Final Report

Recidivism among Female Prisoners: Secondary Analysis of the 1994 BJS Recidivism Data Set

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Abstract

This study explores the recidivism of female inmates released from state prison through secondary analysis of data collected by the Bureau of Justice Statistics (Langan & Levin 2002). This BJS study examined the recidivism of prisoners from 15 states released in 1994 by collecting 3-year follow-up data as described in the bulletin, *Recidivism of Prisoners Released in 1994*. The present study examines the 23,562 females in this data set, examining their recidivism patterns and exploring the impact of prior criminal history on post-release recidivism. Secondary analysis of this data set found:

- The majority (63%) of the women had no prior prison terms.
- Female offenders served less time in prison than the total sample with two-thirds having served less than 12 months (compared to half of the total sample having served more than 12 months) and a median sentence length of 13 months (compared to the total sample median sentence length of 20 months).
- Female prisoners were more likely than the total sample to have lower rates of recidivism across all four measures (rearrest, reconviction, resentence to prison and return to prison).
- About 60% of the females in the sample were rearrested, while almost 70% of the total sample were rearrested. Forty percent of the females had a new conviction compared to 48% of the total sample.
- Correspondingly, about 30% of the females returned to prison (with only 18% the result of a new sentence), compared to 37% of the total sample (with 25% the result of a new sentence).
- Judgments about the similarity or difference in rates of female and male offenders do not depend upon the definition or measure of recidivism.
- The majority of female offenders convicted and sentenced to prison for violent offenses prior to their release in 1994 do not reoffend with a violent crime.

- However, for both the total sample and the female subsample, those serving time for a property offense or a drug offense were much more likely to have a new arrest than those released in all other offense categories.

- Female offenders, similar to those in the total sample, are most likely to be rearrested for a property crime.

- Female offenders typically do not specialize or concentrate their offending in their offense types over their criminal careers.

- However, there is some degree of repetition in related offenses such as property, drugs, and to a lesser extent, public order crimes.

- The strongest and most consistent predictors of recidivism of female offenders, whether measured as the proportion with a new arrest, the number of new arrests, or the time to a new arrest, are the number of prior arrests and age at release from prison.

- Failure, as measured in time to a new arrest, is higher for female offenders who are incarcerated for drug possession and property offenses and lowest for those incarcerated for a violent offense.

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Introduction

Purpose, Goals and Objectives

In July 2002, the Bureau of Justice Statistics (BJS) released a Special Report, *Recidivism of Prisoners Released in 1994* (Langan & Levin, 2002), describing the recidivism patterns of 272,111 female and male former prisoners. Using data from 15 states, this data set represents nearly two-thirds of inmates nationwide who were released in 1994 and tracked for a period of three years. Rarely have such large-scale studies been conducted as most research has focused on much smaller samples of inmates usually from a specific jurisdiction. This BJS report contains basic findings from the analysis of the criminal records both prior to and after their release. Langan and Levin found that, within 3 years, almost 68% of all released prisoners were rearrested; 47% were reconvicted; and 25% were resentenced to prison. Slightly over half were back in prison, both as a result of a new sentence or a technical violation. The BJS report profiles the released prisoners and examines relationships between recidivism rates and time to failure and offenders' demographic and offense characteristics.

The present study explores the recidivism of the cohort of female inmates released from state prison in 1994 by replicating many of the analyses conducted by Langan and Levin (2002) for the 23,562 female prisoners, who represent 8.7% of the total BJS sample. Understanding the specifics of female recidivism provides a foundation for studying their criminal careers and may provide insight into effective reentry programs and policy. The present study describes frequency distributions of female recidivists and examines the potential of this data set for testing hypotheses related to female criminal careers.

With over 600,000 prisoners re-entering their communities each year (Glaze, 2003), and growing recognition in the different pathways to crime for female and male offenders (Bloom, Owen and Covington, 2003), this project examined these data with two goals in mind:

1) To describe patterns of female criminal careers and predictors of recidivism, and
2) To further analyze recidivism and its implications for reentry for female offenders.

Why is it important to conduct a separate examination of the recidivism of female offenders? Brown (2002) suggested that prediction of recidivism has important social and economic implications for offender programs and rehabilitation, parole and public safety decisions, and offenders' families and communities. She further argued that the work involving women has been largely restricted to testing whether recidivism risk indicators validated for male offenders also apply to female offenders. The results reported in the literature for several current instruments show poor correlations between male and female risk profiles. The inability to extrapolate from males to females underscores the importance of studying this sub-sample of women.

There are many external factors that contribute to recidivism for all offenders. A full examination of recidivism acknowledges the effect of both individual behavioral factors and criminal justice processes themselves.[1] Variables not related to the behavior of the individual can account for some of the recidivism outcomes. For example, local "crack-downs" on certain offenses, or certain neighborhoods; police and court resources; the sanctioning philosophy of the local jurisdiction (such as a move toward treatment versus incarceration); plea bargaining; and degree of post-release supervision may have a significant impact on post-release outcomes. Analysis of these factors, while critical to a fuller understanding of recidivism among women, cannot be found using the BJS data. Therefore, recommendations for further research into these

[1] Thanks to the two anonymous reviewers for this suggestion.

contextual and experiential variables, particularly as tied to parole outcomes, are made at the conclusion of this report.

Relevant Literature

The upsurge in female incarceration rates during the 1990s has generally been attributed to the increased participation of females in substance use and the get-tough policies of the war on drugs. Multiple sources have demonstrated that significant numbers of women have entered the prison system as a result of drug convictions and property crimes related to their drug use (Bloom, Chesney-Lind, & Owen, 1994; Bloom, Owen & Covington, 2004; Bush-Baskette, 1999; McShane & Williams, 2006; Owen 1998; Women's Prison Association, 2004).

As a result, the female prison populations have experienced a dramatic increase, outpacing the increase in the incarceration rates of men. Nationwide statistics reveal the total number of female prisoners between 1990 and 2000 grew 108%, whereas the total number of male prisoners increased 77% during the same period (Harrison & Beck, 2000). Between 1995 and 2005 the incarceration rate for females increased from 47 to 64 per 100,000 whereas the rate for males increased from 789 to 925 per 100,000 residents (Harrison & Beck, 2006). In absolute numbers, the number of women incarcerated in state and Federal prisons has risen more than eightfold, from 12,000 in 1980, to over 106 thousand by mid-year 2005; thus, females represented 7% of the prison population at mid-year 2005, compared to 6.1% in 1995 (Harrison & Beck, 2006).

The reason behind this population increase differs between women and men. BJS data (Harrison & Beck, 2003) indicate that violent offenses are the major factor in the growth of the male prison population, and for women, drug offenses represent the largest source of growth. Along with disproportionate representations in the drug offense category, the level of violence in

instant and repeated offenses is another contextual factor that distinguishes female and male offense patterns. Gender differences in the use of weapons, harm and injury to victims and relationships to victims are well documented (Greenfield & Snell, 1999; Owen, 2006; Reisig, Holtfreter & Morash, 2006). Moreover, women commit significantly less violence than males over the course of their criminal career (Steffensmeier & Allen, 1996). As Reisig, Holtfreter & Morash (2006, p. 389) stated, "As noted previously, violence among women differs from men's (i.e., onset, desistance, frequency of participation and harm inflicted)."

Gender differences are illustrated by comparing offense distributions between women and men based on BJS data from 2001. Almost 50% of male prisoners are locked up for a crime of violence, with 18% doing time for property offenses; 19% for drug crimes and 11% for public order offenses. Women, in marked contrast, have a much more even distribution across the three major offense categories: 32% of incarcerated females are serving time for a violent offense; 26% for property offenses; 30% for drug crimes with 11% convicted of public order crimes (Harrison & Beck, 2003).

The data on arrests further demonstrate that the number of women under criminal justice supervision has risen disproportionately to arrest rates. In 2004, the Women's Prison Association (WPA) analyzed the trends in sentencing and arrests for women, using Uniform Crime Reports data. They show that arrest and subsequent imprisonment rates for every 1,000 women have risen dramatically between 1986 and 2000. In 1986, one woman was admitted to prison for every 87 arrests. By 2000, the incarceration rate increased with one woman admitted to prison for every 31 arrests. There was a 53% increase between 1995 and 2004 in the number of women incarcerated but only a 13% increase in arrests, which Greene and Pranis (2006) attribute to changes in prosecutorial and judicial decision-making. This is attributed to the proportion of

women convicted of violent offenses and drug offenses. They note that in 1979 one-tenth of women were incarcerated for a drug offense, which now account for one-third of women in comparison to one-fifth of men.

In addition to gender differences between male and female crime, women's arrest and incarceration rates vary by race and ethnicity. Minority women are disproportionately represented in the United States prison population, and the percentage of African-American women incarcerated continues to grow. In 1991, this group made up about 40% of the female prison population; by 1995, this population had grown to 48%. The percentage of Hispanic and Latina women is also growing, but at a somewhat slower rate. As of midyear 2005, the number of sentenced women per 100,000 residents[2] varied significantly across race and ethnicity. For all women, 121 women per 100,000 were sentenced prisoners: for white women, the proportion was 88 per 100,000; for Black women, 347 per 100,000 and for Hispanic women, 144 per 100,000 residents (Harrison & Beck, 2006).

Reentry and Parole

Following the rise in prison population, parole populations too have continued to rise over recent decades. In the 1980s the state parole populations increased an average of 10% annually between 1980 and 1992, but stabilized thereafter until 1998, and increased an average of 1% annually between 1998 and 2004 (Glaze & Palla, 2005). In 2004 the nation's parole population increased 2.7% by another 20,230 persons or more than twice the average since 1995 (Glaze & Palla). Among those entering parole, the percentage re-released from State prison rose from 27% in 1990 to 45% in 1999. BJS also finds that of the nearly 448,000 parolees discharged from supervision in 2002, 45% had successfully met the conditions of their supervision (Glaze, 2003, p. 8). Looking at the female parole population, BJS reports that since 1995 the percentage of

[2] Includes jail inmates

women has increased 10% and represented 1 out of every 8 adults on parole at yearend 2004 (Glaze & Palla).

Reentry is a difficult process for both women and men. Both must comply with conditions of supervised release, achieve financial stability, access health care, locate housing, and try to reunite with their families (Bloom, Owen & Covington, 2003). Women offenders face additional demands associated with their gender. A review of four studies by NIJ (2005) found the various treatment programs "share the premise that the needs of women inmates differ in many respects—physically, emotionally, psychologically, and socially—from those of their male counterparts. The implementation of rehabilitation programs specifically designed with those differences in mind can effectively address the needs of female inmates and identify factors which may impede their ability to succeed post-release" (p. 7).

Bloom, Owen and Covington (2003) suggested that targeting women's pathways to offending—substance abuse, material needs and addressing victimization, trauma histories and mental health conditions was one approach. O'Brien (2001a) interviewed women on parole who reported that success on parole was "as easy as baking a cake" and involved addressing material and social concerns. Dowden and Blanchette (2002), in a meta-analysis of treatment program outcomes, found that lower recidivism rates among female drug users were associated with an intense program of structured drug treatment. Richie (2001) suggested that access to childcare and transportation, safety from abusive partners and probation, and program staff availability beyond business hours contribute to successful re-integration, particularly for women offenders. Other studies have examined the delivery of post-prison services, with case comprehensive management services most closely associated with positive outcomes for women (Pearl, 1998; Zhang, Roberts, & Callahan, 2006).

Dodge and Pogrebin (2001) examined the collateral costs of imprisonment for women and how they complicate reentry. They stated that reestablishing relationships and social ties often cause a barrier to a woman's reintegration to society, as the criminal stigma and loss of certain rights are impediments to their success. Along with the painful stigmatization, come shame, guilt, and social alienation which also hinders reintegration and reunification for women. One of the most crucial forms of capital required for women's successful reentry is social capital; yet women offenders as a group experience the highest levels of capital deficits (Reisig, Holtfreter, & Morash, 2002). Such deficits include family support, education and job skills. Reisig and colleagues found that these social capital deficits can be attributed to women having weaker social networks from which to draw. They suggested that younger women offenders who are less educated and have low levels of monthly income are more likely to have social networks low in social capital. This may also have a dramatic impact on reentry for women and their resistance from recidivism especially for poor women, as they have significantly lower levels of emotional and overall support. Flavin (2004) also asserted that along with the material needs of reentry shared by women and men, family support was critical to women's success on parole. Rumgay (2004) concurs in suggesting that parole assistance related to material, social and psychological concerns is correlated with successful reentry. Rumgay adds that successful parole performance is also related to a re-imagining of identity for women offenders.

Two current studies examine the experience of parole for women. Marilyn Brown (2003) investigated the role of motherhood in the parole process in her sensitive description of parole in Hawaii. Patricia O'Brien (2001b) examined the transition from prison into the free world through case studies of 18 women returning to the community. These studies have identified gender differences in the parole period, which include:

- Responsibilities for children and other family members
- Continuing problems with substance abuse, personal violence, housing and employment
- Fewer programs that target their pathways to offending.

Criminal Careers and Recidivism

There have been relatively few studies of recidivism among females and even less research examining the criminal career patterns of adult male and female offenders as they relate to recidivism. Stuart and Brice-Baker (2004, p. 29) stated that "[t]he very limited amount of female-specific recidivism research suggests the presence of gender-specific differences between men and women in variables related to offense patterns." They examined 26 variables related to women's recidivism and found that five particular factors were significantly correlated with recidivism: age, arrests while under some form of community supervision; offense type; age of first imprisonment and positive attitudes toward release. They found that a sixth variable, quality of health care in prison approached statistical significance.

In applying the concept of career criminality to women, De Lisi (2002) examined the records of 500 female and male offenders who had a minimum of 30 arrests each. He found that recidivist women were similar to their male peers, in that their criminal careers were both chronic and versatile. Women offenders, De Lisi said, were "disproportionably involved in forgery, fraud and prostitution, whereas men were disproportionably involved in rape, robbery and assault" (p. 27). Significant gender differences were found for some demographic characteristics (age of onset, for example) and some criminal career indicators.

Uggen and Kruttschnitt (1998) also explored the effect of gender on criminal careers and found that gender differences on the predictors of desistance depend on the specific domain of behavior. They found that perceived risks of crime were less important in determining recidivism

among female offenders. Steffensmeirer and Haynie (2000) found that while the structural sources of high levels of female offending resemble closely those influencing male offending, these macrosocial factors tend to be stronger on male offending rates (p. 405). .

In addition to examining the experience of parole, O'Brien (2001b) also summarized studies on female recidivism. On some dimensions, factors were similar to those of men: demographic variables (such as race and age); job stability and income; substance abuse and treatment history; educational attainment; arrest and offense history. She found, however, that female recidivism was different in terms of two family dynamics: unstable living situations and partner abuse. Specifically, Harm and Phillips (2001) found that, for women, relapse, employment difficulties and instability contributed to recidivism. Archwarmety and Katsiyannis (1998) argued that age at first offense and severity of current offense were strong predictors of recidivism of women. In a study of the Statistical Information Scale, Bonta, Pang and Wallace (1995) discovered that this instrument was less useful in predicting recidivism for women than it was for men. Dowden and Blanchett (2002) reported that recent meta-analytic research has documented that substance abuse plays an important role in the development of current and future criminal behavior for women, and also a strong predictor of recidivism. Uggen and Kruttschnitt (1998) and Benda (2005) showed that the present use of illegal drugs and a prior criminal history increases the risk of arrest more than twice as much for women in jail than for men.

Predicting Recidivism

Another area of current research involves predicting recidivism according to risk of re-offending. These actuarial approaches attempt to predict the recidivism of specific individuals for purposes of parole supervision and, increasingly, for service provision (Andrews, Bonda, & Wermith, 2006). There is a debate, however, about the effectiveness of these instruments to

predict the recidivism of women, using instruments that were designed to measure and predict the behavior of men (Bloom, Owen & Covington, 2003; Reisig, Holtfreter & Morash, 2006). Many argue that existing tools fail to consider the overall context of women's offending; specifically their lower socio-economic class, their higher rates of drug offending and their victimization experiences when compared to male offenders (Holtfreter & Morash, 2003; McShane, Williams & Dolny, 2002).

Sampson and Laub (1993) suggested that desistance from crime can be explained aside from delinquency by social bonding that occurs in adulthood transitions that represent turning points in one's life-course trajectory. Strong social bonding, including having an attachment to stable employment and entering into secure marriages increases one's chances of desistance from crime (Benda, 2005). Although Benda asserted that attachment with a living partner who engages in unlawful behavior actually enhances the probability of crime for men and women, these relationships have a higher negative influence on women in particular. This study found that living in an urban residence, childhood and recent abuses, selling drugs, stress, and depression are all strongly associated with recidivism for women.

Similarly, studies of offense specialization have primarily focused on male offenders, but recent studies have included female offenders. In examining gender differences, Mazerolle, Brame, Paternoster, Piquero and Dean (2000), found relationships between age at onset and offending specialization were invariant, contrary to the findings of Kempf's (1986) study that found greater offense specialization for males than females. These studies using the 1958 Philadelphia birth cohort data were limited to the official records up to age 26. Research on adult offenders using official records by Cohen (1983, 1986), examining incapacitation and criminal careers (Blumstein, et al., 1988) suggests that incarceration has a limited impact on reducing

crime and that there is high specialization in drug offending. Consequently Cohen (1986) argued that if research provides evidence of offense specialization it may be possible to improve crime control policies by focusing on particular types of offenders.

Summary

This literature highlights several salient factors concerning female recidivism:

- Just as women commit fewer crimes than males overall, their recidivism rates are somewhat lower than males in most categories.
- Women tend to commit non-violent crimes, most notably drug offenses and property crimes that are often related to substance abuse.
- The context of offending, and correspondingly, the context of reentry and parole outcomes for women is shaped by gender-related variables, such as relationships with family and children, lower cultural capital and additional challenges of reentry related to their status of women in their communities.
- The findings on criminal careers and women are sparse and often inconsistent.

So how do these findings provide a foundation for understanding the recidivism patterns for women prisoners? First, it would be expected that the lower crime rates for women overall would translate into lower recidivism rates post-release. This project was designed to disentangle the recidivism patterns of women from the total sample and examine these outcomes for women specifically. As a first step, this project did not make direct comparisons to the male sample but instead begins with basic description of these patterns and outcomes for the female sample. Part 1 of the findings section below replicates many of the original BJS tables and provides the specific details for women.

Second, prior findings suggest that the context and experience of female offending (for example, histories of personal abuse, the chronic nature of substance abuse, lack of social and economic resources, and on-going relational responsibilities and conflicts) also shapes parole performance. The BJS data, however, did not allow investigation of these questions. The data set

contains only the obtainable official records of the four measures of recidivism and does not permit any analysis of these contextual variables. Measures of these individual, contextual and experiential factors, particularly those suggested by the work on cultural capital and the collateral damage of imprisonment and the descriptive work of Brown (2003) and O'Brien (2001b) are also missing from this data set. Most researchers (see Bloom, Owen & Covington, 2003 for a review) have found that the nexus of violence and trauma histories, mental illness and subsequent substance abuse make a significant contribution to female offending. Correspondingly, treatment of these issues should have an effect on post-release behaviors. The BJS data set lacks these variables as well. These "micosocial" or social capital measures were also absent in the BJS data set.

Third, the literature suggests that the notion of "criminal careers" for women has also been neglected. This project makes an initial foray into this territory in testing analytic strategies that explore the concept of offense specialization and career patterns among women. These findings are reported in Section 2.

Current Study

This report describes the recidivism patterns of the female subsample of prisoners released in 1994, and where appropriate, makes comparisons to the patterns of the total sample reported by Langan and Levin (2002). This study, it must be noted, did not intend to provide specific gender comparisons between female and male prisoners. Comparisons to the total sample, however, do provide an approximation of gender comparisons as the total sample is overwhelmingly male at 92%. In addition to replicating many of the analyses conducted by Langan and Levin specifically for females, several research questions specific to the female sample are examined:

- Does recidivism among women vary by prior criminal history and type of incarceration offense?
- Does recidivism among women vary by number of prior arrests, time served and age at release?
- What predictors of recidivism can be found among women?
- Do female offenders commit crime similar to their incarceration crime before and/or after release?
- Are crimes committed by women offenders predictable based on incarceration offense type, criminal history or demographic characteristics?

Research Design and Methods

A retrospective longitudinal design was used to examine the recidivism and criminal careers of a prison release cohort of female offenders during a 3-year follow-up period.

Data Source

This research used the secondary data on the recidivism of prisoners released in 1994 from the 3-year follow-up study conducted by the Bureau of Justice Statistics (Langan & Levin, 2002). The original study included inmates discharged from prisons in 15 states (Arizona, California, Delaware, Florida, Illinois, Maryland, Michigan, Minnesota, New Jersey, New York, North Carolina, Ohio, Oregon, Texas, and Virginia), representing two-thirds of all prisoners released in the United States in 1994. The data represent a combination of official criminal record data from State and FBI criminal history repositories and prison records kept by State departments of corrections. According to Langan and Levin (2002), the data underestimate the actual recidivism rates because it is often difficult to match the person identified in the police reports to the existing information in the repositories and sometimes the information is just not sent to the State or FBI repository.

For the original BJS study, a sample of 38,624 prisoners was drawn from the study population of 302,309 inmates, sampling by state for 13 offense categories. In some states with low incarceration rates (Delaware and Minnesota) all of the released prisoners were included, whereas in at least one state (California) "it was necessary to double sample sizes to improve the precision of estimates" (Langan & Levin, 2002, p. 12). Each case was assigned a weight based on the probability of selection (by type of offense within state) so that the sample could be representative of the original study population.

The final BJS sample of 33,796 inmates, representing 272,111 inmates, was selected based on meeting four criteria: having a RAP sheet in the State criminal history repository; the released prisoner did not die during the 3-year follow-up period; the prisoner's sentence was greater than 12 months; and the release was not a release to custody, transfer, a result of the inmate being absent without leave or escaping, an administrative release, or a release on appeal. The original BJS analysis sample is 8.7% female and 91.3% male, 50% white and 48.5% black with 24.5% of Hispanic origin, and 44.1% were under age 30 at the time of release (Langan & Levin, 2002).

Secondary data were obtained from the Inter Consortium for Political and Social Science Research (ICPSR) website through agreement of the California State University. The revised data, SPSS commands, and codebook were downloaded from the website following amendments that were made in the summer of 2003. The cases representing male offenders were deleted prior to processing data due to the large number of variables and observations. In recreating the SPSS data set for females only, the values for missing data were set as missing and out of range variables checked. The original data set was reduced to include those cases in the BJS analysis sample and variables measuring individual arrests were deleted after creating summary career

measures. A weighted sample of 2,122 female prisoners was used for our analysis, representing 23,562 women in the 15 state sample.

Measures

Each case contains data on up to 99 arrest cycles that represent the individual's entire adult criminal history from first arrest to most recent rearrest during the 3-year follow-up. Each arrest cycle is defined by the date of arrest and includes 64 variables on the arrest and the adjudication, such as total number of arrest charges and the level of each offense as well as date of adjudication and disposition for each offense charged.

The four measures of recidivism included in the file are: rearrest, reconviction, return to prison (for any reason), and return to prison for a new sentence. The data prepared by BJS contains measures of the number of prior arrests, and number of prior convictions as well as dichotomous measures of any prior arrest and any prior conviction. Age at release is measured at both the ordinal and interval level and depending on the analysis could be used either way. Time served in months and percent of time served for the original sentence are included as is the type of incarceration offense, which is coded as violent, property, drug, public order, or other.

A measure of offense specialization used in research by Piquero et al. (1999) and Mazerolle et al. (2000) to examine criminal careers of delinquents is the diversity index. "The diversity index reflects the probability that any two offenses drawn randomly from an individual's particular set of offense belong to separate offending categories" (Mazerolle et al., p. 1153). It is calculated using the following formula:

$$d_i = 1 - \sum_{m=1}^{M} p^2_m$$

where p_m is the proportion of the individual's offenses in each of the $m = 1,2, \ldots M$ offending categories. Using the BJS data there are 5 categories of offense types (and unknown). The

diversity index ranges from a value of 0, which means there is no diversity in the career and all offenses are of the same type, to a value of 1, which equals the number of offending categories. The greater the specialization, the lower the value in the diversity index and higher values in the index reflect more versatility or diversity.

Several new measures were created for the current study, including age at onset, type of first offense in the criminal career, type of first recidivism offense, date of first and last arrests, and time to first rearrest and to first rearrest for a drug offense. In addition, summary measures were created based on arrests during the criminal career, such as total number of arrests before and after incarceration for each type of offense (violent, property, drug, public order, and other), yearly arrest rates, total number of arrests, and proportion of offenses of each type during the career. To investigate patterns within broader offense categories, for some of the analyses, the type of offense was re-categorized to break out drug trafficking cases from drug possession cases, and less serious from more serious property offenses.

Data Analysis

The purpose of this study is to conduct further analysis of the patterns of recidivism among female offenders. The first section of the study replicates many of the tables in the study by Langan and Levin (2002) and was primarily descriptive. Thus, univariate and bivariate frequency distributions or cross-classification analysis with chi-square tests and other measures of association are the primary statistical techniques used in the analysis. Due to the large sample size when the data are weighted (n = 23,562), the results of the chi-square tests will be statistically significant in most cases but may not be substantively significant. Even though the measures of association, phi and Cramer's V, are based on chi-square, they do indicate the relative strength of that relationship.

The second section of the study examines criminal career patterns and prediction of recidivism. One of the issues identified in the literature is the degree to which female offenders specialize in certain types of offenses. Thus, we were interested in whether females currently incarcerated for a drug offense (perhaps due to the war on drugs) had previous arrests for drug offenses and whether they were re-incarcerated for a new drug offense. Based on our preliminary analyses, we hypothesized that there would be no evidence of offense specialization and those who served time for a drug offense would be less likely to be rearrested for a drug offense than for some other type of offense. These hypotheses about offense specialization were tested with several different analyses, including cross-classification. Second, the offense transitions for all offenses up to the tenth arrest were examined. Third, the proportion of offenses within a career was calculated to create a measure of offense concentration, by dividing the total number of arrests of each type (for the 5 types) by the total number of arrests. Cross-classification with the type of incarceration offense was used to measure the ability to predict criminal careers.

Cross-classification analyses and correlation were used to examine the bivariate relationships between the probability of a new arrest and potential predictors of recidivism. Correlation was used for the variables measured at the interval level such as age at release and number of prior arrests and cross-classification was used for nominal or ordinal level variables such as incarceration offense type. Following these analyses, several multivariate analyses were conducted. For example, logistic regression was used to model the probability of a new arrest following incarceration with criminal history and demographic variables used as predictors. In addition, multiple linear regression was used to model the number of new arrests using the same set of predictor variables. Finally, survival analyses were used to examine the probability and time to a new arrest by various factors. Both SPSS Life Tables and Cox Regression survival

analyses were conducted adding covariates to the model and using the type of incarceration offense as the strata to test for differences between the survival curves based on the type of incarceration offense.

Originally, examination of the possible impact of prison programs on post-release recidivism was planned but the limitations of the data set prohibited exploration of this question. Data on drug program and education participation was only partially available from three states (Illinois, New York and North Carolina). Moreover, where data were available a very low percentage of cases indicated participation in the programs (11% or less) and in most of those cases program completion was unknown, making the data insufficient for any meaningful analysis. Thus, we were unable to assess the impact of prison programs on recidivism patterns due to limitations of the data.

Summary of Findings

This project was designed to replicate the BJS findings by separating out women from the total sample and to provide some preliminary insight into predictors and career patterns among women. Even though statistical tests were not run to compare female and male offenders,[3] these data suggest that the females do differ slightly from males in terms of demographics and criminal history. Analyzing the data for the female sample, we found that, compared to the total sample, women:

- Were more likely to have served time for property and/or drug offenses than violent offenses
- Had similar prior arrest rates
- Were less likely to have at least one prior conviction
- Were less likely to have served a prior prison sentence

[3] It was not the intent of this study to separate out the male sample and analyze gender differences.

- Were somewhat older at release
- Had served less time for the current offense
- Had less chronic criminal careers
- Violent offenders were less likely than drug offenders to be rearrested
- Were much less likely to be returned to prison, regardless of offense

As suggested in the prior research literature, this analysis confirmed that women in the 1994 cohort tended to commit fewer crimes post-release than the total 1994 cohort (serving as proxy for the males). Among those women who were rearrested in this 3-year follow-up, they are most likely to commit non-violent crimes (as represented by drug and property and public order offenses) post-release. The majority of women who served time for a violent offense originally did not re-offend in this three year period with a violent crime. However, those incarcerated for property and drug offenses had higher concentrations of these offenses during their careers. Arrest rates before and after incarceration are highest for property offenders. In comparison, arrest rates for violent and drug offenders are high before incarceration, but only higher for drug offenders after incarceration. In terms of predictors, numbers of prior arrests, age at release and race are significant factors related to recidivism, as measured by rearrest. Time to a new arrest during the 3-year period following incarceration is shortest for those incarcerated for a drug possession offense, followed by a property offense, and longest for those incarcerated for a violent offense.

The following two sections provide the detailed analyses. The primary purpose of the first section of the study is descriptive, examining the characteristics of those women who have new arrests or convictions within 3 years following release from state prison. In the second section, exploratory analyses are conducted that examine possible correlates and predictors of recidivism.

Findings Part I:
Describing Characteristics of Female Prisoners and their Recidivism

Langan and Levin (2002), in the original BJS analysis, used four standard measures of recidivism: rearrest, reconviction, resentence to prison and return to prison with or without a new sentence. In a series of tables, they describe the results across these measures for the entire sample. The present analysis reproduces selected tables for females using these four measures of recidivism.

Table 1 on the following page replicates Table 1 of the BJS report (p. 2), displaying a profile of the 23,562 female inmates in this study sample in comparison to the total BJS analysis sample. As Table 1 shows, women were somewhat similar to the total sample in terms of race and ethnicity, with women slightly more likely to be African American and somewhat less likely to be Hispanic. As a group, women were much more likely to be older at the time of their release in 1994. These data mirror national prison populations across the other descriptive variables: women were much less likely than the total sample to have served time for a violent offense (12.9% compared to 22.5%); and much more likely to have been sentenced originally for a drug offense (42.3% compared to 32.6%). Women were sentenced to and served shorter sentences in comparison to the full sample (women were in prison approximately 13 months on average whereas the time served for the full sample was 20 months), but the percent of time served was about the same (about one-third of the original sentence). Women averaged nine arrests prior to the current incarceration yet only one third had previously served time in prison.

Table 1. Profile of female and all prisoners released in 1994 from prisons in 15 states

Characteristic	Females (8.7%)	All
	n = 23,562	N = 272,111
Race		
White	48.2%	50.4%
Black	50.3	48.5
Other	1.1	1.1
Ethnicity*		
Hispanic	15.2%	24.5%
Non-Hispanic	63.2	75.5
Age at release		
14-17	0.2%	0.3%
18-24	12.9	21.0
25-29	23.3	22.8
30-34	26.8	22.7
35-39	19.0	16.2
40-44	11.4	9.4
45 or older	6.4	7.6
Offense for which inmate was serving a sentence		
Violent	12.8%	22.5%
Property	36.5	33.5
Drugs	42.3	32.6
Public-order	6.0	9.7
Other	2.3	1.7
Sentence length (in months)		
Mean	44.1	58.9
Median	36.0	48.0
Time served before release (in months)		
Mean	13.0	20.3
Median	8.4	13.3
Percent of sentence served before release	31.7%	35.2%
Prior arrest	92.8%	93.2%
Mean number of prior arrests	9.1	8.8
Median number	6.0	6.0
Prior conviction	89.1%	89.8%
Mean number	4.9	4.9
Median number	3.0	3.0
Prior prison sentence	34.0%	43.6%

Notes: * More than 20% missing data for ethnicity for females
Missing data not included in table, but included in calculations
Data for all prisoners from Langan and Levin (2002)

Four Measures of Recidivism

The next series of tables focus on the four measures of recidivism: rearrest; reconviction; and resentence, both with new crimes and technical violations.[4] In the overall sample of 272,111 of both female and male former prisoners, Langan and Levin (2002, p. 1) found that, within 3 years from their release:

- 67.5% of all the prisoners had been rearrested
- 46.9% were reconvicted of a new crime
- 25.4% were resentenced to prison for a new crime
- 51.8% were back in prison, either for a new prison sentence or a technical violation of their release.

Released prisoners in the combined sample with the highest rearrest rates were robbers (70.2%); burglars (74%); larcenists (74.6%); motor vehicle thieves (78.8%); those in prison for possessing/selling stolen property (77.4%); or those with some form of weapons charge (70.2%). The lowest rearrest rates for the combined sample were those originally imprisoned for homicide (40.7%); rape (46%); other sexual assaults (41.1%) and driving under the influence (51.5%).

Table 2. Recidivism rates for female offenders

Percent of released prisoners who, within 3 years were:							
Rearrested		Reconvicted		Returned to prison with a new prison sentence		Returned to prison with or without a new prison sentence	
N	%	*n*	%	*n*	%	*n*	%
13,573	57.6	8,934	37.9	3,945	16.7	7,119	30.2

*Due to missing data, prisoners released in Ohio were excluded from the calculation of percent reconvicted and prisoners from Ohio and Virginia were excluded from the calculation of those returned to prison with a new sentence.

[4] As indicated in the methodology, these variables were created by BJS for the original report.

In comparison to the overall sample, fewer women were recidivists. More than half (57.6%) of the women offenders were rearrested; 37.9% were reconvicted and 16.7% were resentenced to prison in the three year follow-up (see Table 2).[5] The time to recidivism and the types of offenses for which the offenders were rearrested, reconvicted, or resentenced are discussed next along with profiles of the subsamples or females rearrested, reconvicted and resentenced.

In addition to examining the rate of recidivism, it is important to see how quickly individuals return to crime following release. Figure 1, below, mirrors the BJS Figure 1, which displayed the data from Table 2 (Langan & Levin, 2002, p. 3). The figure displays the cumulative percent of released female inmates who were rearrested or reconvicted or returned to prison within 3 years for 6-month and then yearly intervals. Overall, for the women offenders in the 1994 release cohort, less than half of all those rearrested in the 3 year follow-up were arrested in the first 6 months (a total of 23.3%). In the first year this number had increased to 34.5%. Rearrests increase about 15% for year 2 and year 3 of the follow-up period. Thus, the first year appears to be the period of highest risk for rearrest. At the end of the 3 year follow-up, about 44% of all the women released in the 1994 sample were reconvicted. This appears to not differ significantly from the total sample, when compared to the data from Langan and Levin. The largest difference between the women and the total sample is in return to prison with a new sentence. Of the over 23,000 women released in 1994, just under 15% were returned to prison at the end of the follow-up period compared to about one-quarter of the total sample.

[5] Numbers and percentages differ slightly across this report due to differences in usable data and reporting format within categories and across jurisdictions.

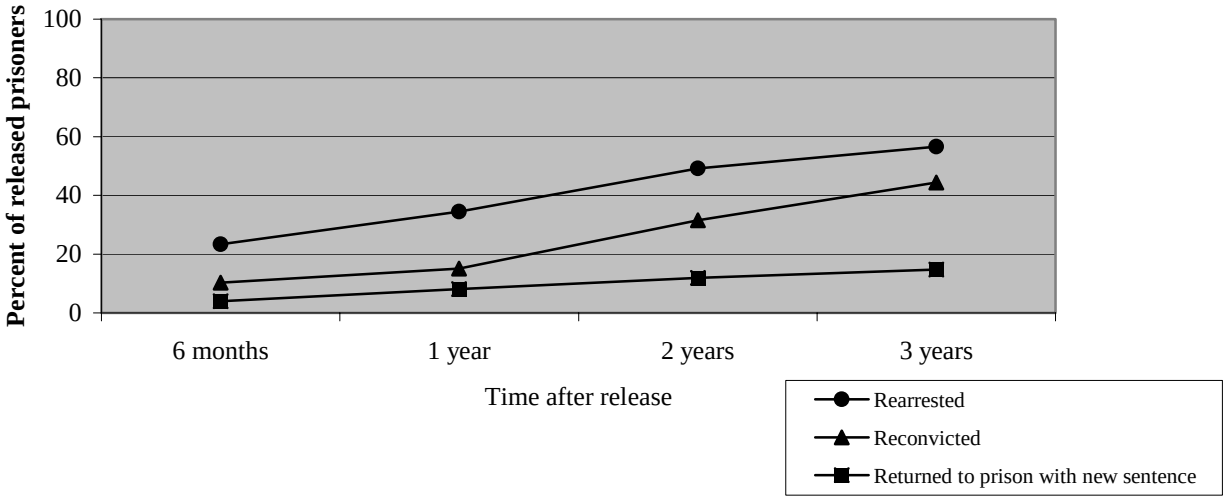

Figure 1. Time to recidivism for female prisoners for specified time intervals

Moreover, comparing the data from Figure 1 to the data from the same figure for all prisoners reported by Langan and Levin (2002) indicates that the curves follows similar patterns for women as compared to all inmates, but at lower rates.[6] Women are most like the total sample at the 6-month mark and least like the total sample at the 3-year mark.

The BJS data also allow estimates of time to first imprisonment. As seen in Table 3, less than 10% of females were re-imprisoned within the first 12 months following release (7.3%) and the cumulative rate of recidivism, as measured by re-imprisonment nearly doubled by the end of 2 years (12.7%), but dropped off slightly during the third year to a cumulative 17.4%.[7] The mean time to first re-imprisonment for women was 17.6 months and the median time was 16.1 months.

[6] The nature of the data in the original dataset made it very difficult to separate male and female characteristics according to time to rearrest, and, as a result, comparison between men and women was not available for presentation. Again, we used "all" prisoners as a proxy here. However, since men represent the vast majority of the sample, it can be inferred that the data from all prisoners is greatly representative of males.

[7] These data are based on the 21,678 prisoners for whom there was data on incarceration; 82% of them were not re-incarcerated.

Table 3. Months from release in 1994 to first incarceration for female inmates

Months	Percent	Cumulative Percent
1-6 months	3.0%	3.0%
6-12 months	4.3%	7.3%
12-24 months	5.4%	12.7%
24-36 months	4.7%	17.4%

These analyses of the BJS data indicate that the rates of recidivism are somewhat lower for female offenders than all inmates, but the next question to be addressed is whether differences exist in the characteristics of the women who recidivate. The next set of analyses examines the profiles of recidivists and compares the female recidivists to the sample of females and the overall sample of released prison inmates.

Profiles of Females who Recidivate

Of the 23,562 women in the 1994 release cohort, almost 60% (13,573 or 57.6%) were rearrested within 3 years. Table 4 displays the demographic and criminal history characteristics of those rearrested, reconvicted, resentenced, and re-confined and can be compared to the profile of the entire cohort of females in Table 1.[8] In the rearrest subsample, compared to the total release cohort, there was a higher percentage of African-Americans (55% to 50%), and the women tended to be a bit younger. Drug and property offenders represented the majority of those rearrested (43.2% and 39.1% respectively), but the percentage of violent offenders was lower (10.8% of those rearrested and 12.9% of the entire cohort) and the percentage incarcerated for a

[8] These analyses do not lend themselves to statistical tests as the purpose is only to describe the profile of each group. Statistical tests are conducted in examining the likelihood of rearrest or reconviction by prisoner characteristics in the next section.

Table 4. Profile of female prisoners by type of recidivism

Characteristic	Rearrested n = 13,573	Reconvicted n = 8,934	Resentenced n = 3,944	Reconfined n = 7,119
Race				
White	43.7%	44.2%	45.3%	42.1%
Black	55.0	54.4	53.4	56.6
Other	0.9	0.7	0.1	0.5
Ethnicity*				
Hispanic	15.6%	16.9%	20.3%	16.4%
Non-Hispanic	66.3	65.3	59.9	64.2
Age at release				
14-17	0.1%	0.0%	0.0%	0.0%
18-24	12.7	12.3	12.1	12.5
25-29	26.4	25.6	25.0	25.8
30-34	29.1	31.5	28.1	30.6
35-39	17.8	18.7	19.6	18.4
40-44	9.9	7.8	8.3	8.1
45 or older	4.0	4.1	6.9	4.6
Offense for which inmate was serving a sentence				
Violent	10.8%	9.7%	9.4%	10.0%
Property	39.1	39.2	41.9	38.7
Drugs	43.2	43.9	43.8	44.8
Public-order	15.8	6.2	3.0	5.4
Other	1.0	0.8	1.8	1.0
Sentence length (in months)				
Mean	38.3	35.8	35.7	38.2
Median	30.0	27.0	30.0	30.0
Time served before release (in months)				
Mean	11.7	11.5	11.5	11.8
Median	7.7	7.2	7.3	7.6
Percent of sentence served before release	32.5%	33.0%	34.8%	33.0%
Prior arrest	96.8%	96.8%	98.7%	97.9%
Mean number of prior arrests	11.2	11.5	11.9	11.3
Median number	8.0	9.0	8.0	8.0
Prior conviction	90.1%	91.6%	89.6%	91.8%
Mean number	4.8	4.9	4.8	5.3
Median number	3.0	3.0	3.0	3.0
Prior prison sentence	40.8%	41.8%	46.9%	41.7%

Note * Ethnicity has up to 18% missing data

public order offense was higher than for the entire release cohort (15.8% versus 6%). The median sentence length for rearrested women was somewhat shorter (30 months) than for the entire female release cohort (36 months) and those rearrested had served somewhat shorter mean sentences than the entire release cohort (11.7 months versus 13.0 months). As expected from the literature, the proportion of women with prior arrests is higher among those women who are rearrested than in the release cohort (96.8% vs. 92.8%) and women who were rearrested averaged 11 prior arrests in comparison to 9 prior arrests for the entire cohort. There appear to be fewer differences between those women who are rearrested and those in the release cohort in prior convictions. The percentage of those with a prior prison sentence is higher among those rearrested (40.8%) than those in the original release cohort (34.0%).

The other columns in Table 4 present the profiles of the women who were reconvicted, resentenced, or re-confined.[9] Just under 40% of the women in this release cohort were reconvicted of any offense and of those nearly 17% were returned to prison. Looking across the columns, it is possible to compare the profiles to determine differences in criminal justice system processing. There appears to be little difference between those rearrested and the other 3 groups by race, but the proportion of Hispanics to non-Hispanics increases for reconviction and re-sentencing. The age at release has the same distribution across all groups with nearly one-third of those who recidivate being in the 30-34 age group and the majority being under age 35. The type of incarceration offense does not appear to change significantly across recidivism groups with the exception of the public order category, which is not prominent for reconviction or re-sentencing. For all the other categories the patterns are the same, with the highest proportion being for drug offenders and the next highest being property offenders. The distributions for all the other variables look very similar. In sum, the profiles of those rearrested, reconvicted,

[9] Missing data for conviction and imprisonment mean somewhat smaller sample sizes for these analyses.

resentenced or reconvicted do not seem to be all that different. Comparing those rearrested to those not rearrested and the likelihood of rearrest or reconviction by these same factors may have different results.

Factors Related to Recidivism

The demographic factors related to recidivism rates for females shown in Table 5 can be compared to the data from Langan and Levin's Table 8 (2002, p. 7). There is a weak, but statistically significant relationship between race and recidivism (Cramer's V = .111 for rearrests, .089 for reconviction, .078 for new sentence, .097 for re-confinement).[10] As was shown in Table 8 for all released prisoners, Table 5 indicates that African-American females are more likely than whites to be rearrested (63.0% vs. 52.2%), reconvicted (43.8% vs. 36.2%), resentenced to prison (19.5% vs. 16.6%), and returned to prison (34.0% vs. 26.4%). Across all race categories, however, a lower percentage of females is rearrested, reconvicted, resentenced, or returned to prison. In comparison to the total sample of released prisoners where non-Hispanics have higher rates than Hispanics, the relationship between ethnicity and recidivism differs for females depending on the recidivism type, even though these are again weak relationships (Cramer's V = .099 for rearrests, .096 for reconviction, .056 for new sentence, .037 for reconfinement).[11] For example, whereas non-Hispanics are more likely to be resentenced to prison than Hispanics in the total release cohort, for females the percentage resentenced is slightly higher among Hispanics than non-Hispanics (22.3% vs. 17.9%).

[10] Due to large sample sizes, the chi-square value is unreliable (always significant) and does not portray whether this relationship is substantively important. Consequently, Cramer's V can be used to measure the strength of the association between the two variables.

[11] It is possible that these differences are related to missing data for female released prisoners as there was nearly 20% missing data across all categories of recidivism (rearrest, reconviction, resentence, reconfine). If those of unknown ethnicity are added as "non-Hispanic," these results may change.

Table 5. Rate of recidivism for female and all prisoners who were released in 1994, by prisoner characteristic

Prisoner characteristic[a]	% of all female released prisoners	% of all released prisoners	Percent of released prisoners who, within 3 years, were: Rearrested		Reconvicted		Returned to prison with a new prison sentence		Returned to prison with or without a new prison sentence	
			Female	All	Female	All	Female	All	Female	All
Percent of all released prisoners		100%	57.6%	67.5%	37.9%	46.9%	16.7%	25.4%	30.2%	51.8%
Race										
White	48.2%	50.4%	52.2%	62.7%	36.2%	43.3%	16.6%	22.6%	26.4%	49.9%
Black	50.3	48.5	63.0	72.9	43.8	51.1	19.5	28.5	34.0	54.2
Other	1.1	1.1	47.0	55.2	24.5	34.2	0.8	13.3	14.1	49.5
Ethnicity										
Hispanic	15.2%	24.5%	58.9%	64.6%	42.0%	43.9%	22.3%	24.7%	32.5%	51.9%
Non-Hispanic	63.2	75.5	60.4	71.4	42.6	50.7	17.9	26.8	30.7	57.3
Age at release										
14-17	0.2%	0.3%	32.0%	82.1%	0.0%	55.7%	0.0%	38.6%	0.0%	56.6%
18-24	12.9	21.0	56.8	75.4	38.8	52.0	17.2	30.2	29.3	52.0
25-29	23.3	22.8	65.4	70.5	43.9	50.1	19.2	26.9	33.5	52.5
30-34	26.8	22.7	62.5	68.8	46.4	48.8	18.8	25.9	34.5	54.8
35-39	19.0	16.2	54.1	66.2	40.9	46.3	19.0	24.0	29.5	52.0
40-44	11.4	9.4	49.9	58.4	27.0	38.0	12.8	18.3	21.4	50.0
45 or older	6.4	7.6	35.7	45.3	25.3	29.7	19.3	16.9	21.5	40.9
Number of released prisoners	23,562	272,111	23,562	272,111	22,373	260,226	21,900	254,720	23,562	227,788

[a] For females, missing data for race, ethnicity, or age at release were not included in the table, but were included in the crosstabulation; missing data on reconviction or return to prison were excluded from the analysis, thereby reducing the sample size. For all prisoners the sample sizes were reduced for reconviction, return to prison, and reconfinement (with or without a new sentence) due to missing data.

Female offenders tend to be older at release than all prisoners released in 1994 and the recidivism rates for those between 25 and 34 appear to be higher than for other age groups when measured in terms of rearrest and reconviction. Only 32% of females under age 18 were rearrested in comparison to 82% of the total sample, yet 56.8% of females ages 18-24, 65.4% of those 25-29, and 62.5% of those 30-34 were rearrested. This pattern remains across all categories. Again, age at release appears to be a weak predictor of recidivism (Cramers's V = .160 for rearrests, .147 for reconviction, .057 for resentences, and .106 for reconfinement).

Demographic factors are not the only variables to be considered when examining possible factors that can be used in predicting recidivism. Analyses were also conducted for criminal career variables, including type of incarceration offense, number of priors, and sentence served. When the probability of a new arrest is examined by the type of incarceration offense, it is clear that those who committed a property offense or were incarcerated for drug possession are more likely to be rearrested than others. As shown in Table 6, less than half of those incarcerated for a violent offense (48.6%) get rearrested as compared to 61.7% of those incarcerated for a property offense and 58.9% of those incarcerated for a drug offense. Although not shown in the table, those convicted and incarcerated of drug trafficking are somewhat less likely to be rearrested (51.4%) than those incarcerated for drug possession (67.9%). More than half of all females incarcerated for a public order offense (55.4%) were also likely to be rearrested, but fewer (39.3%) were reconvicted and less than 10% were returned to prison with a new sentence, even though 27.4% were reconfined. Female property and drug offenders appear to be the most similar with the highest rates of rearrest (61.7% and 58.9%), reconviction (40.7% and 39.4%), return to prison for a new sentence (21.2% and 18.2%), and return to prison with or without a new sentence (32.0%). Although statistically significant, the relationship between incarceration

offense and recidivism is weak as measured by Cramer's *V* for rearrest (.130), reconviction (.104), return to prison (.099), and reconfinement (.088).

Table 6. Recidivism rate by type of incarceration offense (BJS categories)

		Percent of released prisoners who, within 3 years were:							
Incarceration Offense Type	Percent of all released prisoners	Rearrested		Reconvicted		Returned to prison with a new prison sentence		Returned to prison with or without a new prison sentence	
	%	*n*	%	*n*	%	*n*	%	*n*	%
All released prisoners	100%	13,573	57.6	8,934	37.9	3,945	16.7	7,119	30.2
Violent	12.8	1,466	48.6	870	28.8	372	13.8	709	23.5
Property	36.5	5,307	61.7	3,503	40.7	1,581	21.2	2,753	32.0
Drug	42.3	5,867	58.9	3,922	39.4	1,658	18.2	3,188	32.0
Public order	6.0	781	55.4	554	39.3	99	8.8	386	27.4
Other	2.3	140	25.5	71	13.0	71	13.0	71	13.0
Unknown	0.1	12	52.2	12	52.2	0	0.0	12	52.2

These data on recidivism of females can be compared to the recidivism rates in terms of rearrests for the total sample as is done in Figure 2 (which replicates the figure on page 1 of Langan and Levin) using data from Table 9 from Langan and Levin (2002, p. 8). For all types of offenses, females are less likely to recidivate than those in the total sample. However, the patterns differ by type of incarceration offense. The differences between females and the total sample are greater for violent offenses and other offenses and smaller for property and drug offenses.

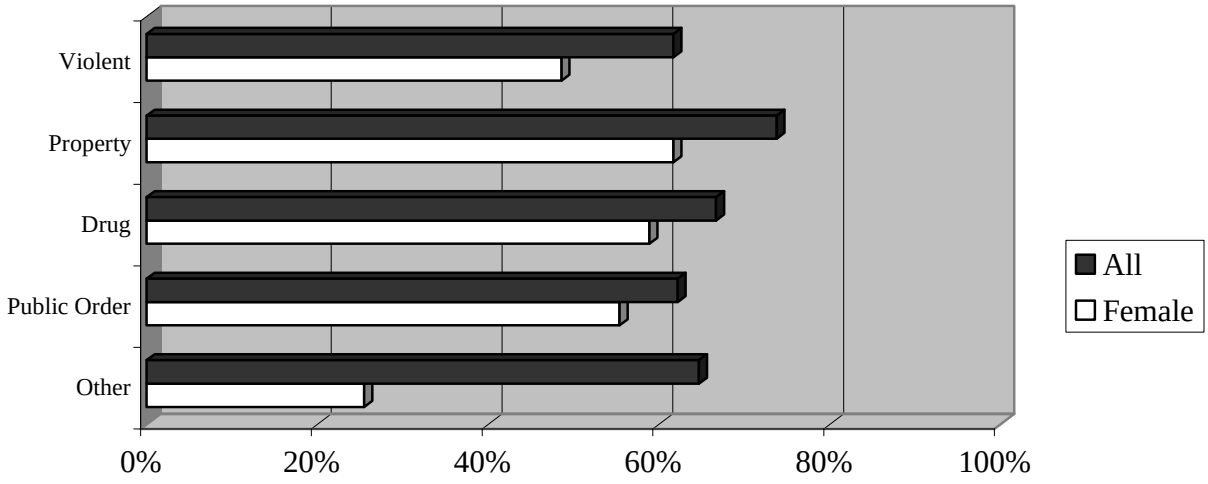

Figure 2. Percent rearrested by incarceration type

The analyses comparing different types of recidivism and factors related to the recidivism of female offenders show that they do differ from male offenders.[12] The rates of recidivism are lower for females than males, but the patterns in terms of percent who recidivate over time are similar. Race is related to recidivism for both males and females as African-Americans are more likely to be rearrested and resentenced or reconfined, but ethnicity does not appear to be as important for females. The age patterns for females also differed from males. These results also suggest that females currently incarcerated for violent offenses pose less of a threat than those incarcerated for property or drug offenses as was found for all inmates. These analyses, however, do not tell the whole picture. It is also necessary to look at the types of new arrests.

Initial Incarceration Offense Categories and Subsequent Rearrests for Women

Another way to describe the recidivism patterns of women offenders is examining the post-release arrests within offense categories. The next table (Table 7) looks at the three largest

[12] These comparisons are between the female sample and sample of all inmates, which is a proxy for males. No statistical tests were run as the data were not available for male inmates and due to the large sample sizes would be meaningless if the chi-square statistic were used.

original imprisonment offenses in terms of subsequent rearrests (by category and some specific offenses) and is similar to Table 10 in the report by Langan and Levin (2002).[13]

Table 7. Rearrest categories and select offense types by type of offender

	Violent (n = 3,025)		Property (n = 8,607)		Drug (n = 9,965)	
Offense Categories	*f*	%	*f*	%	*f*	%
Violent	496	16.4	950	11.0	922	9.2
Robbery	163	5.4	211	2.5	275	2.8
Assault	318	10.4	713	8.3	583	5.8
Property	596	18.0	3,693	42.9	2,086	20.9
Burglary	135	4.5	753	8.7	443	4.4
Larceny	333	11.0	2,537	29.5	1,044	10.5
Fraud/forgery	63	2.1	973	11.3	403	4.0
Stolen property/other	148	4.9	718	8.3	657	6.6
Drug	583	19.3	1,810	21.0	3,898	39.1
Drug possession	325	10.8	1,066	12.4	2,550	25.6
Drug trafficking	192	6.4	418	4.9	1,347	13.5
Other drug	295	9.8	929	10.8	1,913	19.2
Public Order	567	18.8	1,950	22.7	2,446	24.5
Other/unknown	145	4.8	1,113	12.9	720	7.2
Probation/parole violation	104	3.4	396	4.6	371	3.7

Note: Percentages do not add to 100% as individuals can be rearrested for more than one type of offense.

Just over 10% of the entire female release cohort had been originally imprisoned for violent crimes. Of these 3,025 women, about half (48.5%) had been rearrested for any offense in the three year period. There was no real pattern in these rearrests: none of the violent offenders were rearrested for homicide in the follow-up period, but 16.4% were rearrested for a subsequent

[13] Special thanks to Ericka Schmidt of BJS who ran the analysis used in creating this table; this original dataset is not exactly the same as the one used for the rest of the analyses due to differences in the weighting scheme.

violent offense, 18% for a property offense, 19.3% for a drug offense, and 18.8% for a public order offense. Table 7 further demonstrates this in terms of selected specific offenses.

Property offenders made up just under 40% (38.9%) of the imprisoned women. Almost two-thirds (61.7%) of these 6,607 women were rearrested for any offense. Unlike those incarcerated for a violent offense, property offenders were most likely to be rearrested for property offenses (42.9%), with drug offenses (21%) and public order crimes (22.7%) occurring at about equal rates. In terms of selected specific offenses, women who had committed property offenses were primarily rearrested for larceny (29.5%), drug possession (12.4%), and fraud or forgery (11.3%).

At 42% (9,965), drug offenders make up the largest proportion of women in the 1994 cohort. Over half (58.9%) of these women were rearrested for any offense, but the data suggest that drug offenders are most likely to be rearrested for drug offenses (39.1%), with public order (24.5%) and property crimes (20.9%) occurring at somewhat lower rates. One quarter of drug offenders were rearrested for drug possession and another 13.5% for drug trafficking. The probability of a violent offense was quite low at 9.2%.

These results suggest that the type of crime for which a female is incarcerated may be related to the number of rearrests for different types of offenses, but varies by type of offense. Those incarcerated for a violent offense had lower rearrest rates than property or drug offenders and were not likely to repeat violent offenses. In comparison, those incarcerated for a property or drug offense were highly likely to be rearrested and were also likely to repeat these offenses. Whether these patterns are true for the entire criminal career is examined in Part 2 of this report. The next section looks at other factors related to recidivism—number of prior arrests and length of time served in prison.

Criminal Career Measures: Number of Prior Arrests and Time Served

Research on both male and female offenders using official record data has shown that the number of prior arrests is a strong predictor of recidivism (Tracy & Kempf-Leonard, 1996). According to Uggen and Kruttschnitt (1998), prior criminal history increases the risk of arrest by twice as much for females than males. The relationship between number of prior arrests and recidivism is displayed in Table 8 for the females in the BJS sample. A partial replication of Table 12 from Langan and Levin (2002), the results in Table 8 for females show about the same pattern as for the total release cohort. For those prisoners whose current offense is their only prior offense, there is a 21.1% probability of rearrest within 3 years. This increases to 37.1% for those with two prior arrests and up to 51.4% for three prior arrests, but dips slightly for 4 prior arrests. There is more variation with 5, 6 and 7-10 prior arrests, but overall those with 5 or more prior arrests have a 50% or greater chance of a rearrest during the follow-up period. With a value of Cramer's *V* of .335, the relationship between number of prior arrests and recidivism is stronger than any of the other factors previously examined.

Table 8. Any rearrest by number of arrests prior to release

Number of arrests prior to release	Percent of all releases	Percent of releases who were rearrested within 3 years:
All released prisoners	100.0%	57.6%
1 prior arrest	7.2	21.1
2	9.3	37.1
3	8.1	51.4
4	7.6	42.1
5	7.6	50.0
6	8.2	64.2
7 to 10	18.1	58.6
11 to 15	15.1	75.2
16 or more	18.8	75.8

Prior experience within the criminal justice system can also have an impact on the recidivism of offenders. Some research suggests that incarceration has a limited impact on reducing crime (Blumstein et al., 1988). In the current study of those released from prison in 1994, the majority of female inmates (58.5%) were serving their first prison sentence and close to one-third (34.4%) had a prior commitment. Those with a prior incarceration had a higher probability of rearrest compared to those with no prior commitment (68.3% vs. 51.9%). The percent time served in prison was not found to be related to recidivism for the full release cohort (Langan & Levin, 2002, p. 11), but the results for females shown in Table 9, which partially replicates Langan and Levin's Table 13, indicate that females serving 6 months or less had a much higher probability of rearrest (63.4%) in comparison to almost all other female prisoners except those who served 25-30 months; generally the rearrest rate was close to the overall rate of 57.6%. For the small group of those serving a long sentence of more than 5 years (1.3% of cohort), the rearrest rate was quite low (35.7%). The relationship between percent time served and recidivism is weak with a Cramer's *V* of .132.

Table 9. Any rearrest by length of time served

Time served in prison	Percent of all releases	Percent of releases who were rearrested within 3 years:
All released prisoners	100.0%	57.6%
6 months or less	40.8	63.4
7-12	27.5	54.3
13-18	11.1	55.3
19-24	6.4	51.0
25-30	4.5	61.6
31-36	2.8	51.3
37-60	5.2	45.1
61 months or more	1.3	35.7

Even though these analyses, which for the most part have replicated the tables in the report by Langan and Levin (2002), provide a descriptive picture of the recidivism patterns for women in the 1994 release cohort, further multivariate statistical analyses provide greater explanatory and predictive possibilities. To this we turn in Part 2 of the Findings section.

Findings Part 2:
Explaining and Predicting Female Recidivism and Criminal Careers

The analyses and results presented in this section concern the patterns of recidivism among female offenders, the offense specialization of female offenders, and the predictive power of offense types and demographic characteristics in determining criminal career paths. In order to examine the patterns of recidivism amongst female offenders, data concerning pre and post offenses are compared to the incarceration offense data. For determining the predictive power of offenses and criminal career patterns, the broad categories of offense type are examined in terms of before and after offense data, and are applied to rigorous statistical analyses. The analyses have been conducted using the rearrest measure of recidivism. Even though some would argue that this is a less precise measure than reconviction, due to missing data in this data set, it is a better measure for our purposes.

Patterns of Recidivism

The first set of analyses examined univariate frequencies of rearrest and bivariate tables of rearrest by various predictors. Nearly 60% of the females were rearrested at least once within the 3-year follow-up period. The type of first rearrest is indicated in Figure 3. The majority of females (43%) had no new arrest, only 5% were arrested for a violent offense and the most common type of first rearrest was for a property offense (20%). Fewer than that, just 17% were arrested for a drug offense and 11% were arrested for a public order offense.

The picture is somewhat different when the original categories are further divided into more specific categories (data not shown). The violent crimes are primarily robbery and assault offenses (5.2%). Females are also more likely to be rearrested for serious property crimes (15.5%) than minor property offenses (4.2%). A new arrest for drug possession is more than twice as likely (12.1%) as a new arrest for trafficking (4.7%). In addition, a moderate percentage of first rearrests are for other public order offenses (10.0%).

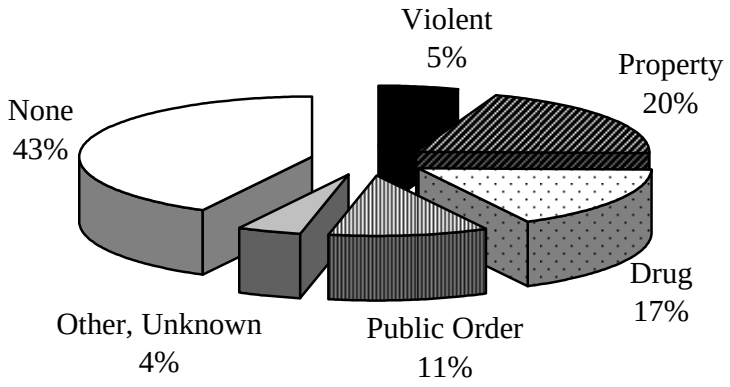

Figure 3. Rearrest categories for female offenders for first new arrest following release

The distribution of type of first arrest following incarceration is different from the distribution of further rearrests, which is shown in Figure 4. [14] Excluding those with no new arrests and looking at all rearrests in the 3-year period following incarceration, it is apparent that females are equally likely to have a new arrest for a property offense (28.6%) or drug offense (28.3%). Violent offenses are less likely at 10.6%, but arrests for public order offenses, such as prostitution and DUI, are higher at 22.8%.

[14] Based on numbers provided by Ericka Schmidt from BJS; percentages represent those with any new arrest of that type out of 23,583 female offenders. Again, we thank Ms. Schmidt for her kind assistance.

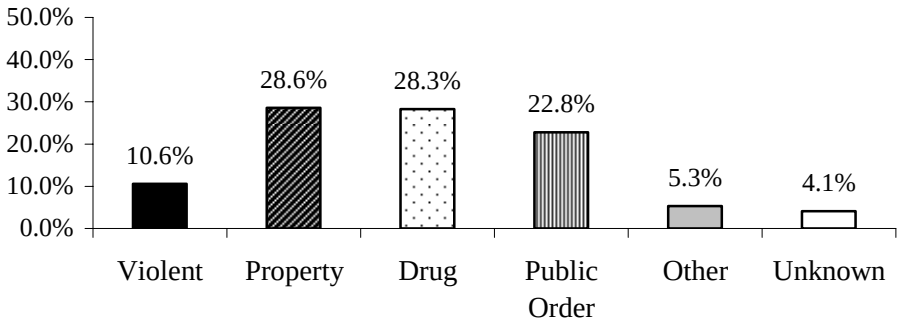

Figure 4. Percent with any rearrest by type of offense

Thus, a preliminary look at the recidivism of the female offenders suggests that the primary types of offenses they commit are property and drug offenses. But is this true for their entire criminal career and does the pattern change following incarceration?

Table 10. Mean number of arrests before and after incarceration by type of offense

Offense Category	Before	After
Violent	0.77	0.12
Property	3.82	0.48
Drugs	2.77	0.43
Public Order	2.07	0.34
Other	0.14	0.04

As shown in Table 10, the mean number of arrests is higher before incarceration and lower during the 3-year follow-up period for every type of offense. In addition, property, drug, and public order offenses are more common than violent offenses. For example, women averaged 3.82 prior property offenses and 2.77 prior drug offenses, but less than one prior violent offense. The recidivism rates are less variant following incarceration, yet follow the same pattern with higher rates for property, drugs, and public order offenses.

With higher rates of property and drug offenses during the criminal career, does this mean that the total number of arrests will be higher for those incarcerated for property and drug offenses? The pattern seems to change when the data are analyzed in terms of yearly arrest rates[15] before and after incarceration by type of incarceration offense as shown in Table 11 and Figure 5. The rates before incarceration are highest for property offenders and slightly lower for violent and drug offenders. Following incarceration the same pattern is found but the variation in the yearly arrest rates is much smaller. Property offenders have slightly higher rates than the other groups.

Table 11. Yearly arrest rates by type of incarceration offense

Yearly Arrest Rates		Violent	Property	Drugs	Public Order	Other	Unknown	Total
	n	2,524	8,268	9,293	1,262	419	23	21,789
Before incarceration	Mean	1.29	1.49	1.31	1.08	2.00	2.11	1.38
	s.d.	1.13	1.37	1.04	0.76	2.05	1.46	1.21
After incarceration	Mean	0.44	0.59	0.50	0.53	0.34	0.17	0.53
	s.d.	0.65	0.88	0.66	0.67	0.61	0.17	0.75

These results examining the type of incarceration offense and patterns of arrests during the criminal career confirm earlier analyses and prior research indicating that females are most often arrested for property and drug offenses. They also seem to indicate that incarceration does have an impact and tends to decrease the number of rearrests.

[15] To compute arrest rates, the total number of offenses within the time period is the numerator and the number of days is the denominator. This calculation is then multiplied by 365 to create yearly arrest rates. For those individuals with less than 364 days during the time period or if the number of days was missing, the number of priors was taken as the rate. This was done because using the actual number of days, when less than one year, would over inflate the rates. For example, if a person had one arrest in 10 days, the value would appear to be 36.5 arrests per year if the original formula were used.

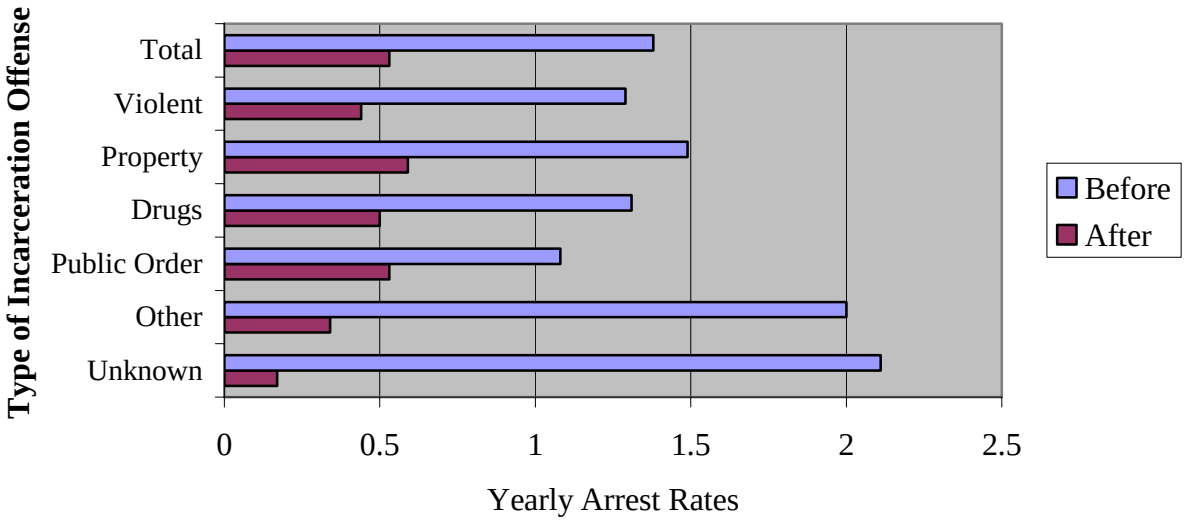

Figure 5. Offense category and yearly mean arrest rates before and after incarceration

Offense Specialization and Career Offense Types

In examining the criminal career and the likelihood of offense specialization, several approaches were taken. An initial question was whether offenders would repeat the same type of offense for which they were previously incarcerated. To test this hypothesis, simple bivariate analyses were conducted. As shown in Table 12, there is a relatively low probability of repeating the same offense in the 3-year follow-up but this does differ by type of offense. Only 10% of females were rearrested for a violent offense or for some type of public order offense. In comparison, nearly one quarter were rearrested for a drug offense (20% repeated drug possession and 9% repeated drug trafficking) and the most frequent offense was a property offense (31%).

Table 12. Probability of repeating the incarceration offense

	Violent	Property	Drug	Public order
Yes	10.0	31.4	24.5	10.1
No	90.0	68.6	75.5	89.8

This type of analysis comparing one offense type to the next was repeated for each of the first 10 transitions of offenses, which is known as Markov chain analysis. These analyses did not separate arrests for drug trafficking from drug possession. The results in Table 13 on the next page display the diagonals for each of the tables, which would be indicative of offense specialization. There appears to be some consistency in the patterns where the probability of repeating a violent offense is low (generally between 20% and 30%), but the probability of repeating a property offense or drug offense is higher (closer to 60%). About 40% of the time a public order offense was repeated.

Table 13. Transition matrices for first ten arrests in career

	N	Violent	Property	Drugs	Public Order	Other
Trans 1 to 2	20,120	26.9	61.3	57.7	41.6	7.2
Trans 2 to 3	17,894	24.5	62.9	57.2	41.8	2.6
Trans 3 to 4	16,412	25.6	69.3	56.7	42.4	32.4
Trans 4 to 5	14,809	31.0	58.3	62.3	45.7	8.9
Trans 5 to 6	13,180	38.4	65.0	54.9	43.1	0.0
Trans 6 to 7	11,507	24.6	67.9	58.6	50.5	0.0
Trans 7 to 8	10,519	20.7	60.2	57.0	41.7	0.0
Trans 8 to 9	9,471	19.9	56.9	64.1	41.9	0.0
Trans 9 to 10	8,469	27.1	58.4	64.6	43.7	16.3

Another set of analyses examined the relationship between the first arrest in the criminal career, the current incarceration offense, and the first arrest following release. The probability of being incarcerated for a drug offense was .72 for those whose first offense was a drug arrest.

However, following the current incarceration there was not a tendency to repeat a drug offense. No new rearrest or a property offense were most common as shown in Table 14.

Table 14. Probability of offense type being the same for first arrest to incarceration and arrest immediately following incarceration for female offenders

	First to Current	Current to Next
Violent	.34	.11
Property	.54	.32
Drug	.72	.24
Public Order	.09	.10
Other	.15	.00
None		.42
Unknown		.02

The next set of analyses examined the diversity index, a measure previously used by Piquero et al. (1999) and Mazerolle et al. (2000) to examine criminal careers of delinquents. The distribution of the diversity index in this sample of female offenders had a mean of .48 and a median of .55, with 14% of the cases having a value of 0, indicating no diversity, and 2% of the cases having a value of 1 or no specialization. The curve does not have a normal distribution, which makes it difficult to use parametric statistics. Mazzerolle et al. used Kruskal-Wallis chi-square tests in their study of offense specialization. Although it violates the assumptions, we conducted an analysis of variance to examine the average diversity in a criminal career by type of first offense and type of incarceration offense. The results are displayed in Table 15.

Females whose first offense was an arrest for public order had the most diversity in their criminal careers with an index of .56 on average. In comparison, those arrested for a drug offense for the first offense, with a score of .41 had the least diversity or more offense specialization. Post hoc Scheffé tests revealed that those arrested for a drug offense and those arrested for public

order offenses for their first offenses were significantly different from all other groups. On the other hand, those who were first arrested for a violent offense did not differ from those first arrested for a property offense or some other offense. These results suggest that females with a first arrest for a drug offense are likely to continue to be arrested for drug offenses. However, this does not mean that it is possible to predict rearrest. Other analyses are necessary.

Table 15. Average diversity index by type of first offense and type of incarceration offense

	First Offense		Incarceration Offense	
Type of Offense	*n*	Mean	*n*	Mean
Violent	2,882	.4729	3,018	.5237
Property	10,172	.4687	8,607	.4730
Drugs	5,524	.4102	9,957	.4757
Public Order	3,518	.5635	1,410	.6218
Other	626	.4895	547	.2968
Unknown	840	.8983	23	.5721
Total	23,562	.4855	23,562	.4855

Because the current study focuses on the recidivism of female offenders following their release in 1994, it was also important to examine the relationship between the diversity index and incarceration offense. The results are somewhat similar to those for the first arrest, but not the same. The most diversity is displayed again by those incarcerated for a public order offense, but the least diversity is among those incarcerated for an “other” offense. For violent and property offenses, the average diversity index is almost the same as was found for the first arrest, but there is more diversity for those incarcerated for drug offenses. Post hoc Scheffé tests revealed significant differences in the diversity index for those incarcerated for violent offenses or public order offenses and all other groups. Whereas the diversity index for females incarcerated for

property and drug offenses did not differ from each other, they did differ from other groups. One must be cautious in interpreting these results, however, since the diversity index was calculated using data from the entire career, not just the arrests following incarceration.

Nonparametric tests were also conducted on the diversity index using the SPSS Kruskal-Wallis *H* test to compare the means and medians. For both the type of first arrest and type of incarceration offense, the results were statistically significant, indicating the average diversity index does differ by type of offense.

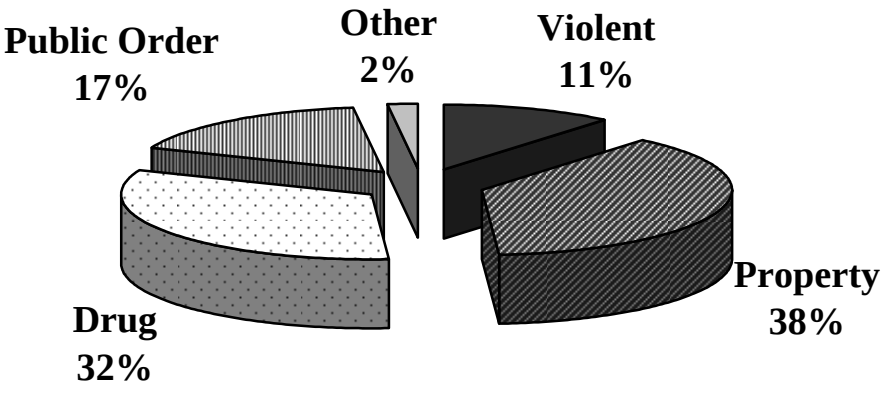

Figure 6. Proportion of arrests for criminal careers of female offenders presented as a percentage within career total

The next approach was to examine the proportion of offenses within each career that were of the different types.[16] The percentage was calculated as a proportion with the total number of arrests for that type of offense as the numerator and the total number of arrests in all 99 cycles as the denominator. Figure 6 displays the results. Arrests for drug offenses or property offenses were the most frequent in the criminal careers of these females, with property offenses being the highest (38%), followed by arrests for drug possession (21%) and drug trafficking (11%), which

[16] This analysis was suggested in a study conducted by Tracy and Kempf-Leonard (1996).

together are 32%, then public order offenses at 17% and violent offenses at 11%. These results confirm the findings of earlier studies of female offenders, indicating these women are not frequently arrested for serious offenses.

To examine the likelihood of being able to predict career types by the current incarceration offense, cross-classification analysis was used as reported in Table 16 on the following page. The results show some evidence of offense specialization with a high propensity of arrests for property offenses among those who might be classified as "property" offenders (57.3%) and a high proportion of drug arrests among those incarcerated for a drug offense (51.6%). These analyses were also conducted separating out drug possession and drug trafficking offenses, which alters the results.

Table 16. Percent of career type by incarceration offense

	Type of Incarceration Offense					
	Violent	Property	Drug	Public Order	Other	Unknown
Violent	36.54	6.79	5.47	7.39	14.88	7.50
Property	23.44	57.31	20.84	23.99	37.25	22.49
Drug	12.53	13.39	51.62	11.67	24.70	0.00
Public Order	16.66	13.65	15.24	29.25	18.31	15.00
Other	3.07	1.41	2.27	2.92	4.21	0.00
Unknown	7.38	7.41	4.53	24.78	0.14	11.88

Among those whose current incarceration offense was a violent offense (see first row and first column), violent offenses made up more than one-third of their criminal careers (37%) and property offenses were the next most common type of offense (23%). Over half of the arrests during their criminal careers for those incarcerated for a property offense were also property

offenses (57%); public order offenses and drug offenses were the next highest in frequency (at 14% and 13% respectively). A similar pattern was found for those incarcerated for drug offenses, where more than half (51.6%) were rearrested for a drug offense and the next most frequent type of offense was a property offense (21%). When type of drug offense is broken down into two subcategories (data not shown in table), among those incarcerated for drug trafficking, the most common offenses during their careers were arrests for drug trafficking or possession (30% and 27% respectively), with the next most common offense being a property offense. In comparison, over one-third (37%) of the criminal career arrests for those incarcerated for drug possession were also for drug possession, with the next most common arrest being for a property offense (23%) or public order (19%). For those incarcerated for a public order offense, the two most common types of arrests during their criminal careers were public order offenses (29%) and property offenses (24%), though one-quarter were unknown. The clear patterns in these results are some repetition of the incarceration offense and arrests for property offenses. The findings do not appear to fully support a hypothesis of offense specialization.

Predicting Recidivism

Bivariate analyses were conducted to examine the relationship between various predictor variables and the probability of any arrest. Some of the results presented in earlier tables and figures in Part 1 of this report indicate that race, age at release, number of prior offenses, length of time served and type of incarceration offense are all related to the probability of a new arrest.

Two sets of multivariate analyses were conducted to examine predictors of rearrest. Logistic regression was used to predict any new arrest (recoded as 0, 1) and multiple regression was used to predict number of new arrests. Unfortunately, a limited number of predictor variables were available and many of the variables were categorical rather than interval level. Thus, it was

necessary to create several dichotomous or dummy variables. For race, the reference category (x=0) is white; one dummy variable "Black" was constructed to indicate whether an individual was African-American and another dummy variable "API/Other" was created for other racial groups including American Indians, Asians, Pacific Islanders, or other. For ethnicity, the dichotomous variable Hispanic was created to indicate whether an individual was Hispanic (x=1) or not. Three dichotomous variables were created for type of offense for which incarcerated—violent, property, and drug offense. Three dichotomous variables were created for the first type of offense in a criminal career to represent a violent first offense, a property first offense, or a drug offense as a first offense. Number of prior arrests, time served in months and age at release were included as interval level independent variables.

Bivariate correlations were run between the independent variables prior to running other multivariate analyses in order to rule out possible problems of multicollinearity. Even though almost all of the correlations were statistically significant (due to sample size), very few were substantively significant (see Appendix). Three pairs of dummy variables had correlations greater than .4, but this is to be expected given how dummy variables are created. The correlation between Black and Hispanic was -.405 as 71% of those who were not Hispanic were also not Black (African-American). Similarly, the correlation between being having a property offense as one's first offense and having a drug offense as the first was relatively high at -.477. For those whose first offense was a property offense, none had a first drug offense, but 41% of those who did not have a property offense first had a drug offense first. The strongest correlation was between being incarcerated for a drug offense (Drug Offender) and being incarcerated for a property offense (Property Offender), which was -.649. Sixty-three percent of those who were

not drug offenders were property offenders. The final correlation that is statistically and substantively significant at .519 was between the sentence length and actual time served.

Given these results, in testing the various models, the dummy variables for race (Black, API/Other) and ethnicity (Hispanic) were included regardless of statistical significance in the model; the variables for type of incarceration offense were all entered into the model and tested using SPSS backwards elimination, [17] whereas the variables sentence length and time served were entered and removed to determine which variable was more significant and the interaction term was tested as well.

The results for the logistic regression models, which are presented in Tables 17 and 18, include all of the predictor variables. As shown by the Wald statistic, the number of prior arrests is the most important predictor of any new arrest (Wald = 1287.1), followed by age at release (Wald = 704.1), whether the inmate was African-American (Wald = 250.9), sentence length in months (Wald = 212.2) and being incarcerated for a drug offense (Wald = 108.5). By using the estimated odds ratio or Exp(B) it is possible to examine how each independent variable affects the dependent variable. In this case, being incarcerated for a drug offense increases the odds of a new arrest by a factor of 1.78 and being incarcerated for a property offense increases the odds of an arrest by a factor of 1.57. Even though it appears to be the strongest predictor of a new arrest, each prior arrest increases the odds of an arrest by a smaller factor of 1.08. Being older at the time of release decreases the odds of a new arrest as does increasing the sentence length.

[17] The reason for using the backward elimination procedure is to obtain a parsimonious model that includes the fewest number of variables. In addition, this allows the less significant variables to be deleted from the model.

Table 17. Predicting any rearrest by demographic and offense characteristics

	Logistic Regression Coefficients				
	B	SE	Wald	Sig.	Exp(B)
Constant	0.914	0.086	113.8	.000	2.495
African-American	0.497	0.031	250.9	.000	1.643
Hispanic	- 0.135	0.045	9.0	.000	1.145
API/Other	- 0.089	0.145	0.4	.542	0.915
Violent offense	0.253	0.065	15.1	.000	1.288
Property offense	0.453	0.056	66.4	.000	1.574
Drug offense	0.576	0.055	108.5	.000	1.780
Prior arrests	0.077	0.002	1287.1	.000	1.080
Sentence length	- 0.005	0.000	212.2	.000	0.995
Violent first offense	- 0.160	0.052	9.3	.002	0.852
Property first offense	0.141	0.039	13.2	.000	1.152
Drug first offense	- 0.171	0.044	15.0	.000	0.843
Age at release	- 0.052	0.002	704.1	.000	0.949

Correctly Predicted No = 49.6% Yes = 78.5% Total = 66.3%
Nagelkerke R^2 = . 181 Chi-square = 3403.85 df=12 Sig. = .000

This model does a good job of predicting both no new arrest and a new arrest, but is correct about two-thirds of the time. Thus, it is not a perfect fit for the data. The Nagelkerke R-square indicates that about 18% of the variance is explained by the model.

As shown in Table 18, the independent variables included in the model predicting any new drug arrest are no different from those that predicted any new arrest. The overall model is slightly better than the model for any new arrest with 23% of the variance explained and an overall prediction of 87%. However, the low percentage of "yes" responses correctly predicted (16.3%) suggests that this model does not do a very good job of predicting whether an individual will commit a new drug offense. The number of prior arrests is again the most significant variable as shown by the high Wald statistic of 1730.6 and the next most important variable is whether the individual had been incarcerated for a drug offense (Wald = 220.2). The Exp(B) for this variable indicates that having been incarcerated for a drug offense increases the odds of a

new drug arrest by a factor of 4.78. The dichotomous variables entered for race and ethnicity show patterns different from the earlier model predicting any rearrest. Being African-American is not significant and being Hispanic decreases the odds of a new drug arrest. Having a violent first offense is more important in this model and increases the odds of an arrest for a drug offense following release.

Table 18. Predicting any new drug arrest by demographic and offense characteristics

	Logistic Regression Coefficients				
	B	SE	Wald	Sig.	Exp(B)
Constant	-2.828	.139	416.351	.000	.950
African-American	- 0.082	.047	3.0	.000	0.921
Hispanic	- 0.048	.067	37.0	.000	0.665
API/Other	0.182	.223	0.7	.416	1.199
Violent offense	0.410	.126	10.5	.001	1.507
Property offense	0.495	.108	21.1	.000	1.640
Drug offense	1.565	.105	220.2	.000	4.785
Prior arrests	0.086	.002	1730.6	.000	1.090
Sentence length	- 0.009	.001	155.6	.000	0.992
Violent first offense	0.463	.076	10.5	.000	1.589
Property first offense	0.182	.055	11.0	.001	1.200
Drug first offense	- 0.386	.067	32.8	.000	0.680
Age at release	-.021	.003	45.0	.000	0.980

Correctly Predicted No = 98.4% Yes = 16.3% Total = 87.3%
Nagelkerke R^2 = .231 Chi-square = 3175.49 df = 12 Sig. = .000

For both models, the regression coefficients explain the nature of these relationships. As expected, the greater the number of prior arrests and the younger one's age at release from prison, the higher the likelihood of a new arrest. In addition, those who were black had a higher probability of arrest. An increase in sentence length decreased the probability. Females incarcerated for a property offense (compared to all other types of offenses) had a higher probability of recidivism. The same was true for persons incarcerated for a drug offense in

comparison to all others. Hispanic females and females who were incarcerated for a violent offense were more likely to be rearrested.

The models explain about 23% of the variance in the probability of rearrest as shown by the Nagelkerke R^2, which is significant but also indicates that there is insufficient explanatory power. Inspection of the classification tables indicates that the model is better at predicting who will be arrested and incorrectly predicts those who will not be arrested for a drug offense.

Table 19. Explaining rearrests by demographic and offense characteristics

	Multiple Regression Coefficients			
	B	SE	Beta	t
Constant	2.325	.069		33.853
African-American	0.389	.030	.088	13.152
Hispanic	- 0.223	.042	- .036	-5.286
API/Other	- 0.409	.138	- .018	-2.973
Property offense	0.382	.037	.084	10.404
Drug offense	0.319	.037	.072	8.630
Prior arrests	0.064	.001	.294	27.316
Sentence length	- 0.003	.000	- .067	-10.843
Drug first offense	- 0.329	.034	- .063	-9.695
Age at release	- 0.049	.002	- .171	-27.790

Adjusted R^2 = .141 F = 429.35 df=9 Sig.= .000

The same predictor variables were entered into the equation to examine the factors related to the number of new arrests using multiple regression and a backwards elimination model was used. The results in Table 19 suggest that 14% of the variance in the number of arrests following release can be predicted based on being African-American, not being Hispanic, being incarcerated for a drug offense, prior record, a shorter sentence length, and a younger age at release. Being incarcerated for a violent offense and committing a violent offense as the first offense in one's career were not statistically significant and were dropped from the model. The relative contribution of each of the variables is indicated by the standardized Beta coefficients.

The patterns are only somewhat similar to the earlier results of the logistic regression analyses. The strongest predictors of the extent of recidivism are number of prior arrests and age at release.

Survival Analysis: Time to Rearrest

The final hypothesis to be tested was related to the average time to a new arrest following release from incarceration and whether this could be predicted from criminal career variables. Two different procedures were used for the analysis. First, the survival analysis was conducted using the SPSS Life Tables procedure and partitioning the days to a new arrest into 30-day time periods with the primary independent variable being the type of incarceration offense. For this analysis the category of drug offense was separated into incarceration for possession or trafficking offenses given the differences in the proportion of offenders' careers of arrests for possession versus trafficking. Second, the Cox regression technique was used to enter additional covariates.

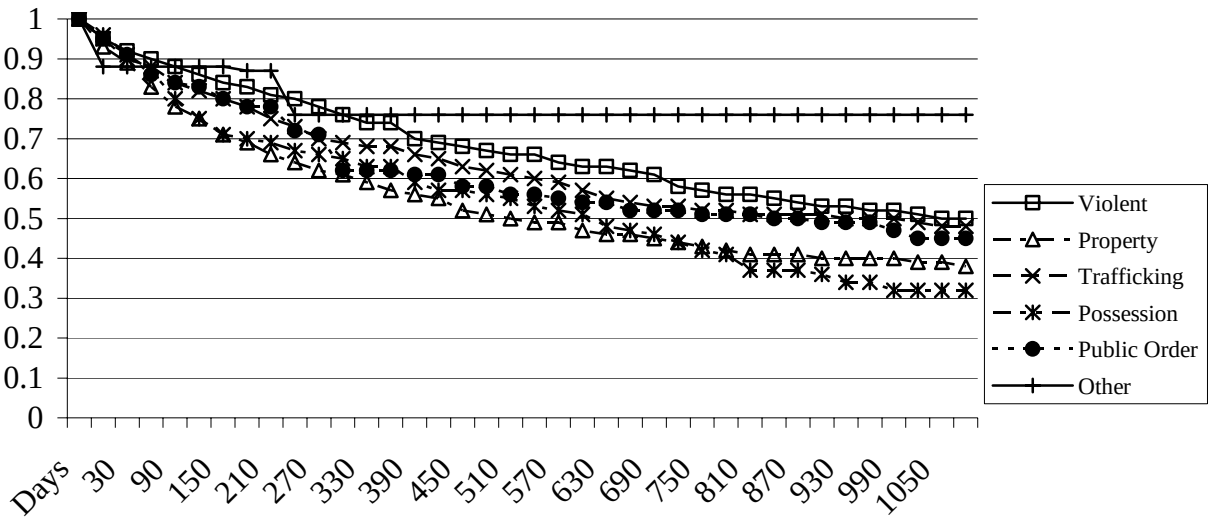

Figure 7. Time to rearrest in days for female offenders

The results of the Life Tables procedure with the dependent variable "any new arrest" are displayed in Figure 7. Within 30 days of release a small proportion of females incarcerated for a minor offense (other category) are the first to fail, but this trend does not continue. There is overall variation between the groups according to the type of offense for which they were incarcerated as tested using the Wilcoxon statistic, but when examined pairwise, property offenders do not differ from those incarcerated for drug possession. These two groups of offenders have the highest failure rates as shown by the decreasing rate of survival over the 3-year period. Females incarcerated for a violent offense are least likely after those incarcerated for other offenses to have a new arrest.

Table 20. Survival analysis covariates

	B	SE	Wald	Exp(B)
Age at release	-.032	.001	647.106	.968
Prior arrests	.032	.001	2259.931	1.033
Time served	-.005	.001	35.966	.995
Sentence length	-.003	.000	144.618	.997
Hispanic	.134	.028	22.632	1.144
African-American	.338	.020	273.310	1.403
Violent offense first	-.198	.031	41.813	.820
Drug offense first	-.186	.023	63.131	.830

Similar to the previous analyses, the covariates that are most important in predicting the time to a new arrest are the number of prior arrests, age at release and being African-American, as shown by the Wald statistics reported in Table 20. Being older at release, having a longer sentence and serving a longer sentence in prison, having committed a violent offense or a drug offense as the first offense of one's criminal career all decrease the odds of a new arrest. Having

a longer criminal record and being a minority (African-American or Hispanic) increase the odds of a new arrest.

The survival analyses were repeated using the time to a new arrest for a drug offense as the dependent variable (see Figure 8). There is less difference between the strata (type of incarceration offense) in this model, but the Wilcoxon statistic is significant. The pairwise comparisons indicated no significant differences between those incarcerated for a violent offense and those incarcerated for a public order offense. Property offenders and those incarcerated for drug trafficking were not significantly different from those incarcerated for some other offense. Those who were incarcerated for a drug possession offense were most likely to fail and have a new arrest for drug possession within the 3-year follow-up period and did so at a higher rate than all other types of offenders. This is reported in Figure 8. Note the scaling of the figure was manipulated as to allow a clearer view of the differences.

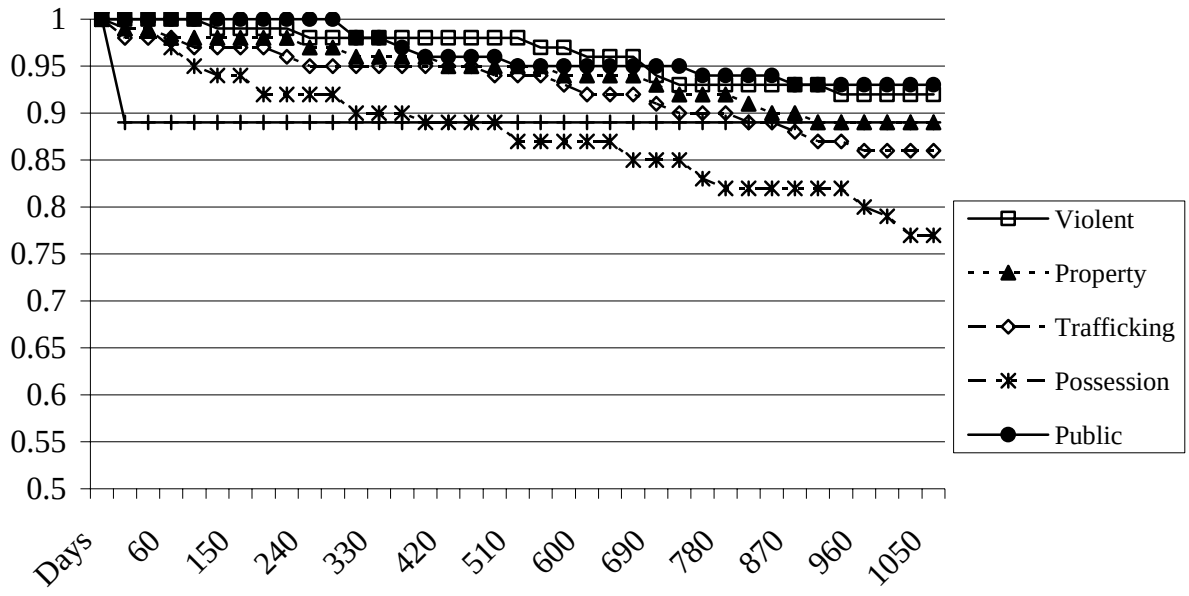

Figure 8. Time to an arrest for drug possession

Table 21. Cox regression covariates

	B	SE	Wald	Exp(B)
Age at release	-.011	.003	18.000	.989
Prior arrests	.053	.001	2750.752	1.054
African-American	-.157	.041	14.501	.855
Hispanic	-.316	.058	29.884	.729
Sentence length	-.007	.001	146.349	.993
Drug first offense	-.529	.051	106.859	.589

The covariates of a new drug arrest are slightly different from those for any arrest as shown in Table 21, yet prior arrests remains the most significant predictor. More important in this model, however, were sentence length and having a drug offense as the first arrest in one's career. Both of these variables decreased the odds of having a new arrest for drug possession. In addition, being a minority offender decreases the odds of a new arrest, which is the opposite of the effect for any new arrest.

Implications for Policy and Practice

This project has implications for both policy and practice. In terms of policy, this project addresses two primary initiatives of the U.S. Department of Justice: reentry (Travis & Lawrence, 2002) and gender-responsiveness in corrections (Bloom, Owen & Covington, 2003). Decision-makers will benefit from this greater understanding on female recidivism as federal, state and local jurisdictions begin to examine differences in their female and male parole populations. This understanding is critical as jurisdictions improve their reentry response.

These findings show that, like their pathways to prison, women have different experiences and outcomes at release as well. Although these data do not provide a description of the reasons

women recidivate, the findings do allow some suggestions about targeting parole and reentry resources. These recommendations are listed below.

Due to the unavailability in these data of many of the experiential, contextual and procedural factors that contribute to recidivism for women described in the literature review, secondary analysis of the BJS data does not provide a comprehensive explanation of female recidivism and post-release criminal careers. Answers to questions about the effect of prison or post-release programming were equally elusive due to their incomplete appearance or total absence in the data. Additionally, observations of post-release resources and experiences, such as parole program participation, variations in relational or residential circumstances and community circumstances are also missing from this analysis. Local law enforcement and sanctioning strategies also effect post-release outcomes. As suggested in the research literature,[18] a complete picture of female recidivism requires examination of these complex factors. Research including these variables will be critical in developing a comprehensive picture of post-release outcomes among female offenders. Such research will provide foundational information for program development and improved supervision strategies. Research recommendations are made below.

In spite of these limitations, this report does provide useful descriptive detail on the post-release outcomes for the women in the 1994 release cohort and makes some preliminary statements about post-release offense specialization and criminal careers among women. Such descriptive detail and preliminary statements, combined with other knowledge about parole for women, provide a foundation for suggestions for policy and practice.

[18] The two reviewers of this report made similar suggestions: The critical variables such as social capital (supportive families and non-violent partners) access to child care, educational and vocational opportunities, safe housing, treatment programs, and supportive post-supervision resources through parole agencies may have a significant impact on parole performance.

Recommendations for Policy and Practice

1. These data confirm the finding that overall, women commit non-violent crimes both before and after prison. These property and drug crimes can be conceptualized as survival crimes and have been tied to economic and emotional struggles (Bloom, Owen and Covington, 2003; Brown, 2003; O'Brien, 2001; Richie, 2001). As these offenses are most likely to persist post-release, in-prison programming and post-release resources should be targeted toward the economic and personal survival needs of women. As drug crimes are particularly associated with women's offense patterns, and there is some evidence to support the idea that women are repeatedly arrested for drug offenses, enhanced substance abuse treatment in prison and in the community is also indicated.

2. The lower risk to public safety presented by female criminality was also confirmed in these analyses. These recidivism patterns point to a different type of risk for women than men. The risk represented by women, then, is not to public safety but instead is a risk for reincarceration. Expressed another way, the risk of women's recidivism is for return to prison for lower level crimes rather than a risk to community safety. Reentry and parole programs, again, should focus on the delivery of treatment and services rather than surveillance to protect the community from violent harm. Similarly, although prior arrests and age at release tend to predict any recidivism, there is no evidence that the factors predict violent offenses. Risk, then, as suggested by these findings and in the literature review, has a gendered component that should be incorporated in the development of risk assessment instruments.

3. The findings about limited offense specialization, with only some repetition of drug and property offenses, and lack of correlation between incarceration offense and recidivism offense for women offenders call into question the current reliance on risk assessment instruments that heavily weight the instant offense as a predictive factor. Specifically, the finding that the small number of women who served time for violent offenses tend to not commit violent offenses suggests that the weighting of violent offenses should be calibrated differently for women than men. These results suggest the need for developing gender-appropriate risk and need instruments. Furthermore, given these gender differences in recidivism patterns, parole agencies should also examine the utility of existing assessment instruments. Assessment instruments should be developed specifically for women and men, given the demonstrated differences in post release outcomes.

4. For both women and men, the first year represents a highly risky period of rearrest. This suggests that enhanced case management during the first year following release may reduce recidivism. Women appear to be more like men in these initial patterns in the first year of release from prison and least like them 3 years subsequent to release. Enhanced resources and support at the initial release period are indicated. Resources that target the primary pathways to crime for women offenders include substance abuse and mental health treatment, vocational and educational training that improves women's capacity to support themselves and their children, and domestic violence services should be provided through case management strategies.

5. Although absent in the data set, the impact of social capital and supportive relationships was described in detail in the literature review (Flavin, 2004; Reisig,

Holtfreter & Morash, 2002; Zhang et al., 2006). Investment in the social capital and providing services such as parenting support and domestic violence programs, may increase women's ability to avoid recidivism,

6. Due to the lower recidivism rates and the lesser degree of harm created by the post-release offense patterns described here, intermediate sanctions that do not involve return to custody may serve both the interests of public safety and improving outcomes for women offenders. Again, targeting these pathways in these community settings would be appropriate for women offenders due to their lower levels of threat to public safety.

7. Even though much of the literature discusses parole and other post release services, these findings about the recidivism patterns of women (and, by extension, from the literature review findings), in prison treatment and prerelease programs could also benefit from the suggestions above. Education for staff and women inmates on these findings may also serve some purpose. Providing programs and services in prison may also improve outcomes for offenders.

Recommendations for Further Research

These findings show that gender has a significant effect on all aspects of the criminal justice system and should be an important factor in designing and implementing reentry services as well as delivering sanctions during the post-release period. Across the board, the variable of gender should be collected and analyzed separately in any study of mixed gender criminal justice populations. Where appropriate, such studies may need to oversample women to obtain robust samples. Below, some suggestions about both theoretical and applied research are offered.

1. Even though current research on the context of female crime, recidivism and desistance has developed preliminary theoretical frameworks to explain the criminal career patterns of women offenders, much is left to explore. Support for basic and comparative research should be developed.
2. Research on the experience and context of parole performance for women may supply insight into decreasing recidivism rates through potential intervention and treatment strategies. This may include qualitative examination of the subjective experience of women to supplement existing statistical profiles. The role of social capital, relationships and other experiential and contextual variables should be systematically examined.
3. In terms of applied research, program process and outcome studies on gender-specific programs, services to women in prisons and in the community, and other interventions targeting women offenders should be conducted to determine the effects of concepts described in the literature. Despite the fact that more recent analyses of the "what works" literature (Dowden & Andrews, 1999) have included women, specific empirical attention to these programs should be developed and supported.

Conclusion

This re-analysis of the BJS 1994 data set indicates that females have lower recidivism rates than the total sample on all four measures. Even though 40% of females do get reconvicted either for a new offense, parole or probation violation, only 18% have a new sentence in comparison to 25% of the total sample. There is greater variation in recidivism rates by type of current incarceration offense among females than the total sample with 62% of females serving time for a property offense having a new arrest within 3 years. Not all this variation is explained by the variables in the BJS data set. The results of the current study indicate that only 20% of the

variation is explained by criminal history variables. Incomplete data were available on the characteristics of prison treatment. For example, the variables indicating prior drug treatment and vocational training were available for only a small percent of the BJS sample. Thus, the logistic regression and multiple regression models were limited to criminal history variables. The results confirmed earlier research that has found prior arrest to be the most significant predictor of recidivism. The predictors did differ by gender with time served being more important for females and incarceration for a property offense more important for males.

Just as the type of incarceration offense differs significantly by gender, recidivism and criminal career patterns also differ significantly. As shown in this analysis of the BJS recidivism data, consistently, women offenders are more likely than the total sample to be doing time for a drug or property offense. Women in this sample also have less severe criminal histories than the total sample in terms of the number of prior arrests. On average, however, they serve less time in prison but are older at release than the total sample. These characteristics appear to have some impact on subsequent recidivism patterns as well. This secondary analysis shows that gender continues to be a salient factor in understanding—and addressing—postrelease recidivism.

APPENDIX

Correlation Matrix

	Asian Pacific Islander	Black	Hispanic	Number of prior arrests	Drug offender	Property offender	Violent offender	Drug first offense	Property first offense	Violent first offense	Sentence length in months	Time served	Age at release
Asian Pacific Islander[a]	1	-.099**	-.041**	-.026**	-.008	-.012	-.012	.009	-.034**	-.031**	-.007	-.014*	.002
Black	-.099**	1	-.405**	.007	.040**	-.045**	.075*	-.090**	.026**	.032**	.089**	.029**	-.068**
Hispanic	-.041**	-.405**	1	.102**	.078**	.014*	-.111**	.140**	-.070**	.005	-.126**	-.033**	.041**
Number of prior arrests	-.026**	.007	.102**	1	-.081**	.125**	-.069**	-.112**	.048**	-.083**	-.098**	.001	.115**
Drug offender	-.008	.040**	.078**	-.081**	1	-.649**	-.328**	.323**	-.224**	-.095**	-.014*	-.042**	.005
Property offender	-.012	-.045**	.014*	.125**	-.649**	1	-.291**	-.212**	.326**	-.097**	-.070**	-.114**	.012
Violent offender	-.012	.075**	-.111**	-.069**	-.328**	-.291**	1	-.107**	-.111**	.281**	.210**	.290**	-.019**
Drug first offense	.009	-.090**	.140**	-.112**	.323**	-.212**	-.107**	1	-.477**	-.203**	.019**	-.011	-.074**
Property first offense	-.034**	.026**	-.070**	.048**	-.224**	.326**	-.111**	-.477**	1	-.322**	-.045**	-.065**	.029**
Violent first offense	-.031**	.032**	.005	-.083**	-.095**	-.097**	.281**	-.203**	-.322**	1	.108**	.125**	-.026**
Sentence length in months	-.007	.089**	-.126**	-.098**	-.014*	-.070**	.210**	.019**	-.045**	.108**	1	.519**	.086**
Time served	-.014**	.029**	-.033**	.001	-.042**	-.114**	.290**	-.011	-.065**	.125**	.519**	1	.117**
Age at release	.002	-.068**	.041**	.115**	.005	.012	-.019**	-.074**	.029**	-.026**	.086**	.117**	1

[a] Includes category American Indian

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

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