma_t + \varepsilon_{it}.^{17}$$

In (1), we define Y_{it} as a dummy variable equal to one if a woman received Food Stamps, Medicaid, or TANF/AFDC during the (calendar) month t . The variable \mathbf{X}_{it} denotes a vector of observed characteristics described above in the text.

The term γ_t in (1) denotes time-effects that account for the effect of changing statewide economic conditions and policies on rate of social welfare receipt by female offenders.¹⁸ The term ε_{it} in (1) denotes unobserved characteristics. We assume that the time-varying component of the error is independently distributed across individuals. Our standard error estimates are "robust standard errors" that take into account that these unobservable characteristics are not identically distributed across individuals and time periods.

The term $\delta(\tau; S_i, \mathbf{Z}_i)$ in (1) denotes the effect of prison on social welfare receipt. We allow this effect to vary according to the number of months, τ , between the current month and the entry and exit months from prison. We assume that the prison effect is time-invariant. Thus, we assume that there are no cohort effects of prison among these women. We also allow these effects to vary by time served in prison and by a limited vector of individual characteristics.

¹⁷ This model is borrowed from the program evaluation literature and is described in Jacobson, LaLonde, and Sullivan (1993) and in Heckman, LaLonde, and Smith, (1999).

The term $R_{it}(\tau; S_i, Z_i)$ in (1) is a vector of dummy variables that denotes the current month in terms of months relative to the month of incarceration. In our empirical work, we explicitly allow for the possibility prison affects social welfare receipt rates prior to entering prison. This specification attempts to account for the possibility that women who are going to go to prison soon have had a particularly bad time and that either their level of functioning or their fortunes are likely to improve regardless of whether they go to prison. Our empirical evidence reported below appears to be consistent with this view.

To implement this specification, we include in our model a vector of 17 dummy variables that indicate whether the current calendar month is a given number of months prior to a prison spell. We allow separate monthly effects of prison on social welfare receipt for the first 13 months prior to prison.¹⁹ We then control for these effects during pre-prison months 14 through 29 using a step function consisting of 4 dummy variables. By including these variables in the model, we measure the effect of prison on social welfare receipt relative to social welfare receipt rates prior to the 29th month before incarceration. We assume that incarceration does not affect social welfare receipt rates more than 29 months prior to incarceration. We test this assumption with our data. We also include three dummy variables to control for incarceration in the current month. We control for whether the woman is in prison for her first prison term, whether she is in jail for a prior or subsequent offense, and whether she is in prison on for a subsequent term.

¹⁸ We model these time effects with 11 dummy variables denoting the month of the year, and 12 dummy variables denoting the year of the observation.

¹⁹ Note that while we refer to these as months prior to prison, the first month prior to prison is the month in which the woman enters prison. The fraction of the month actually spent in prison will depend on whether the woman enters early or late in the month.

We model the impact of prison on social welfare receipt after incarceration using 15 parameters. The first 13 parameters are dummy variables indicating whether the current month is a given number of months after exit from prison.²⁰ For example, one of the dummy variables is equal to 1 if the current month is six months after the month in which the woman was released from prison.

We intend the last two post-incarceration parameters to provide a parsimonious summary of the temporal pattern of social welfare receipt during the months beyond the first year out of prison. These two parameters are associated with (i) a dummy variable indicating whether the current month is 14 or more months after the month a woman left prison and (ii) the inverse of the number of months (starting with the 13th month) after a woman left prison as follows:

$$(2) \gamma_0 * 1(\tau > 13) + \gamma_1 * (1/(\tau - 13)), \text{ if } \tau > 13.$$

This specification produces a straightforward estimate of the long-term effect of incarceration on social welfare receipt. As the number of months since exit from prison increases, $1/\tau - 13$ approaches zero. Therefore, the long-term effect of incarceration on social welfare receipt is given by γ_0 . The effect during the 14th month after exiting prison is given by $\gamma_0 + \gamma_1$.²¹

The terms S_i and Z_i in $R_{it}(\tau; S_i, Z_i)$ denote time served and observed demographic characteristics, respectively. In the empirical work below, we focus on interactions between a dummy variable indicating whether the current month is a post-

²⁰ The first month after prison is actually the month of prison exit. The fraction of the month spent in prison will depend on whether the woman is released early or late in the month.

²¹ See Jacobson, LaLonde, and Sullivan (2005) for an example of this specification in the program evaluation literature. We also experimented with using a linear trend in (2) instead of the inverse of $k-13$. This linear specification did not affect inferences about the short and medium term impact of incarceration, but did affect inferences about its long-term effects.

incarceration month and, whether the woman's time served on her sentence was greater than the median (8 months), the woman's highest grade completed, whether we ever observe a drug law drug-law violation in the woman's records, and whether we ever observe that the woman had one or more children in foster care.²²

Consequences of State Dependence for Incarceration Effects

Besides our desire to specify a flexible statistical model to account for a variety of potential factors influencing the pattern of social welfare receipt, another rationale for our model is to account for state dependence in welfare transitions. State dependence implies that the probability a woman receives welfare during one month depends on whether she received welfare during the previous month. We find strong evidence in our data of state dependence in the transition rates on and off welfare. The percentage of women in our sample who at some point go to prison, who are off welfare during month $t-1$ who received welfare during month t is about 2.6 percent. By contrast, the percentage of women on welfare during month $t-1$ who also received it during the following month is 95.3 percent.²³

One implication of this state dependence is that the impact of prison on welfare receipt should vary with time since incarceration. When women are released from prison they are off welfare. Therefore their welfare receipt rates are below expected levels, but this gap should diminish with time as they transition back on to these programs. This change occurs even if prison has no effect on the underlying transition rates onto or off of

²² This amounts to including additional variables into the model that are interactions between a dummy variable indicating that the current month is a post-incarceration month and variables in Z_i .

²³ These figures include transitions during the months leading up to and immediately after prison. The corresponding figures for women in the short jail sample are 1.5 and 97.1 percent, respectively. The figures

welfare. But this change—the rising welfare receipt rates following release from prison—is nonetheless an effect of having been incarcerated. This part of the effect of incarceration on social welfare receipt is mechanical and it should dissipate with time.

But our estimates of the longer term effects of incarceration should be unaffected by these post-prison adjustments. These longer term effects, if they exist, should result from changes in welfare transition rates. The idea that in the presence of state dependence, the short and long-term effects of incarceration might differ underscores the importance of specifying a statistical model that allows the effect of prison to vary with time since incarceration.²⁴

Constructing Comparison Groups

To estimate (1) we compare social welfare receipt among women incarcerated in state prison to observationally similar women who were incarcerated only in county jail.

Ideally, our comparison group would include women who are identical to the women who are incarcerated in state prison, but whose welfare receipt is not interrupted by a period of incarceration. In our empirical work, we examined the sensitivity of our results to the following samples of women with jail spells:

- (i) women whose only incarcerations are jail spells;
- (ii) women whose only incarceration is a single jail spell;
- (iii) women who have only one jail spell that lasted less than 30 days.

Women in these three comparison groups were incarcerated at approximately the same time as women who served time in state prison and were similarly involved with the

for women who eventually go to prison during the period more than 28 months prior to a woman's first prison spell are 2.4 and 94.0 percent, respectively.

²⁴ This point is discussed in more detail in Appendix A.

criminal justice system. However, these offenders are likely to have been arrested less often and to have committed less serious offenses than women incarcerated in prison.

Associations that we might find between incarceration and social welfare receipt could result from differences in unobserved attributes that determine both the seriousness of a woman's criminal behavior and her social welfare receipt rate. If this concern is important, we expect that our results should vary depending on which comparison group we choose. The first of these comparison groups includes more serious offenders than does the last. By contrast, women in the last group—who we call the short jail sample--include some who were arrested and held in county jail, but later released after the charges were dropped. Moreover, because jail spells were so short we do not expect the incarcerations of women in the third group to cause breaks in their welfare spells.

IV. Empirical Findings

Incarceration in County Jail, State Prison and Social Welfare Participation

In Figure 5, we present the mean rate of social welfare receipt *relative to the month of incarceration* for three groups of incarcerated women: Women who (i) only had jail spells (this group includes the next); (ii) only had one short jail spell and (iii) ever had a state prison spell. We do not control for any demographic or time varying variables. Each point on the graph, except the last, indicates the mean rate of social welfare receipt in that month; the last point, after the shaded vertical bar, is the mean rate of social welfare receipt for all subsequent months.

As shown by the figure, women incarcerated in state prison have social welfare receipt rates that averaged nearly 40 percent 13 months prior to their first full-month in prison. These rates declined during the pre-prison period and drop sharply during the two

months prior to their first full-month in prison. After exiting prison, women's social welfare receipt rates rise for six months and return to levels approaching those that we observed one year prior to the year that they entered prison.

The pre-jail social welfare receipt rates for two groups of jail only women were about three percentage points lower than those of women incarcerated in prison. This difference likely results because these women were likely less economically disadvantaged than women who were incarcerated in prison. As expected, the pattern of welfare receipt among women that had only a single short jail spell appears unaffected by their incarcerations, because they were incarcerated for less than one month.

The information in Figure 5 suggests that prison is not associated with increased welfare dependency. Further as indicated in the previous section where we discussed state dependence in social welfare transitions, we observe an adjustment period after prison. During the first 5 months after their paroles, these women's welfare receipt rates rise rapidly. After this point, their welfare receipt rates have returned to close their pre-prison levels.

The figure also indicates that in the longer term, rates of welfare receipt appear to be somewhat below pre-prison levels. The last point in the figure, the mean rate for all subsequent months, starting 14 months after the month these women exited prison, is about 30 percent.²⁵ This percentage is lower than the rates of social welfare receipt at the end of the first year following incarceration and results in part because of the lower later rates of social welfare receipt later in the sample period. (See Figures 1 through 4), emphasizing the need to examine these patterns controlling for year effects.

Regression-Adjusted Estimates of the Effect of Prison

In Figure 6, we present the estimates based on equation (1) of the differences between the rates of social welfare receipt of women incarcerated in prison and of women with short jail spells, or $\delta(\tau)$, starting with the 29th month prior to the month they enter prison or jail. We condition on the observed characteristics including: age, age², race and ethnicity, highest grade completed, any drug law violations, any foster care record, time served on first prison greater than the median, controls for current incarceration²⁶, and month and year effects.²⁷ The year effects help account for the fall in social welfare receipt rates during the latter half of the sample period. The two lines in the figure are associated with (i) the model estimated without individual fixed effects (the solid line) and (ii) the model estimated with individual fixed effects (the line with squares).²⁸

We identify the “effects” of incarceration, $\delta(\tau)$, because we assume that the regression-adjusted rates of social welfare receipt are the same for both the short jail and prison groups prior to the 29th month. The figure indicates that this assumption is approximately consistent with the data. During the period that falls 25 to 29 months prior to the month of incarceration for the women who goes to prison there were only slight differences between their regression-adjusted rates of social welfare receipt.

²⁵ In Figure 5 as well as the remaining figures in the paper, the vertical bar serves to indicate that month 14 refers to all subsequent months pooled starting with the 14th month following the month these women were paroled from prison.

²⁶ Current incarceration controls include three separate indicator variables if the individual is currently in jail, if the individual is currently in prison for her first prison term, and if the individual is currently in prison on a second or higher prison term.

²⁷ Age is the only time-varying individual characteristic here. We experimented with including the cube of age to account for nonlinearities in the relationship between age and social welfare receipt, but it was not statistically significant. We intend our controls for age to take into account any life cycle effects on social welfare receipt.

²⁸ Estimates of the other coefficients in the model are available from the authors upon request.

Our empirical results indicate that starting with the 24th month prior to incarceration, the rates of social welfare receipt of prison group slowly diverges. By the 8th month prior to incarceration, women who will go to prison have social welfare receipt rates that are about 5 percentage points less than observationally similar women who have a single short jail spell. At this point the rate of divergence increases. By the second month prior to incarceration the two groups' social welfare receipt rates differ by about 10 percentage points. We have explored whether these patterns in pre-prison welfare receipt can be explained by jail spells that are not associated with the arrests that lead to women's imprisonments. These estimates include controls for jail spells for separate arrests from those leading to the current prison term, and for subsequent prison and jail terms. However, leaving these controls out of our model does not significantly change the pattern shown in Figure 6.²⁹

After paroling from prison, our estimates reveal the same post-prison patterns that we inferred from the unadjusted mean rates of social welfare receipt in Figure 5. The first five months after prison is a period of adjustment during which women's social welfare receipt rates rapidly approach their expected levels based on their pre-prison histories and the social welfare receipt rates of women with single short jail spells. After this point, post-prison welfare receipt rates remain about 4 to 5 percentage points below expected levels. Over the longer term, the rates of social welfare receipt tend to fall somewhat. As indicated by the last value in Figure 6, by the 25th month following these women's

²⁹ Women who go to prison are substantially more likely than is typical for them at other times to be incarcerated in jail in the months just prior to prison for unrelated offenses. But, we find including controls for these jail terms, as we do in the models that underlie Figure 6, the decline in social welfare use prior to prison remains. Recall that most jail spells in our full sample are short, many lasting less than 30 days. So by themselves we would not expect such spells to affect rates of social welfare receipt.

paroles from prison, their rate of social welfare receipt has fallen to about 7 percentage points (i.e., estimates of δ_0 in (2)) below expected levels.³⁰

Comparisons between the OLS and fixed-effect (FE) estimates in Figure 6 indicate that the FE estimates are about 2 percentage points lower (in absolute value). But the FE estimates also were about 2 percentage points lower two years prior to prison. Therefore, we conclude that both sets of estimates generate the same conclusion that prison is associated with much lower rates of social welfare receipt during the first 4 or 5 months after prison, about a 5 percentage point lower rate by the end of the first year after paroling from prison, and somewhat larger impacts in the long-term. Importantly, both sets of results do not support the contention that incarceration in prison or involvement with the criminal justice system is associated with greater welfare dependence. Without a long panel of data, however, this would be difficult to detect given that the pre-prison drop in social welfare receipt begins as much as two years prior to a woman's prison term.

It is unclear how to interpret the long-term decline in social welfare receipt. It could signify increased self-sufficiency, reduced life functioning or the possibility that women who enter prison sometimes lose their parental rights, which could diminish the likelihood that they receive social welfare benefits. Note that while recidivism might lower welfare rates after the first prison term, we control for subsequent prison terms here, and thus recidivism should not be driving the post-prison pattern depicted in Figure 6.

³⁰ Because we include time-varying age effects and time effects, this pattern does not obviously result from life cycle, macro-economic, and policy effects. In particular, this pattern does not result because the post-prison period tends to occur later during the sample period when social welfare receipt rates are relatively

The Characteristics of Prisoners and the Effects of Prison on Social Welfare Receipt

We explore whether our findings for the effect of prison on social welfare receipt vary according to a woman's personal characteristics. Four variables of special interest were as follows:

- (i) whether a woman's time served in prison was above or below the median time served (which was 8 months);
- (ii) whether she ever had an offense that involved a drug law violation;
- (iii) her highest grade completed;
- (iv) and whether she has ever had a child in the foster care system.

We view these variables as a proxy for women's life skills and functioning. They likely are associated with a woman's competence as a parent, in the labor market, and in being able to complete the application process and collect welfare benefits.

In table 2 we present the results for whether post-prison welfare use varies with individual characteristics. The first and second columns present the results for OLS and fixed effect estimation. Columns 3 and 4 allow the pre-prison period to vary by these characteristics as well.³¹ This is to take into account the decrease in welfare receipt prior to the first prison term that we observe in figures 5 and 6. If better educated women, for example, do not decrease their welfare usage as much in the months leading up to their first prison term, and we fail to take that into account, we might find that their post-prison

low. We find that when we remove the time effects, the temporal pattern is similar to that depicted in Figure 5.

³¹ In particular, we allow the level of usage to vary by these characteristics in the 29 months prior to the woman's first prison term. We also allow for a linear trend in usage that varies with these characteristics in the 29 months leading up to the first prison term. The maintained assumption is that welfare receipt does not vary with these characteristics in the 30th, or greater, months prior to prison.

welfare usage is higher than other women's simply because we did not correctly specify their pre-prison usage.

Our results indicate that time served in prison does not appear to affect our estimates of the effect of prison on social welfare use. As shown by the first row of Table 2,³² both the OLS and fixed effect estimates indicate that women who served more than the median prison spell had post-prison welfare receipt rates that were essentially the same as those their counterparts who served shorter spells. If prison had an adverse impact on women's social welfare receipt, then one would expect that a larger "dose" of prison, as measured by the length of time spent there, would have a bigger adverse effect. We see no effect of the size of the "dose." This finding is robust to allowing for pre-prison differences in welfare receipt for women who will serve longer than average sentences.

As shown by the second row of the table, women who at some point have a drug law violation have lower post-prison use of social welfare programs. Post-prison social welfare use among such former prisoners was an additional 3 to 7 percentage point below that of other observationally similar female felons.

One explanation for this finding is that women who are drug law violators also are likely to report substance abuse problems when they enter prison.³³ These problems may be associated with declines in life skills and such a decline might contribute to their inability to qualify for benefits and so such women appear to become less connected with

³² We present estimates of the main effects of these variables in appendix table B. We observe that older and better-educated women have lower rates of social welfare usage. Whereas African-American women, women who have had children in the foster care system, and women who have ever violated a drug law have higher rates of social welfare usage.

the social welfare system after prison. Another possibility that we explore in detail below is whether these declines in social welfare receipt after prison is the result of policy changes under PRWORA.

Turning to the other estimates in the table, it appears that after leaving prison, the decline in social welfare use is somewhat greater among women whose characteristics are associated with poor life skills. For example, less schooling is associated with lower welfare rates after prison. As shown the first column of the table, each grade completed is associated with about a 1.7 percentage point increase in post-prison rates of welfare receipt; the fixed-effect estimates are about one-half this magnitude. So we expect an ex-prisoner with 14 years of schooling to have social welfare receipt rates after prison that are about 5 percentage points larger than an observationally similar ex-prisoner with 9 years of schooling. These results suggest that prison is associated with increased welfare dependency only among the most educated former prisoners in our sample.

The results for women who ever had a child placed in the state foster care system (FC women) are consistent with our view that women with declining life skills are likely to have lower than expected use of social welfare programs after prison. But, we find that these results are sensitive to the underlying econometric model and to the comparison group used in the analysis. As shown by column 1 of the table, such women have sharply declining rates of social welfare use after prison. The much smaller estimate associated with the fixed-effect estimator indicates that these women are different from other felons. One way that we find that they are different is that during the 29 months prior to their incarcerations, their rates of social welfare use declined more sharply than it did for other

³³ For women who serve in prisons, we have information both on their offenses and self-reported drug abuse and addiction. For women who only have jail sentences, we only have information on their offense

felons. These sharper rates of decline are not controlled for with the FE estimator in column 2

In column 3 of Table 3, we account for differences in the decline of pre-prison social welfare use among women who were drug felons, who had children ever placed into the foster care system, and by schooling attainment. These estimates are indeed smaller in magnitude, indicating that the OLS estimates in column 1 are biased downward, because they do not take into account the variation in women's pre-prison decline in social welfare use. As shown by column 4 of the table, now the OLS and fixed effect estimates for the highest grade completed and ever foster care variables are about the same.

The results for women who ever had children in foster care remain striking and suggest sharp declines in use of social welfare programs after prison for them. But we find that these results are very fragile and depend on the comparison group used in our analysis. We compared the prison women to their counterparts who also had histories of children in foster care, but only had one short jail spell. After re-estimating our model using this sub sample, we find that after paroling from prison, social welfare use by these two groups of incarcerated women are comparable, suggesting that time in prison does not affect the post-prison use of social welfare programs differently for the FC women.

The foregoing finding suggests that our econometric model is misspecified for the FC women. As shown by Panel B of Table 2, among women in the "No FC" group, the post-prison interaction effects for time served, drug law violations, and highest grade completed are the same as before (compare column 3 in Panel B to column 4 in Panel A.). But the estimated coefficients associated with these interactions are different for the

type.

FC women. Although the coefficients are imprecisely estimated, they suggest that these variables may influence post-prison social welfare use differently for these women than they do for women who never had a child in the foster care system. The links between prison, loss of parental rights, and use of the social welfare system is a topic that we will address in future research.

Did PRWORA Affect Receipt of Social Welfare Benefits by Ex-Prisoners?

The lower post-prison rates of social welfare use by drug law violators suggest that welfare reform might have affected these women's access to cash benefits. As discussed above in Section II, all felons in Illinois, including drug felons, remained eligible for Food Stamps. But serious drug felons face a lifetime ban from TANF, and less serious drug felons may face a ban on benefits for up to two years. Here we ask whether the temporal patterns of welfare receipt between the pre- and post-PRWORA periods changed in a manner that is consistent with these policy changes.

To address this question, we first plot the monthly receipt rates of AFDC/TANF relative to the dates of entry and exit from a woman's first prison spell for four groups of women with prison records defined based on the date of their arrests and whether they served time for drug-law violations.³⁴ The four groups are as follows:

- (i) women who served prison time for a drug offense for which they were first arrested prior to August 1996;
- (ii) women who served prison time for a drug offense who were arrested after that date;

³⁴ We do not have the date of arrest in our data. But we approximate this date with the date on which they were incarcerated in county jail for the offense for which they were subsequently incarcerated in prison.

- (iii) women who served prison time for a non-drug-law violation for which they were arrested prior to August 1996;
- (iv) women who served prison time for a non-drug law violation for which they were arrested after August 1996.

In principle, only the second groups' eligibility for TANF was affected by PRWORA.

As shown by Figure 7, average TANF/AFDC receipt rates for all four groups fell during the months leading up to women's incarcerations in prison and rise again afterwards, but they do not return to their pre-prison levels. Among women arrested *prior* to PRWORA for drug-law violations (the line with the diamonds), the monthly TANF/AFDC receipt rates were about 30 percent one year prior to going to prison for the first time. After this the date temporal pattern of TANF/AFDC receipt follows the "V" shape observed above for social welfare receipt overall.³⁵ After exiting prison, these women's TANF/AFDC receipt rate rose steadily before leveling off at about 20 percent. Among these pre-PRWORA drug law violators, the rate of TANF/AFDC receipt is about 10 percent points lower one year after exiting prison than it was one year prior to entering prison.

If we view the foregoing temporal pattern of TANF/AFDC receipt as the baseline pattern, we would expect that the gap between the receipt rates of the pre-PRWORA and post-PRWORA drug law violators to widen during the post-prison period. To be sure, as shown by (the solid line with the triangles in) Figure 7, the TANF/AFDC receipt rates for the cohort of drug felons potentially affected by the PRWORA ban have been

³⁵ The period 0 in Figure 7 encompasses all full months in which a woman was incarcerated in prison. In principle, a woman is ineligible for welfare benefits while incarcerated so we expect receipt rates to be very close to zero. Deviations from zero may result from administrative errors, or errors in matching prison and welfare records.

consistently lower than those of their pre-PRWORA counterparts. However, the gap between pre- and post- PRWORA drug felons' post-prison receipt rates did not widen and in fact became somewhat smaller compared with the gap during their pre-prison periods. During the year prior to prison the TANF/AFDC receipt rates of these two cohorts differed by about 10 percentage points. During the year after prison, this gap also was about 10 percentage points. If welfare reform operated as designed, we would expect this post-prison gap between the pre- and post-PRWORA cohorts to have become larger.³⁶ The last dots on right side of Figure 7 show the average TANF/AFDC receipt rates for all months 14 and beyond the months these women left prison. They indicate that over the long-term, this gap became smaller.

The pattern observed in Figure 7 for post and pre-PRWORA drug felons is supported by the temporal patterns of TANF/AFDC receipt for non-drug law violators. As shown by the two lines with squares and crosses in Figure 7, women incarcerated prior to welfare reform for non-drug law violations had higher rates of TANF/AFDC receipt both before and after prison compared to women who were incarcerated for the same kinds of offenses after PRWORA. Contrary to expectations, the difference between TANF/AFDC receipt rates of the pre- and post-PRWORA non-drug law violators became larger during the post-prison period. Significantly, the pattern of TANF/AFDC receipt among post-PRWORA non-drug felons is nearly identical to that for drug felons. By contrast, during the pre-PRWORA period, the welfare receipt rates of non-drug felons were consistently lower than those of the drug felons.

³⁶ Given that we are studying each woman's first prison spell, the lower TANF receipt for the later cohort of drug felons is not likely the result of some of them being banned from TANF because of a prior drug offense. We believe the most likely explanation for the pattern observed in these data is that the later cohort

As shown by Figure 8, women in the four offender groups, described above who spent less than one month in jail do not have “V” shaped TANF/AFDC receipt rates like the women who had been incarcerated in prison. Although all four groups of these short jail women show a downward trend in their receipt rates, including women arrested for drug-related offenses after PRWORA, there is no break in this trend around the time that they are incarcerated in jail. In the short jail spell sample, we do not observe any tendency for the welfare receipt rates to fall among post-PRWORA drug arrestees relative to other women.

Turning from TANF/AFDC receipt to Food Stamp receipt, we observe that the temporal patterns of Food Stamp receipt rates corroborate our interpretation of the TANF/AFDC results. As shown by Figure 9, Food Stamp receipt rates are highest for drug felons during the pre-PRWORA period. These rates decline during the months leading up to prison and rise during the months after prison before leveling off at a rate that is about 5 percentage points below pre-prison levels.

Among post-PRWORA drug-law violators, Food Stamp receipt rates start from a lower level, follow a similar pattern, but return close to their pre-prison levels during the post-prison period. The gap between the Food Stamp receipt rates of the pre- and post-PRWORA drug law violators’ is about the same as the gap between these two groups’ TANF/AFDC receipt rates. As we observed with TANF/AFDC receipt, we find that both prior to and after PRWORA, the Food Stamp receipt rates of the drug and the non-drug felons converge during the post-prison period.

of drug felons had lower rates of TANF receipt because, as shown above in Figure 4, TANF caseloads in general were low and falling during this period.

The foregoing discussion is based on the unadjusted mean receipt rates of TANF/AFDC and Food Stamp benefits. To identify the effect of PRWORA on TANF/AFDC receipt, controlling for differences in characteristics and time periods, we use a “triple differences-in-differences” specification. We compare the post-prison TANF use of women arrested for drug law violations after welfare reform was enacted to other felons. The term of interest then, is the coefficient on the triple interaction: whether the woman was in prison for a drug law violation, whether her arrest was after PRWORA was enacted, whether the current period is a post-prison month.

Besides this interaction term, we also add the following “main” and “interaction” effects to our model and re-estimate equation (1):

- (i) whether she was arrested for a felony after PRWORA’s enactment;
- (ii) whether the current period is a post prison period and the women was arrested for a felony after PRWORA’s enactment;
- (iii) whether a woman’s incarceration was due to a drug law violation;
- (iv) whether the woman was incarcerated for a drug law violation and she was arrested for a felony after PRWORA’s enactment;
- (v) whether the current period is a post prison period and the women was incarcerated for a drug law violation.

Our regression-adjusted results are consistent with our inferences from Figures 7 through 9 and reveal little evidence of substantially lower social welfare receipt rates after prison among women who were incarcerated for drug-law violations after August 1996 compared (i) to women who committed similar crimes prior to that date and (ii) to women who were incarcerated for non-drug felonies. As shown by the last row of Table

3, women affected by the lifetime or limited TANF bans received cash assistance at the same rate as other felons after they were paroled from prison. The estimated standard error associated the point estimate of -0.001 in the table suggest that the data is consistent with views that TANF participation rates of drug felons rose or fell by as much as 3 to 4 percentage points. In column 2, we observe that these conclusions are not affected by adding controls for individual fixed-effects.

The remaining estimates in Table 3 suggest an explanation as to why some observers have contended that PRWORA severely limited drug felons' access to TANF and ultimately to other social welfare benefits even though we find no evidence of such effects, at least in Illinois. The first two estimated coefficients in column 1 indicate that women arrested after PRWORA had participation rates in TANF that were about 2 percentage points above their expected levels both before and after their incarcerations. The coefficient estimate of 0.005 indicates that after prison this group's use of TANF rose by about ½ of a percentage point,

The next two estimated coefficients coefficients in Table 3 indicate that drug felons had TANF participation rates that average 5.4 percentage points above non-drug felons throughout the sample period. But among drug felons arrested after PRWORA this gap was only about 1.5 percentage points (i.e. 0.054 – 0.039). This estimate implies that during both the pre- and post-prison periods TANF use by post-PRWORA drug felons was lower than it had been among earlier cohorts of drug felons. However, in the fifth row in the table indicates *throughout* the sample period TANF use during the post-prison period by drug felons was about 5 percentage points lower than is was for non-drug felons.

Therefore, taken together the foregoing estimates indicate that TANF use among drug felons after prison was substantially below expected levels based on their TANF/AFDC use prior to entering prison *and* on TANF/AFDC receipt by drug felons arrested prior to PRWORA. But this result is not caused by PRWORA's specific bans for drug law violators. Instead, it appears that drug felons' post-prison AFDC/TANF participation rates have always fallen more relative to their pre-prison levels compared with non-drug felons. And further after PRWORA, TANF use among drug felons was below pre-PRWORA levels even prior to going to prison.³⁷

As we explained above, because the PRWORA bans in Illinois apply only to TANF, but not to Food Stamps. Interestingly, the pattern of coefficients in in Table 3 is nearly identical for Food Stamps and TANF receipt rates. This corroborates our contention that whatever is driving post-prison TANF receipt rates for female ex-offenders, it is unlikely to be the specific bans on serious drug offenders receipt of cash assistance.

Results not shown in Table 3 indicate that our findings also hold when we estimate the short- and long-term effects of PRWORA separately. In the short-term- defined here as the six months after leaving prison -- women covered by either the lifetime or limited TANF bans had modestly lower rates of TANF receipt. But over the long-term their relative rates of TANF receipt were at expected levels.

Our analysis indicates that post-PRWORA drug felons in Illinois have not decreased their use of TANF due to policy changes intended to limit their access to

³⁷ We checked to see whether this finding might result because after PRWORA, but prior to their first incarcerations in prison, these women had been incarcerated in jail for a drug offense that was unrelated to the arrest that led to their imprisonments. But this possibility does not account for our results – the results in table 3 control for imprisonment in jail and on a subsequent prison spell.

TANF.³⁸ One explanation for findings is that ex-prisoners and/or officials may be confused about welfare policy believing that it limits access to TANF benefits to all felons not just drug felons, and perhaps that the ban applies to Food Stamps as well as to TANF. However, rows 1 and 2 of Table 3, are not consistent with this interpretation as they suggest a slight rise above expected levels in TANF and Food Stamp receipt rates among non-drug felons during the post-PRWORA period.

The temporal pattern of TANF/AFDC receipt observed in Figure 7 among women potentially affected by the PRWORA bans also is consistent with the pattern of TANF/AFDC receipt among low income women around the time of welfare reform. During the pre-prison period, pre-PRWORA drug law violators had higher receipt rates, because they went to prison when the TANF/AFDC caseload was relatively high. Post-PRWORA drug violators have lower TANF receipt rates compared with their pre-TANF counterparts largely due to the sharp decline in the TANF caseload in Illinois since 1997.³⁹

Finally, although it is true that the population of incarcerated women consists of a disproportionately large fraction of drug law violators, in Illinois only about 15 percent of them are classified as serious Class 1 or Class X drug felons.⁴⁰ The vast majority of

³⁸ We discount the possibility that women who become ineligible for TANF but remain eligible for Food Stamps, now have a greater incentive to apply for and receive such benefits. In the past, women who receive TANF or AFDC benefits almost always receive Food Stamps. So in practice a policy banning drug felons from TANF, while still allowing them to receive Food Stamps, should not cause their Food Stamp receipt rates to rise.

³⁹ Statistics from the Illinois Department of Human Services indicated that the numbers of families receiving AFDC/TANF fell by nearly 80 percent from 198,923 per month in 1997 to 41,625 in August 2005. (ACF, 2004; IDHS, 2005)

⁴⁰ About 327 women fall into the category of Class 1 or Class X drug felons arrested after PRWORA took effect. This small number of serious drug law violators when compared to the entire TANF caseload raises the question about whether it is worthwhile to enforce the PRWORA policy on drug offenders. One practical problem faced by DHS is that any file that IDOC provided it with a listing of serious drug felons does not contain an individual identifier that is both verified and common to both agencies. Although IDOC files contain most female prisoners' Social Security numbers and names, these data are not verified by the

female drug offenders are covered by the limited TANF ban. However the legislature provided these women with a variety of ways to have these bans waived so that in practice few Illinois drug felons' eligibility for TANF appears to be affected by PRWORA. In this light our finding that PRWORA appears to have had no effect on drug felons' use of TANF in Illinois is less surprising.

V. Conclusions

In this paper, we have used an unusual administrative data set to examine how incarceration in prison affects women's subsequent receipt of social welfare benefits. Our sample consists of women from Cook County, Illinois who were incarcerated in state prison between 1993 and 2001 and comparison group of women who were incarcerated in the Cook County jail, with a particular focus on women who had one and only one jail spell lasting less than a month. These data were matched to state administrative records on AFDC/TANF receipt, Food Stamp receipt, and participation in Medicaid. The main contribution of this paper is that our unique data allow us to examine women's interaction with the social welfare system for a long period of time both before and after their incarceration. This longer horizon allows us to dispute some claims about the likely effects of prison on welfare dependency, while simultaneously helping to explain why those conclusions made sense given the available data. For example, many believe that a prison term will increase women's welfare dependency. Until now, the available data would have supported such a claim – women who go to prison have very high rates of

agency. This information is self-reported by the inmate at the time she is admitted to prison. Instead, IDOC's files include a verified identification number that is associated with a prisoner's fingerprint. DHS files do not include this fingerprint ID. Because of reporting errors and missing Social Security numbers in IDOC files, in practice it is not a straightforward task for DHS to verify without error whether an applicant for TANF has been banned from TANF for life or faces a limited ban. Nor is it clear whether the applicant herself would know which category she fell into-limited ban or lifetime ban-even if she truthfully reported that she had a previous drug conviction.

welfare use, and they are higher six months after release from prison than they were immediately before hand. Only with our long panel can we observe that this is because a) women who go to prison have higher rates of welfare receipt than other wise similar women in all periods, and b) women's welfare receipt drops precipitously in the months just prior to their prison terms. Thus, a simple pre- and post-prison comparison will inflate the impact of prison on welfare receipt.

Our analysis indicates that incarceration in prison is associated lower levels of welfare dependency. During the first 4 to 5 months after parole, women's social welfare receipt rates are far below expected levels. After one year they approach their expected levels based on their own rates of receipt prior to prison and the receipt rates of women with a single short jail spell. Over the longer term, we estimate that having been in prison is associated with a decline in receipt of social welfare benefits by about 6 percentage points or about 15 percent below expected levels.

One question raised by our study is whether the reduced use of social welfare programs among former prisoners who were more disadvantaged to begin with is an indication of greater levels of long-term economic deprivation following prison or whether it reflects a trend toward greater self-sufficiency.⁴¹ Our analysis controls for recidivism which could cause welfare use to decline in the years after a woman's first prison term.

Finally, we find that the specific bans on drug offenders' receipt of cash assistance that were introduced as part of PRWORA cannot explain reduced social

⁴¹ One possibility is these women are more likely employed, though the patterns observed here work against that contention. Cho and LaLonde (2005) use data from Illinois covering 1995 to 2001 to study the links between incarceration and employment. They find that prison appears to be associated with higher

welfare usage among former state prisoners after their release from prison compared with women with more modest contacts with the criminal justice system and poor women more generally. However, our data can explain why the belief that these bans had a large effect on female ex-offenders' access to cash assistance is widespread. Individuals convicted of drug felonies after the PRWORA bans came into effect have lower TANF receipt rates. However, our long panel demonstrates that this is a cohort effect – they have lower receipt of cash assistance in all years (even those prior to TANF), and they have lower rates of cash receipt prior to their first conviction. Furthermore, drug felons convicted after the PRWORA bans on cash assistance also have lower receipt rates of Food Stamps, a program not included in the bans in Illinois. Although there are a variety of alternative explanations for these findings, they appear to reflect the general decline in caseloads rather than the effect of changes in drug offenders' eligibility for cash assistance.

employment rates during the year following exit, but over the longer term post and pre prison employment rates are similar.

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Appendix A

In the presence of state dependence, the short and long-term effects of incarceration should differ. To see this point, consider the following model that determines whether a woman receives food stamps during any given month:

$$(3) \text{FS}_{i,t} = \alpha_0 + \alpha_1 \text{FS}_{i,t-1} + \delta_1 D_{it} + \delta_2 D_{it} * \text{FS}_{i,t-1} + \epsilon_{i,t}$$

where $\text{FS}_{i,t}$ is a dummy variable equal to one, if a woman received Food Stamps in month t ; and D_{it} is a dummy variable equal to one if a woman has previously been to prison. The parameters of this model determine the two transition rates from Food Stamp receipt to non-receipt and from non-receipt to Food Stamp receipt. For example, the probability of receiving Food Stamps in month t , given that a woman was off Food Stamps in month $t-1$ is given by α_0 for women without a prison record.

When a woman is admitted to prison the process that determines whether she receives Food Stamps is interrupted. Individuals in prison are ineligible to receive benefits and prison officials regularly provide lists of new prison admissions to state welfare authorities. Therefore, we expect that when a woman exits prison during month s , the Food Stamp indicator variable equals zero (i.e., $\text{FS}_{i,s} = 0$). The statistical model described above indicates that the probability that these women will receive Food Stamps during month $s+1$ is given by $\alpha_0 + \delta_1$. By contrast, the rate of Food Stamp receipt during that month for a comparison group is given by the steady state rate of $\alpha_0/(1-\alpha_1)$. Because α_1 is larger than α_0 , and assuming the value of δ_1 is not too large, we expect the rate of Food Stamp receipt by recently released offenders will be less than that rate for non-offenders. This difference, however, is our estimate of the effect of prison on food stamp receipt $\Delta_{\tau=1} = E(\text{FS}_{i,\tau=1,t} | D_{i,\tau=0,t} = 1) - E(\text{FS}_{i,t} | D_{i,t} = 0, \text{ for all } t) = (\alpha_0 + \delta_1) - (\alpha_0/(1-\alpha_1))$. Notice that if prison has no effect on welfare transition rates (i.e. = 0), we expect the effect of prison on social welfare receipt, during the first full month out of prison to be negative.

During the months following their release from prison the fraction of woman receiving food stamps will rise relative to rate for the comparison group. In our statistical model (1), we intend that the parameter $\delta_\tau(S_i, Z_i)$ to capture these mechanical effects of prison during the τ months after prison. Because of state dependence, the effect of prison on the rate of Food Stamp receipt will rise with time since exit ($\tau > 0$) as more women enter Food Stamps and stay on the program. This result is not a general result, of course, and depends on the values of the parameters δ_1 and δ_2 and whether they are time varying in τ . The key point is that the process described by (3) implies that the impact of incarceration on offenders use of social welfare programs should be time varying.

Figures 1-4
Fraction of Former Female State Prisoners Ever Receiving Social Welfare Benefits
between January 1, 1990 and June 30, 2001

Figure 1
Ever Receive any Welfare

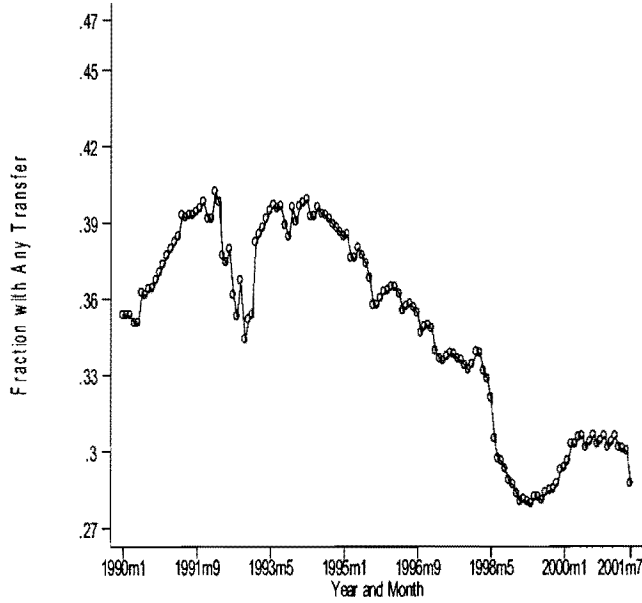


Figure 2
Receive AFDC/TANF

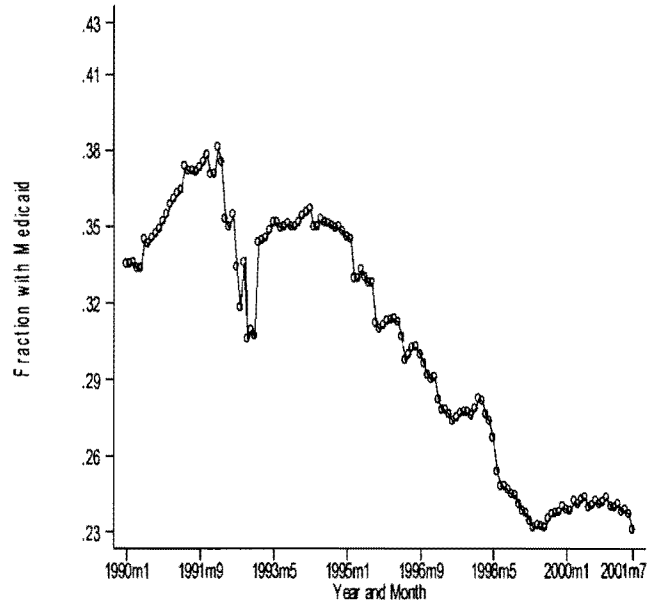
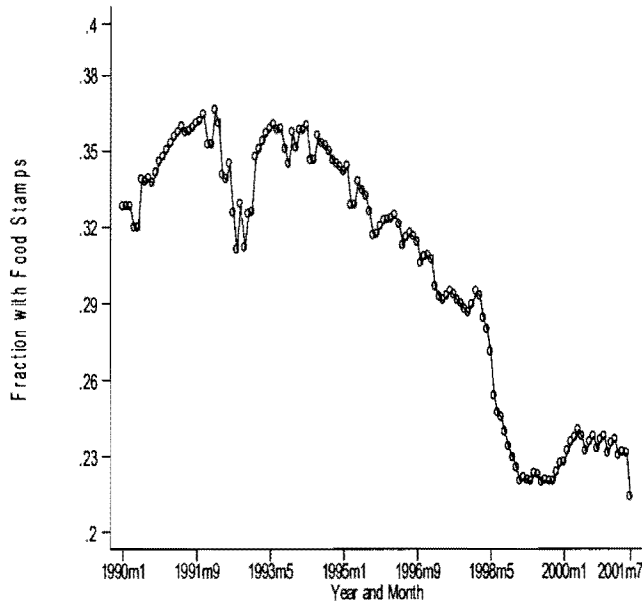
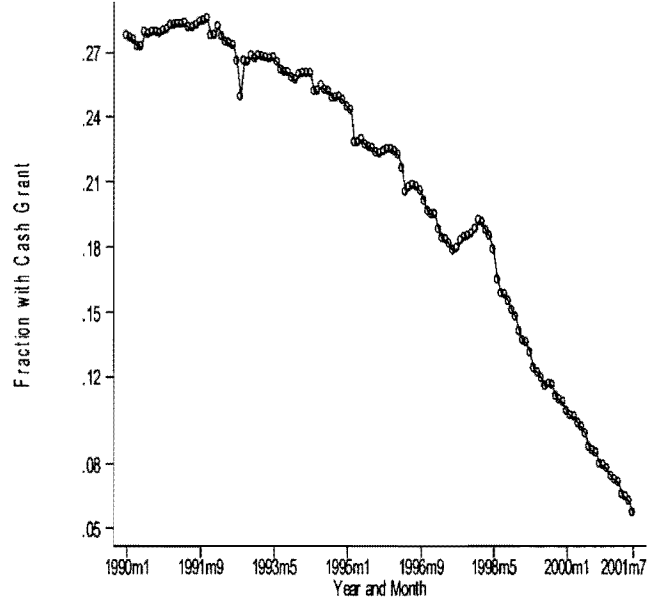


Figure 3
Received Food Stamps

Figure 4
Received Medicaid

Figure 5: Fraction Receiving Any Transfers in Months Before and After 1st Incarceration (Jail or Prison)

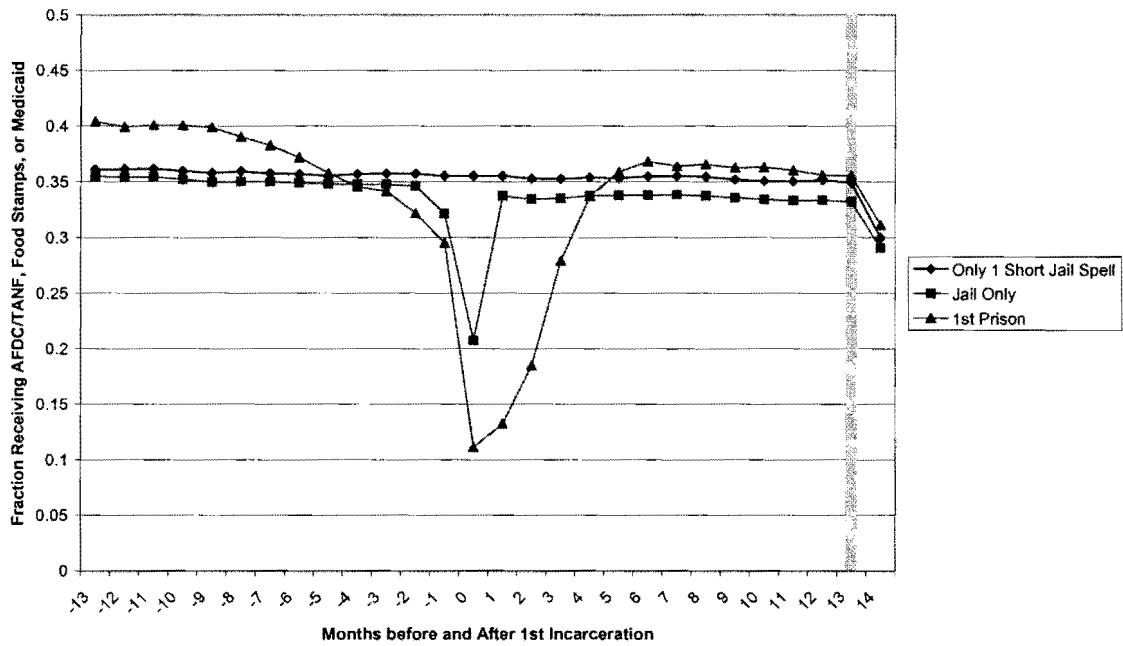


Figure 6: The Impact of Incarceration in State Prison on Women's Social Welfare Receipt

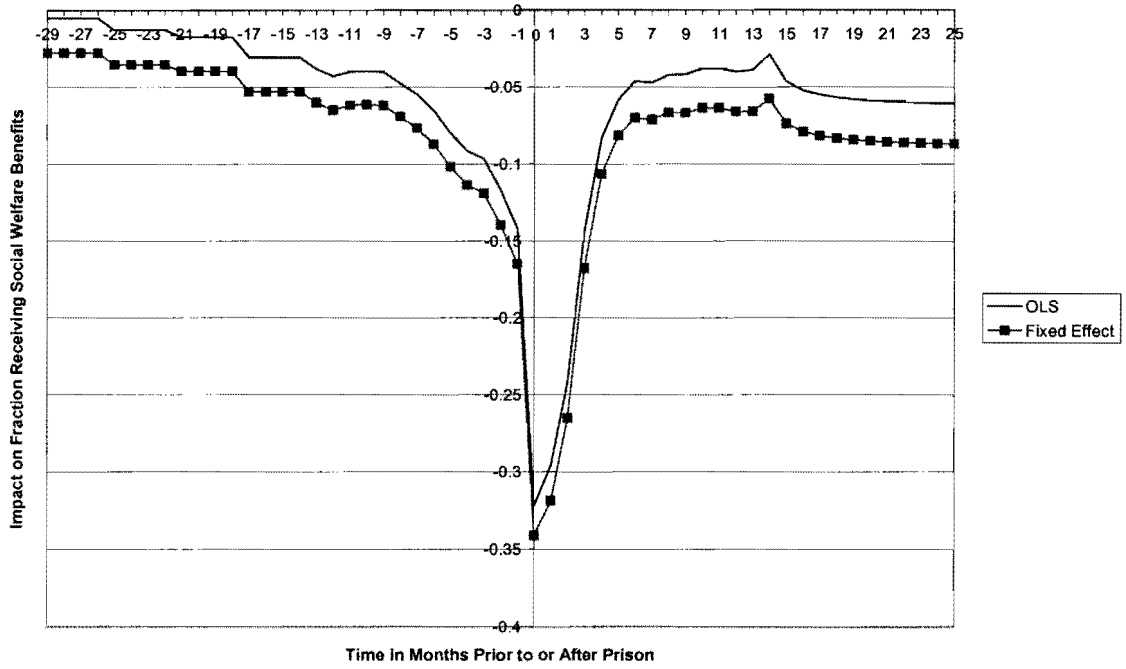


Figure 7: Fraction of Felons Receiving AFDC/TANF in months Before and After 1st Prison Term, by Arrest Date pre-post August 1996

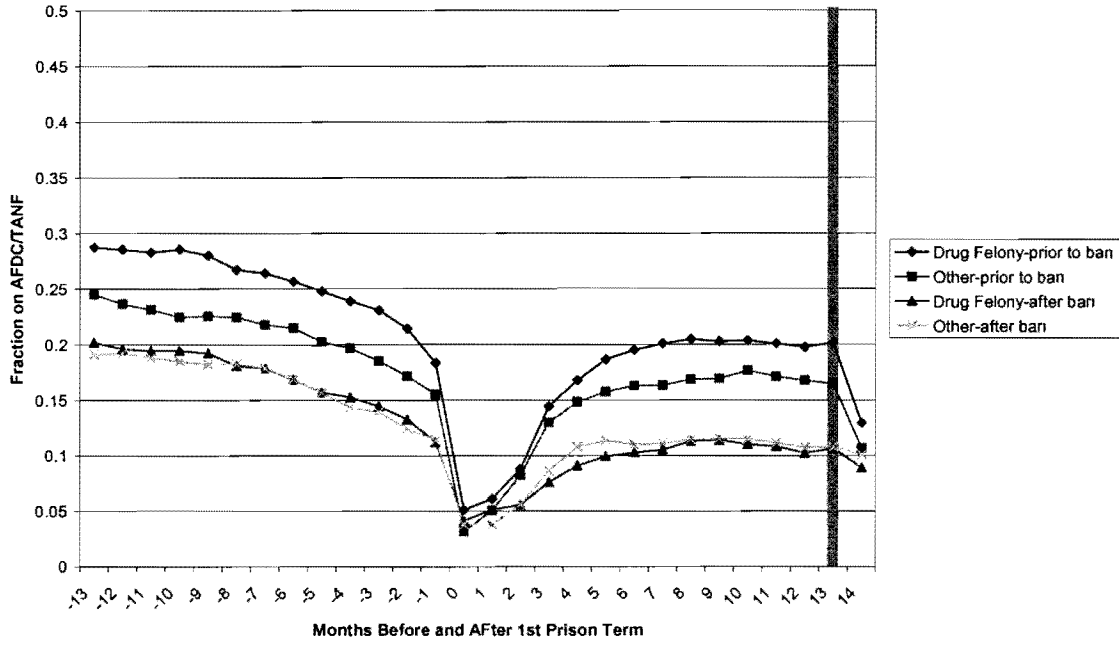


Figure 8: Fraction Receiving AFDC/TANF in months Before and After Incarceration in Only Jail Spell, By Offense Category and Arrest pre-post August 1996

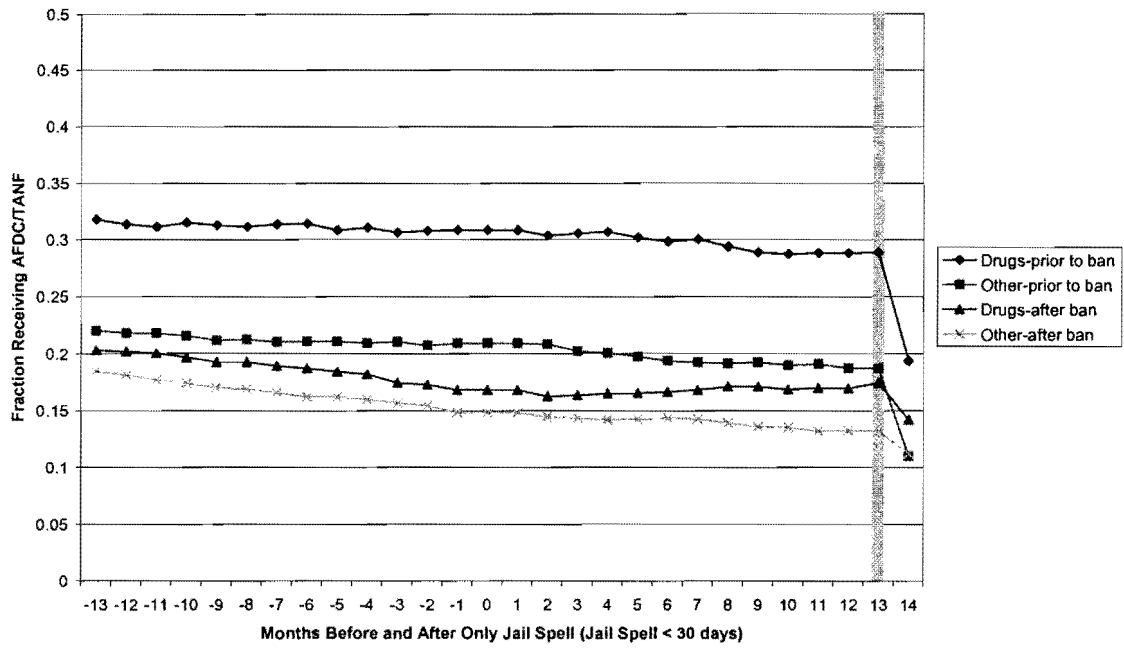


Figure 9: Fraction Receiving Food Stamps in Months Before and After 1st Prison Term, by Arrest pre-post August 1996

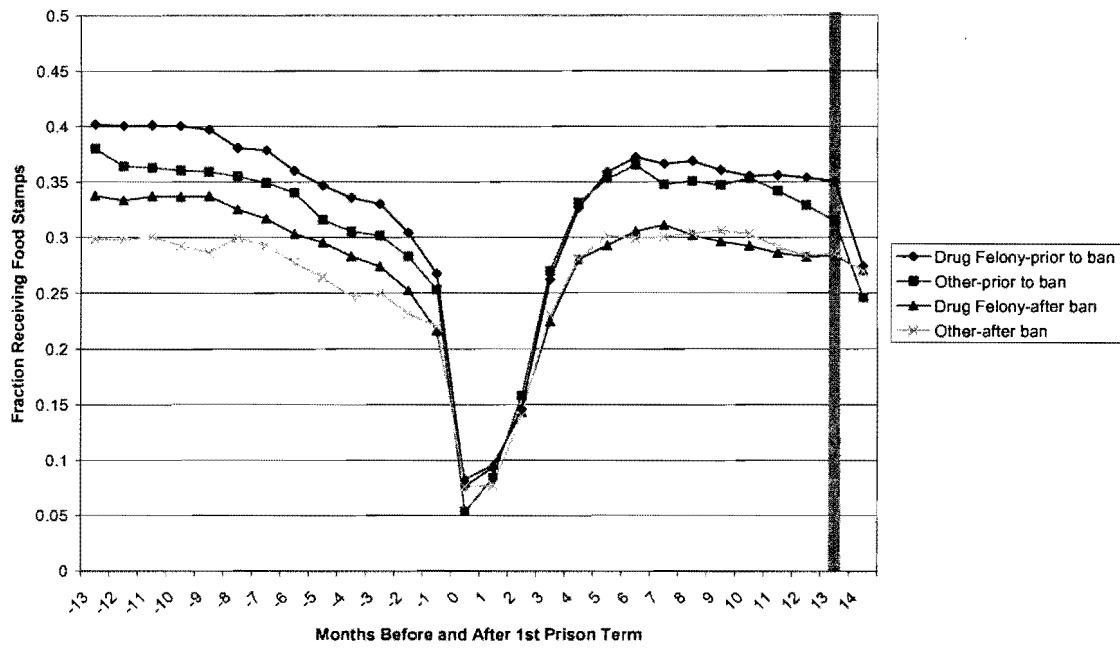


Table 1: Means For Sample of Incarcerated Women From Cook County, Illinois
(Standard Deviations)

	Person Records	Person-Month Records: Monthly Average	
Age on July 1, 2001	35.7 (9.01)	Receive Any Welfare (Food Stamps, Medicaid or Cash Grant)	0.346 (0.476)
Fraction African American	0.756 (0.430)	Receive Food Stamps	0.301 (0.459)
Fraction White	0.180 (0.384)	Receive Medicaid	0.303 (0.459)
Fraction Hispanic	0.060 (0.237)	Receive Cash Grant	0.204 (0.403)
Fraction Other Race	0.004 (0.062)	In Jail	0.025 (0.155)
Highest Grade Completed	11.6 (1.74)	In Prison	0.014 (0.119)
Number of Children	2.3 (1.94)	Age	30.00 (9.62)
Ever Receive Food Stamps	0.581 (0.493)		
Ever Receive Medicaid	0.572 (0.495)		
Ever Receive AFDC/TANF	0.461 (0.498)		
Ever Receive FS, Med or AFDC/TANF	0.600 (0.490)		
Ever Have a Child in Foster Care	0.133 (0.340)		
Ever have Drug Law Violation ¹	0.319 (0.466)		
Ever have a Jail Term	0.962 (0.190)		
Ever have a Prison Term ²	0.120 (0.324)		
1 Short Jail Spell (< 1 month)	0.414 (0.493)		
Average Number of Criminal Justice Spells	2.00 (1.72)		
Average Months Served	1.28 (4.68)		
Number of Observations	36573		5083647

Notes: The data are linked administrative records for women with Cook County Jail records from January 1990 through June 2001. Administrative come from: for Cook County Department of Corrections, Illinois Department of Corrections, Illinois Department of Children and Family Services, and Department of Human Services. We begin with data on over 50,000 women. This sample includes only those women whose first criminal justice spell in our data began after January 1993, to help ensure that the spell we designate as the first criminal justice spell is really the first. The last month included here is June 2001. Our working sample is a 75% random subset of the women with "Jail Only" records, and all the women who ever had a prison record. Weights are used to adjust the samples. See text for additional information. ¹"Ever Have Drug Violation" indicates that we see either a jail or a prison term for a drug law violation at some point. ²Criminal justice spells can be "Jail Only," "Combined Jail/Prison," or "Prison Only." The last is rare, and we have combined the "Jail/Prison" and "Prison only" spells here. The data are in month-person form. If one has any jail time in a month, for example, one is coded as having jail=1 for that month. The minimum value for time served is zero, which would include spells lasting less than one month duration.

Table 2
Differences in Effect of Prison on Welfare Receipt,
by Characteristic of Woman and Offense Category

Panel A: Full Sample

	No Controls for Pre-Prison Effects		Controls for Pre-Prison Effects	
	OLS (1)	FE (2)	OLS (3)	FE (4)
Post * Time Served > 8 months	-0.014 (0.011)	0.008 (0.009)	0.004 (0.011)	0.009 (0.009)
Post * Drug Law Violation	-0.072 (0.011)	-0.044 (0.009)	-0.028 (0.012)	-0.053 (0.010)
Post * Highest Grade Completed	0.017 (0.003)	0.008 (0.002)	0.011 (0.003)	0.010 (0.003)
Post * Ever Child in Foster Care	-0.162 (0.012)	-0.068 (0.011)	-0.107 (0.013)	-0.096 (0.012)

Panel B: Separate Estimates By Whether Women Ever Had a Child in Foster Care

	No Controls for Pre- Prison Effects		Controls for Pre- Prison Effects	
	No FC	FC	No FC	FC
	(1)	(2)	(3)	(4)
Post * Time Served > 8 months	0.008 (0.010)	0.020 (0.020)	0.008 (0.010)	0.020 (0.020)
Post * Drug Law Violation	-0.055 (0.010)	-0.002 (0.021)	-0.063 (0.011)	-0.012 (0.023)
Post * Highest Grade Completed	0.008 (0.003)	0.005 (0.006)	0.011 (0.003)	0.005 (0.006)
Fixed Effects	Yes	Yes	Yes	Yes

Notes: The sample has 20169 women (2803491 observations) and includes women with one and only 1 jail spell lasting less than a month from a random subset of all women with only jail spells, and all the women who had a prison spell. The estimates in the table give the effect of the indicated characteristic on the long-term effect of prison on social welfare receipt based on equation (1) in the text. The OLS estimate of -.072 implies that women with drug law violations have post-prison welfare receipt rates that are about 7 percentage points less than observationally similar women with person-related or property-related offenses. The term "Controls for Pre-Prison Effects" indicates that the model includes separate effects for the level and change in social welfare receipt during the 29 months prior to prison for each characteristic. "FE" refers to fixed effect estimates. FC refers to the subsample of short jail and prison women who ever had a child in foster care. Other variables included in the model include race/ethnicity, time varying age, highest grade completed, and number of children.

Table 3
Impact of PRWORA on Drug Felons Monthly Participation Rates in TANF and Food Stamps

Variable	Monthly Participation Rate in:			
	TANF/AFDC (1)	(2)	Food Stamps (3)	(4)
Arrested After PRWORA?	0.020 (.005)	---	0.034 (.005)	---
Post-Prison* Arr. After PRWORA?	0.005 (.012)	0.013 (.013)	0.009 (.015)	0.018 (.013)
Drug Felon?	0.054 (.010)	---	0.060 (.010)	---
Arr. After PRWORA* Drug Felon?	-0.039 (.012)	---	-0.041 (.013)	---
Post-Prison*Drug Felon?	-0.051 (.011)	-0.039 (.010)	-0.054 (.012)	-0.040 (.011)
Post-Prison* Arr. After PRWORA* Drug Felon?	-0.001 (.016)	-0.011 (.016)	-0.001 (.019)	-0.008 (.017)
Fixed Effects	No	Yes	No	Yes

Notes: Coefficients in row 1 are estimates of TANF and Food Stamp participation of non-drug felons relative to the baseline participation rates of non-drug felons arrested before PRWORA was enacted in August 1996. The post-prison interaction term in row 2 is an estimate of how non-drug felons' welfare use changed during the post-prison period if they were arrested after welfare reform. In row 3, we control for whether the woman was a drug felon; and in row 4 whether the drug felon was arrested after welfare reform was enacted. The coefficients estimates in row 5 indicate the average difference between post-prison period welfare use by drug felons compared with non-drug felons. The coefficient estimates are for the "triple differences" term is in row 6. The model also includes controls whether a women is currently in prison for her first prison spell, in jail, or in prison for a subsequent offense or a parole violation. Year and month effects also are controlled for to account the effects of the economy and policy on average participation rates. Other variables included in the model are described in the text. The numbers in parentheses are the standard errors. The standard errors for the fixed effect estimates are unadjusted. Source: Authors' calculations from the merged IDOC, CCDOC, and IDB data base described in the text.

Appendix Table B
Coefficient Estimates for Other Variables in Figure 6 and Table 2

Control Variables	Figure 6 OLS	Figure 6 Fixed Effects	Table 2 OLS Panel A, col. (1)	Table 2 Never Had Child in FC Fixed Effects Panel B, col. 1	Table 2 Ever Had Child in FC Fixed Effects Panel B, col. 2
Age	-0.006 (0.001)	0.003 (0.001)	-0.006 (0.001)	0.004 (0.001)	-0.020 (0.005)
Age Squared	0.00005 (0.00002)	-0.00009 (0.00002)	0.00005 (0.00002)	-0.00009 (0.00002)	0.00007 (0.00008)
African-Amer.	0.208 (0.006)	---	0.208 (0.006)		
Hispanic	0.065 (0.010)	---	0.065 (0.010)		
Other Race	-0.035 (0.023)	---	-0.036 (0.023)		
# of Children	0.018 (0.002)	---	0.018 (0.002)		
Time Served > 8 months	0.009 (0.008)		0.010 (0.008)		
Highest Grade Completed	-0.016 (0.001)	---	-0.017 (0.001)		
Ever Any Kids in Foster Care	0.178 (0.007)	---	0.199 (0.007)		
Ever Any Drug Law Violation	0.050 (0.006)	---	0.056 (0.006)		
R-squared	0.0840		0.0862		
Number of Obs.	2803491	2803491	2803491	2451265	352226

Notes: See table 1 for a description of the data. Data are person-month records from January 1990 to June 2001. We exclude those whose first prison term is before January 1993, in order to ensure that the 1st prison term we observe is the actual first prison term. Linear probability models; the standard errors are clustered on the individual to account for multiple observations per individual. The dependent variable is equal to 1 if the individual received food stamps, Medicaid, or a cash grant in a given month. These regressions examine welfare participation in the months before and after the person's first prison term (either a prison "only" term or a jail/prison term combined). The regressions also include a constant, a dummy for each month, a dummy for each year, 17 dummy variables controlling for 29 months prior to the first full month in prison, and 14 dummies indicating the number of months after the last full month of the first prison term, a dummy for people with highest grade completed greater than or equal to 18, and a dummy variable if a given month falls during the first prison term, during a prior or subsequent jail term, or a subsequent prison term. See Figure 6 for how welfare use changes in the years surrounding the first prison spell. See table 2 for how welfare use in the post prison period differs by individual characteristics.

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