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**Recidivism of Offenders on
Federal Community Supervision**
2010-BJ-CX-K069

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Recidivism of Offenders on Federal Community Supervision

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Introduction

The Office of Probation and Pretrial Services (OPPS) of the Administrative Office of the U.S. Courts (AOUSC) provides community supervision for offenders convicted of federal crimes and conditionally released to the community. Between October 1, 2004 and September 30, 2010 245,362 offenders commenced a term of federal community supervision – 56,361 began a term of probation following a conviction for a federal offense and 189,001 began a term of supervised release following a prison sentence.

This report examines criminal recidivism, defined as an arrest for a new crime or a revocation, for these 245,362 offenders. Specifically this report examines:

- The rates of recidivism among offenders who entered federal community supervision between October 1, 2004 and September 30, 2010.
- How recidivism rates vary with risk and protective factors and the accuracy of using risk and protective factors to predict recidivism.
- How contextual factors (i.e., district, offender’s environment, and probation officer characteristics) affect recidivism rates.

Highlights

38% of offenders received for supervision between October 1, 2004 and September 30, 2005 recidivated within five years of commencing supervision.

- 24 percent were re-arrested and almost 13 percent were revoked.
- Most were re-arrested for drug (30%), property (25%) and violent (23%) offenses.

30% of offenders received for supervision between October 1, 2004 and September 30, 2007 recidivated during their term of supervision (within three years of commencing supervision).

- 16 percent were re-arrested for a new crime and almost 14 percent were revoked.
- They were most often arrested for drug (28%), violent (25%) and property (24%) offenses.

Several risk factors increase offenders’ risks of committing new offenses or being revoked during their period of supervision including a history of criminal behavior, gender, race, drug abuse problems, mental health issues, unemployment, and basic needs (e.g., financial assistance, temporary housing, and/or transportation assistance).

Several protective factors can decrease offenders’ risks of committing new offenses or being revoked including having a strong social support system, marketable skills (i.e., strong educational foundation or life skills), motivation to change, and age.

These risk and protective factors distinguish between offenders who will and will not recidivate during their term of supervision and the seriousness of future offenses.

Arrest and revocations rates vary significantly across the 90 federal districts studied, after taking risk and protective factors into account. Several district-level variables explain variation in arrest and revocation rates across the districts including the population size, proportion of American Indians, and average household income in a district.

Offenders who return to neighborhoods that are seen as impoverished and transient have higher failure rates.

Arrest and revocation rates increase with officer experience in the federal probation system. Similarly, arrest and revocations rates increase when an officer has an advanced degree.

Overview of Federal Community Supervision and Offenders on Supervision

Description of Federal Community Supervision

Federal community supervision refers to the post-conviction period during which an offender is actively supervised by a federal community corrections officer (referred to as a probation officer in the federal system and throughout this report). Federal probation officers are responsible for the supervision of offenders in 94 judicial districts, which include the U.S. territories and the District of Columbia.

This study examines recidivism rates for offenders on *terms of supervised release (TSR)* and offenders on *probation*. TSR is a “term of supervision served after a person is released from prison. The court imposes supervised release during sentencing in addition to the sentence of imprisonment. Unlike parole, supervised release does not replace a portion of the sentence of imprisonment but is in addition to the time spent in prison.”¹ TSR replaced parole for most offenders sentenced after 1987. “With probation, instead of sending an individual to prison, the court releases the person to the community and orders him or her to complete a period of supervision monitored by a U.S. probation officer and to abide by certain conditions.”² Federal probation officers also supervise a few other types of offenders (including parolees), but these types of supervision are rare and are excluded in this study. Analysis is also limited to offenders in 90 of the 94 judicial districts (the four territories are excluded). (See Methodology for additional discussion of offenders excluded from the analysis.)

Offender Terms of Federal Community Supervision

Seventy-seven percent of offenders on community supervision were serving a term of supervised release (TSR); the other 23 percent were on probation

For offenders in the FY2005- FY2010 cohort, the typical term of community supervision is about three years; 95 percent of supervision terms are five years or less. Probation terms are slightly less time (average of 2.4 years) than TSR (average of 3.4 years). In reality, many offenders serve only a proportion of their court imposed supervision terms. This is because a number of them are revoked for technical violations or new criminal arrests during their supervision terms and some have their terms terminated early by the court.

For those who “successfully” completed supervision in the FY 2005-FY 2007 cohort, the average amount of time served on supervision was 2.4 years – offenders on TSR spent about 2.7 years on supervision and probationers spent an average of 1.8 years.

¹ <http://www.uscourts.gov/FederalCourts/ProbationPretrialServices/CommonlyUsedTerms.aspx>

² Ibid.

Characteristics of Offenders

Most offenders are male (80 percent), white (59 percent), and are in their thirties (the average age of offenders is 37 years). Seventy percent have a high-school diploma/GED or higher level of education.

Offenders typically have a history of criminal activity.

- They have an average of 4.8 prior arrests.
- 8 percent absconded during a previous term of supervision.
- About 16 percent were previously arrested or revoked while on supervision for new criminal conduct.
- 10 percent have a history of engaging in domestic violence.

The majority of offenders were on supervision for drug (41 percent), property/white collar offenses (22 percent), and firearms (13 percent) offenses.

Offenders on federal supervision have considerable needs.³

- 34 percent of offenders are unemployed when they begin supervision.
- Many have substance abuse issues – over one-quarter have a history of or current problem abusing opiates, methamphetamine or cocaine and 43 percent have a history of or current alcohol abuse problem.
- 27 percent have a historical or current mental health diagnoses.
- 10 percent have medical problems that interfere with his/her ability to work or establish constructive community ties.
- Almost 20 percent are in need of financial assistance, temporary housing, and/or transportation assistance.

Despite these obstacles, many offenders have a number of strengths/protective factors.

- Almost half have a strong positive social support network.
- About 10 percent have an advanced professional degree or are certified in a technical area.
- 47 percent are characterized as being motivated to change.
- 14 percent have skills or talents that could be used to improve his/her employment prospects and/or promote pro-social connections

Table 1 summarizes the characteristics of offenders on federal supervision between October 1, 2004 and September 30, 2010 who were sentenced to different lengths of supervision (approximately one year, two years, three years and over four years). (The appendix defines the variables presented in the table.)

³ Data on offender needs and strengths are based on probation officers' clinical assessments recorded in offender case plans. OPPS now collects data from a dynamic risk assessment instrument, the PCRA, that uses objective criteria to determine the dynamic factors that influence the offenders' risk to recidivate but these data were not available for this study.

Table 1. Profile of offenders sentenced to One, Two, Three, and Four Years of Community Supervision^a					
	One Year	Two Years	Three Years	Four or More Years	Total All Years
	(n=31,200)	(n=34,162)	(n=105,776)	(n=71,528)	(n=242,666)
Gender					
Male	75.6%	77.1%	80.4%	83.4%	80.2%
Race					
White	64.6%	64.6%	61.5%	51.0%	59.2%
Black	29.0%	27.7%	32.0%	44.7%	34.7%
Other	6.5%	7.7%	6.5%	4.4%	6.0%
Ethnicity					
Hispanic	16.0%	22.9%	21.1%	19.0%	20.1%
Age at start of supervision					
18-21 years	10.2%	5.5%	3.7%	1.6%	4.2%
22 to 25 years	16.0%	12.7%	11.1%	7.2%	10.8%
26 to 34 years	27.7%	30.3%	31.5%	33.8%	31.6%
35 to 45 years	23.4%	26.3%	28.3%	32.7%	28.6%
46 to 65 years	20.6%	22.9%	23.2%	22.3%	22.6%
Education level					
Less than High School Diploma/GED	21.4%	29.4%	30.3%	32.0%	29.5%
High School Diploma/GED	62.4%	58.8%	59.5%	61.0%	60.2%
More than High School Diploma/GED	16.2%	11.8%	10.2%	7.0%	10.3%
Mean Number of Prior Arrests	3.0	4.2	5.2	5.4	4.8

Table 1. Profile of offenders sentenced to One, Two, Three, and Four Years of Community Supervision^a					
	One Year	Two Years	Three Years	Four or More Years	Total All Years
	(n=31,200)	(n=34,162)	(n=105,776)	(n=71,528)	(n=242,666)
History of Absconding while on Supervision	5.7%	10.4%	8.8%	7.1%	8.1%
History of Criminal Activity on Supervision	9.6%	16.6%	17.2%	17.0%	16.1%
History of Domestic Violence	6.7%	10.1%	11.2%	10.3%	10.2%
Most Serious Incident Offense⁴					
Drugs	24.9%	24.1%	30.5%	71.1%	40.9%
Property/White Collar	17.9%	28.0%	26.5%	14.2%	22.0%
Firearms	3.8%	17.2%	19.8%	4.8%	12.9%
Public Order	39.8%	9.4%	4.0%	1.9%	8.7%
Immigration	3.9%	8.6%	6.3%	0.8%	4.7%
Violence	4.0%	6.1%	7.8%	4.1%	5.9%
Other	4.3%	4.0%	2.2%	0.8%	2.3%
Sex Offense	0.9%	1.7%	2.6%	2.1%	2.1%
Escape/Obstruction	0.3%	0.8%	0.5%	0.1%	0.4%
Technical Violation	0.1%	0.1%	0.0%	0.0%	0.0%
Unemployed					
	25.7%	36.5%	37.1%	33.1%	34.4%
Strong Educational Foundation					
	12.8%	10.8%	9.5%	7.7%	9.6%
Difficulty Meeting Basic Needs					
	12.7%	20.1%	20.6%	18.0%	18.7%
Medical Problems					
	6.9%	10.2%	11.2%	10.5%	10.3%

⁴ This is the most serious offense of conviction that originally led to federal community supervision.

Table 1. Profile of offenders sentenced to One, Two, Three, and Four Years of Community Supervision^a					
	One Year	Two Years	Three Years	Four or More Years	Total All Years
	(n=31,200)	(n=34,162)	(n=105,776)	(n=71,528)	(n=242,666)
Drug Abuse Problem	13.6%	21.6%	28.3%	33.3%	26.9%
Alcohol Abuse Problem	36.3%	39.4%	44.2%	47.1%	43.4%
Mental Health Problem	19.2%	28.1%	30.3%	24.3%	26.8%
Institutional Adjustment Problems	1.0%	2.3%	3.2%	3.9%	3.0%
Strong Pro-Social Support	38.5%	45.5%	48.6%	52.1%	47.9%
Highly Motivated to Change	35.5%	41.6%	47.3%	54.0%	47.0%
Demonstrates Life Skills	11.8%	13.5%	14.5%	14.6%	14.1%

^a Statistics are provided for offenders with approximately one year supervision terms (offenders sentenced between 0.5 and 1.5 years), two year terms (offenders sentenced between 1.5 and 2.5 years), three year terms (offenders sentenced between 2.5 and 3.5 years), and four year terms (offenders sentenced two 3.5 years or more). Most supervision terms fall exactly at yearly increments, a minority fall at half-year increments, and a few fall between these increments.

Measures of Recidivism

This study uses three measures of *recidivism*: (1) the *first arrest* for a new *serious* crime; (2) a *revocation* during the period of supervision; and (3) *any failure* (i.e., an arrest for a new crime or a revocation).⁵ When offenders were arrested for multiple offenses, the most serious offense is counted as the offense of interest for this study. Also, the analysis only includes arrests for a serious offense. The following offenses were classified as “minor” offenses and were therefore excluded from the analysis: traffic violation, obstruction of justice, liquor law violation, public peace offense, invasion of privacy and prostitution. Crimes that fell into the less serious category were principally traffic violation and obstruction of justice. Many of these crimes ultimately resulted in a revocation. (See the appendix for additional discussion about the classification of offenses as minor and serious and description of data sources for criminal recidivism measures.)

The data are for supervision terms that began between October 1, 2004 and September 30, 2010. Consequently, the length of time that offenders in the analysis have to recidivate varies, ranging from less than a month for some offenders (e.g., for those who started supervision in September 2010) to almost six years for others (e.g., for those who started in October 2004). The study distinguishes between *overall recidivism* (i.e., recidivism during and post-supervision within five years of commencing supervision) and recidivism *during supervision* (within three years). For purposes of tabulation:

Overall recidivism rates are calculated for offenders received for supervision between October 1, 2004 and September 30, 2005 (i.e., the FY2005 cohort of offenders) since those offenders could be observed for five years (n=38,896).

Recidivism rates during supervision include only those offenders received for supervision between October 1, 2004 and September 30, 2007 since those offenders could be observed for three years (n= 119,126). Many of the offenders who began supervision after that time were still under supervision (i.e., their terms are censored) so failure rates would be underestimated if we included them.

Recidivism statistics are provided for offenders sentenced to one, two and three years of federal supervision. However, this report also employs inferential statistics (survival analysis) to identify risk and protective factors and to summarize predictive accuracy. All supervision terms enter into the survival analysis because right-hand censoring deals with terms that are abbreviated by the limited follow-up period.⁶

⁵ A detailed definition of recidivism is provided in the appendix.

⁶ See report prepared for BJS and OPPS for details: Rhodes, W., C. Dyou, R. Kling, J. Luallen, and D. Hunt. *Estimating Criminal Recidivism*. A report prepared for BJS and OPPS, Forthcoming.

Findings

Overall Recidivism Rates (Recidivism During and Post-Supervision)

Thirty-eight percent of offenders in the FY2005 cohort (sentenced to one, two, or three years of supervision) recidivated within five years of commencing supervision – 25 percent were re-arrested and almost 13 percent were revoked. Of those offenders re-arrested within five years, many were re-arrested in another state than where they began their supervision. This is especially pronounced in states in close proximity to each other and states with a high proportion of offenders on supervision. For example, 40 percent of offenders who were supervised in DC within the five years were re-arrested in contiguous states (23 percent in Maryland and 10 percent in Virginia); 46 percent of offenders supervised in New York were re-arrested in another state; 40 percent of offenders in Pennsylvania were arrested in other states; and 38 percent of offenders supervised in California were re-arrested in another state.

Table 2 shows the recidivism rates (within five years, by year) for offenders sentenced to one, two and three years of supervision. Offenders sentenced to three years have higher recidivism rates within five years than offenders sentenced to one and two years. One reason for these differences is that offenders sentenced to longer terms have greater opportunity to have their supervision revoked. Another explanation is that longer terms are reserved for more recidivistic offenders.

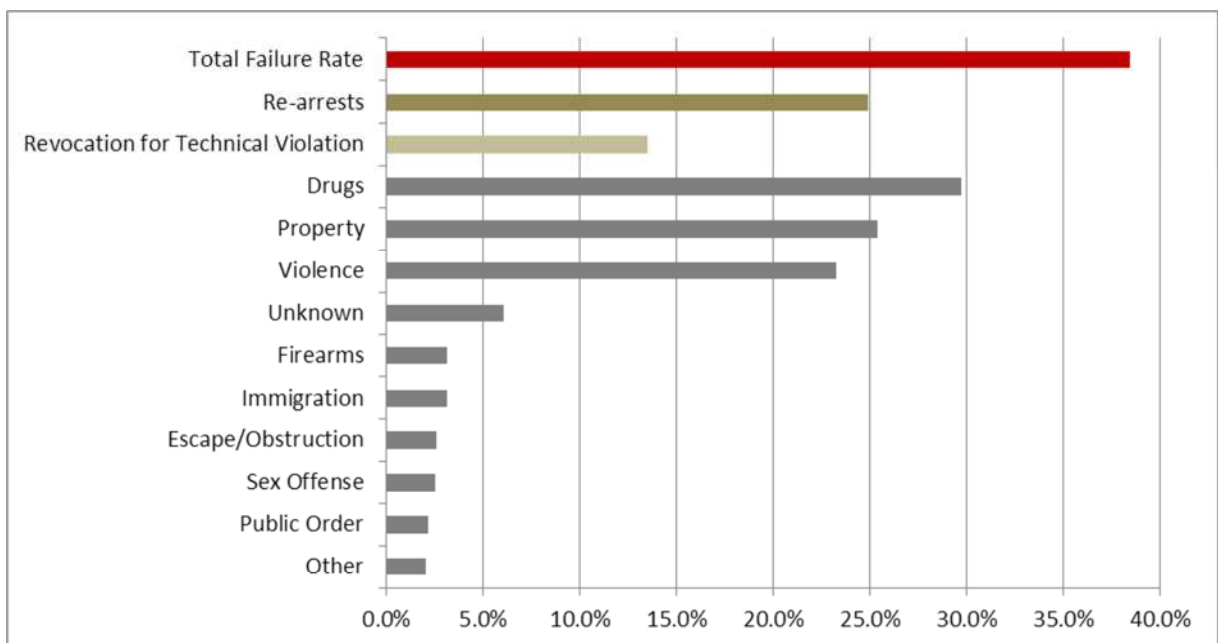
Not surprisingly recidivism rates increase over time – 18 percent of offenders sentenced to two years recidivated in the first year; twice as many recidivated within five years.

Table 2. Recidivism Rates for Offenders Sentenced to One, Two and Three Years of Supervision (for the FY2005 Cohort)						
Sentenced	Recidivism Rates (Arrests, Revocations, and Overall)					
	Within 1 year	Within 2 years	Within 3 years	Within 4 years	Within 5 years	
1 Year						
Overall	16.2%	21.3%	25.1%	27.8%	29.7%	
Arrest	7.6%	12.4%	16.2%	18.9%	20.8%	
Revocation	8.6%	8.9%	8.9%	8.9%	8.9%	
2 Years						
Overall	18.4%	28.2%	32.4%	35.5%	37.8%	
Arrest	9.1%	14.1%	18.2%	21.3%	23.7%	
Revocation	9.4%	14.1%	14.2%	14.2%	14.2%	
3 Years						
Overall	18.3%	28.1%	34.3%	37.8%	41.0%	
Arrest	10.3%	16.1%	19.9%	23.3%	26.4%	
Revocation	8.0%	12.1%	14.4%	14.5%	14.5%	
Total						
Overall	18.0%	26.9%	32.3%	35.6%	38.4%	
Arrest	9.6%	15.1%	18.9%	22.2%	24.9%	

Table 2. Recidivism Rates for Offenders Sentenced to One, Two and Three Years of Supervision (for the FY2005 Cohort)					
Sentenced	Recidivism Rates (Arrests, Revocations, and Overall)				
	Within 1 year	Within 2 years	Within 3 years	Within 4 years	Within 5 years
Revocation	8.3%	11.9%	13.4%	13.5%	13.5%

Most offenders re-arrested within five years, were re-arrested for drug, property and violent offenses (see Figure 1).

Figure 1. Five-Year Recidivism Rates for Offenders Sentenced to One, Two and Three Years of Supervision by Type of Offense (for the FY2005 Cohort)



Note. The re-arrest rate and the revocation rate sum to the total failure rate. Tabulations for specific offense types are conditional on an arrest so they sum to 100 percent.

Recidivism Rates of Offenders While on Supervision

Thirty percent of offenders received for supervision between October 1, 2004 and September 30, 2007 (i.e. sentenced to one, two, or three years of supervision) recidivated within three years of commencing supervision – 16 percent were re-arrested and almost 14 percent were revoked.

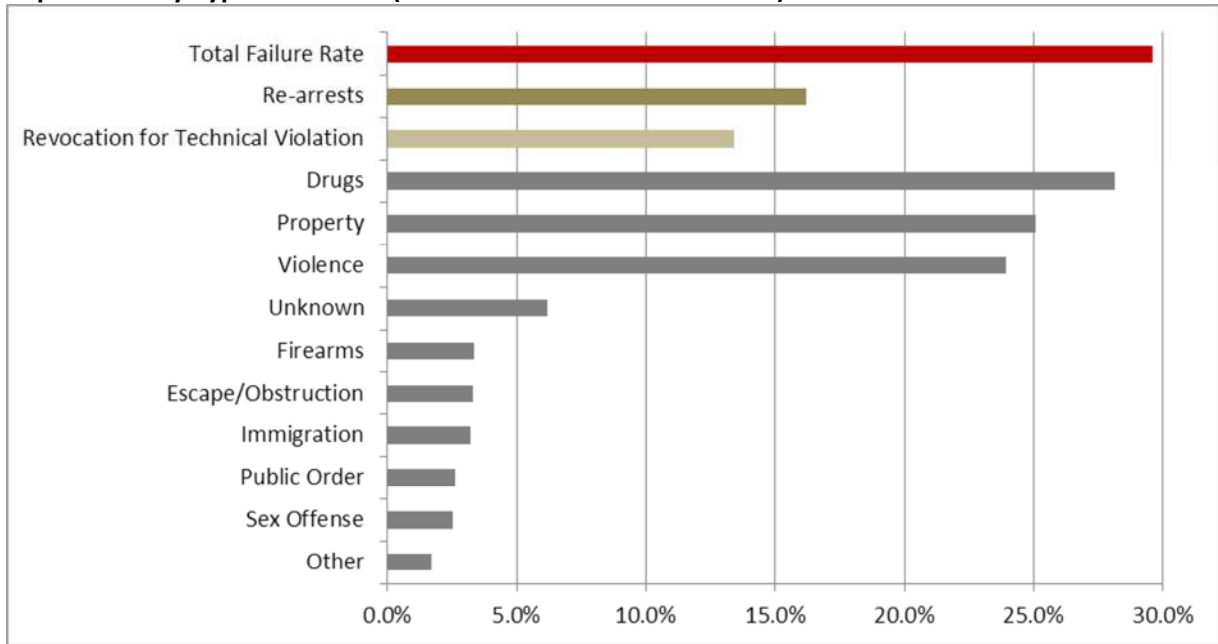
Table 3 provides one, two and three year recidivism rates for offenders sentenced to one, two and three years of supervision. Offenders sentenced to three years have somewhat higher re-arrest rates than offenders sentenced to one and two years.

Arrest and revocation rates increase over time – about 18 percent of offenders sentenced to three years recidivated in the first year; over 33 percent recidivated within three years.

Table 3. Recidivism Rates, While on Supervision for Offenders Sentenced to One, Two and Three Years of Supervision (for the FY2005-FY2007 Cohorts).			
Sentenced	Recidivism Rates (Arrest and Revocation)		
	Within 1 year	Within 2 years	Within 3 years
1 Year			
Arrest	7.7%	--	--
Revocation	9.0%	--	--
2 Years			
Arrest	8.9%	13.4%	--
Revocation	9.8%	14.5%	--
3 Years			
Arrest	10.3%	16.0%	19.1%
Revocation	7.9%	11.9%	14.2%

Offenders who were re-arrested during their period of supervision (within three years) were most often arrested for drug, violent and property offenses.

Figure 2. Three-Year Recidivism Rates for Offenders Sentenced to One, Two and Three Years of Supervision by Type of Offense (for the FY2005-FY2007 Cohorts)



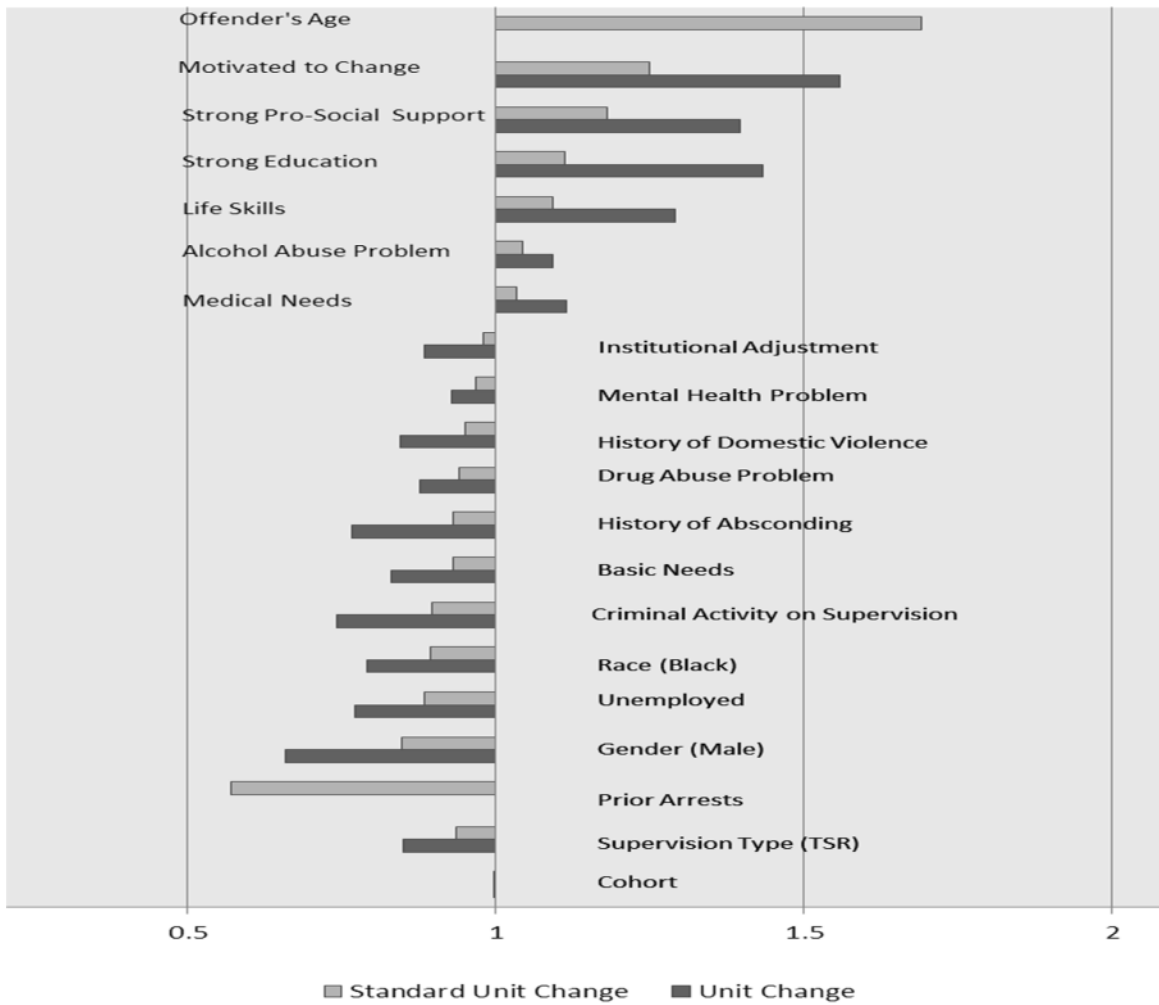
Note. The re-arrest rate and the revocation rate sum to the total failure rate. Tabulations for specific offense types are conditional on an arrest so they sum to 100 percent.

Predicting Recidivism: Offender Risk and Protective Factors

Identifying Risk and Protective Factors

Statistical model building led to a model that identified twenty risk and protective factors that predicted a new arrest during the period of supervision.^{7,8} Although predictions were calibrated for new arrests, the predictions are applicable to all failures (i.e., revocations as well as arrests). Figure 3 identifies the risk and protective factors that were identified. A risk factor has a score of less than 1; the lower the score, the larger the effect. A protective factor has a score greater than 1; the higher the score, the larger the effect. All these effects are statistically significant at $p < 0.001$. (See the appendix for a more details on interpretation of the figure.)

Figure 3. Risk of Recidivating for Each Risk and Protective Factor



⁷ See report prepared for BJS and OPPS for details: Rhodes, W., C. Dyou, R. Kling, J. Luallen, and D. Hunt. *Estimating Criminal Recidivism*. A report prepared for BJS and OPPS, Forthcoming.

⁸ As noted previously, these data are based on probation officers' clinical assessments and not OPPS' dynamic risk assessment instrument, the PCRA.

The figure identifies a unit change and a *standard* unit change. A unit change is literally a change of one unit in the variable being represented. For example, for women the Male variable is coded zero and for men the Male variable is coded one. A unit change is 1. A standard unit change is based on a change of one standard deviation. For example, about three of every four offenders are men. Because gender is a binary variable, the standard deviation is 0.433. Therefore the standard unit change is 0.433 of the unit change for the risk factor Male.

The offender's age and prior arrests are continuous variables that are entered into the model as quadratic terms. The bars in Figure 3 are the effects evaluated at one standard deviation about the mean values of age and prior arrests. The figure only shows standard unit changes for those two variables.

Several risk factors increase offenders' risks of committing new offenses or being revoked during their period of supervision. These are partial effects, that is, effects associated with a variable after using a regression to hold all other variables constant.

Criminal Histories:

- Offenders with extensive criminal histories/patterns of criminal behavior have a greater risk of being arrested for a new crime and being revoked – offenders with more prior arrests have the greater risks;
- Offenders who were previously arrested or had their supervision revoked for new criminal conduct while under active community supervision are more likely to have a re-arrest for a new crime or be revoked;
- Offenders with a history of minor or multiple infractions while incarcerated are more likely to fail while on supervision;
- Offenders who previously absconded while on supervision have higher risk of failure; and
- Offenders with a history of engaging in domestic violence are more likely to have an arrest for a new crime.
- ***Gender:***
 - Men have higher rates of recidivism for new offenses and revocations than woman.
- ***Race:***
 - Blacks are more likely than other offenders to have an arrest for a serious offense while on supervision.
 - Blacks have revocation rates that are the same as other offenders (when all other factors are taken into account).
- ***Substance Abuse Problems:***
 - Offenders with a history or current drug abuse problem (for methamphetamine, opiates, and/or cocaine) have higher re-arrest and revocation rates.
 - Offenders with a history or current alcohol abuse problems are associated with lower rates of recidivism.
- ***Mental Health Issues:***
 - Identified mental health problems are associated with higher re-arrest and revocation rates.
- ***Unemployment/Basic Needs:***

- Unemployed offenders and offenders with basic needs (such financial assistance, temporary housing, and/or transportation assistance) have higher re-arrest and revocation rates than their counterparts.

Protective factors can decrease offenders' risks of criminal recidivism or revocations.

- **Social support:**
 - Offenders with a strong social support system (either an individual or support group in the community committed to helping the offender) are less likely to be re-arrested or revoked.
- **Strong Skills and Motivation:**
 - Marketable skills (strong educational foundation or life skills) and offenders who are highly motivated to change are associated with better outcomes (i.e., fewer re-arrests and revocations).
- **Medical Needs:**
 - Offenders with medical needs are less likely to recidivate or be revoked,
- **Age:**
 - Older offenders are less likely to be re-arrested for a new offense and be revoked from supervision than younger offenders.

How well do Risk and Protective Factors Predict Recidivism?

Predicting criminal recidivism is instrumental to the larger goal of classifying offenders to distinguish between those who are at high and low risk of criminal recidivism. This section examines how well the statistical model presented above predicts recidivism.⁹

Table 4 shows results: offenders were sorted based on their predicted risk to recidivate during their term of supervision and then classified into 10 equal categories sorted from high risk to low risk; each category has 22,628 offenders. The table then compares the proportion of offenders who actually recidivated (i.e., proportion arrested, revoked and overall failure) with the predictions. Table 4 comprises all offenders in the analysis file, some of whom were under supervision for short periods that ended with the closure of data collection. That is, many were still under supervision at the time of analysis.

The table shows that risk and protective factors do a good job of distinguishing between offenders who will recidivate during their terms of supervision and offenders who will not recidivate.

- Of the 10 percent of offenders who had the *highest* predicted probability of recidivating, about 64 percent were arrested or had their supervision revoked during their term of supervision – 34 percent were arrested for a new crime and 30 percent were revoked from supervision.

⁹ Summarizing how well the model predicts is difficult. The problem is that data are censored, especially by revocation practices, so the recidivism that is predicted by the survival model is not actually observable. Nevertheless, we can approximate prediction power.

- Of the 10 percent of offenders who had the *lowest* predicted probability of recidivating, about 4 percent failed on supervision – 2 percent were re-arrested for a new crime and two percent had their supervision revoked.

Table 4. Predictions and Observed Recidivism by Risk Category for All Offenders

Risk Categories	Number of Offenders (Predicted)	Proportion of Offenders (Actual)		
		Arrested	Revoked	Overall Failure
10% (highest risk)	22,628	33.8%	30.1%	63.9%
20%	22,628	24.3%	24.4%	48.7%
30%	22,628	18.7%	20.1%	38.8%
40%	22,628	15.1%	16.4%	31.5%
50%	22,628	11.8%	12.9%	24.7%
60%	22,628	9.5%	9.4%	18.9%
70%	22,628	7.4%	7.3%	14.8%
80%	22,628	5.4%	5.3%	10.7%
90%	22,628	4.0%	3.3%	7.3%
100% (lowest risk)	22,628	2.2%	1.7%	3.9%

Many of the offenders in Table 4 were still under supervision (i.e., their terms are censored) so their failure rates are underestimated. The table is nevertheless informative because it uses the full complement of data.

Table 5 is similar to table 4 but is limited to offenders who were received for supervision between October 1, 2004 and September 30, 2007 (i.e., the FY2005-FY2007 cohort) since most of those offenders had completed their terms of supervision by the end of the study period.¹⁰

Table 5. Predictions and Observed Recidivism by Risk Category for the FY2005-FY2007 Offenders

Risk Categories	Number of Offenders (Predicted)	Proportion of Offenders (Actual)		
		Arrested	Revoked	Overall Failure
10% (highest risk)	10,014	39.1%	35.3%	74.4%
20%	10,417	28.1%	29.3%	57.5%
30%	10,502	22.0%	24.7%	46.7%
40%	10,762	17.4%	20.3%	37.7%
50%	11,051	14.1%	15.5%	29.6%
60%	11,114	11.1%	11.8%	22.9%

¹⁰ Table 5 does not partition the sample exactly into deciles because the deciles were established before the selection rule was applied. Otherwise the calculations are the same as table 4.

Table 5. Predictions and Observed Recidivism by Risk Category for the FY2005-FY2007 Offenders				
Risk Categories	Number of	Proportion of Offenders (Actual)		
70%	11,331	8.8%	8.9%	17.7%
80%	11,669	6.2%	6.7%	12.9%
90%	11,671	4.7%	4.2%	8.9%
100% (lowest risk)	11,835	2.5%	2.0%	4.5%

Again, the table illustrates that risk and protective factors do a good job of distinguishing between high and low risk offenders.

- Of the roughly 10 percent of offenders who had the *highest* predicted probability of recidivating, about 74 percent were arrested or had their supervision revoked during their term of supervision – 39 percent were arrested for a new crime and 35 percent were revoked from supervision.
- Of the approximately 10 percent of offenders who had the *lowest* predicted probability of recidivating, only about 4-5 percent failed on supervision – 2-3 percent were re-arrested for a new crime and two percent had their supervision revoked.

How good are Predictions by Offense Type?

The statistical model predicts recidivism in general, but how well does it predict the “dangerousness” of an offender. To answer this question, we classified recidivism into five offense categories: violent, property, sex, drug and other. (The appendix describes these offense categories, including the specific offenses that comprise the categories.)

Table 6 is the counterpart to Table 4; as in Table 4, the table shows actual recidivism rates across all offenders. The number of observations entering the two tables is the same. The difference between Tables 4 and 6 is that the former reports recidivism without distinguishing the offense; the latter reports recidivism distinguishing the offense.

Table 6. Predictions by Offense Type for All Offenders					
Risk Categories	Proportion of Offenders (Actual)				
	Violent	Property	Drugs	Sex	Other
10% (highest risk)	10.5%	7.0%	11.2%	0.7%	4.3%
20%	7.3%	5.3%	7.7%	0.4%	3.5%
30%	5.2%	4.2%	5.9%	0.5%	2.9%
40%	4.1%	3.6%	4.6%	0.3%	2.5%
50%	3.1%	3.0%	3.4%	0.3%	2.0%
60%	2.4%	2.6%	2.6%	0.3%	1.7%
70%	1.6%	2.1%	1.9%	0.3%	1.5%
80%	1.3%	1.5%	1.3%	0.2%	1.2%
90%	0.7%	1.2%	0.9%	0.2%	1.0%
100% (lowest risk)	0.4%	0.9%	0.3%	0.1%	0.6%

Similarly, table 7 is the counterpart to table 5. The bottom part of the table shows actual recidivism rates for offenders who entered supervision during the first three years of the study (i.e., the FY2005-FY2007 cohort).

Table 7. Predictions by Offense Type for the FY2005-FY2007 Offenders					
Risk Categories	Proportion of Offenders (Actual)				
	Violent	Property	Drugs	Sex	Other
10% (highest risk)	12.4%	8.2%	13.1%	0.8%	4.7%
20%	8.2%	6.3%	9.2%	0.5%	3.9%
30%	6.0%	5.0%	7.1%	0.5%	3.4%
40%	4.7%	4.2%	5.3%	0.4%	2.8%
50%	3.8%	3.6%	4.1%	0.3%	2.4%
60%	2.9%	3.0%	2.8%	0.4%	1.9%
70%	1.8%	2.6%	2.3%	0.3%	1.7%
80%	1.5%	1.7%	1.5%	0.2%	1.3%
90%	0.9%	1.5%	1.0%	0.2%	1.1%
100% (lowest risk)	0.4%	1.0%	0.4%	0.1%	0.6%

The tables illustrate that risk and protective factors do a fairly good job of distinguishing recidivism by offense type.

- Over ten percent of those offenders who are classified in the highest two deciles (10% and 20%) were arrested for a crime of violence exclusive of sexual crimes.
- Less than 1.5 percent of those offenders who are classified in the lowest two deciles (90% and 100%) were arrested for a violent crime.

Contextual Factors as Predictors of Recidivism

Recidivism and District Effects

The study examined cross-sectional variation in recidivism across the 90 districts and district-level variables that account for the variation.

Results indicate a statistically significant variation in arrest and revocation rates across the 90 federal districts, after taking risk and protective factors into account. Researchers sometime reference such analysis as hierarchical, in which case each district is represented by a dummy

variable.¹¹ In fact, the addition of districts is statistically significant at $p < 0.001$ but the addition of districts makes almost no improvement to predictions of recidivism.¹²

Several district-level variables explain this variation in arrest and revocation rates across the districts (see figure 4).¹³

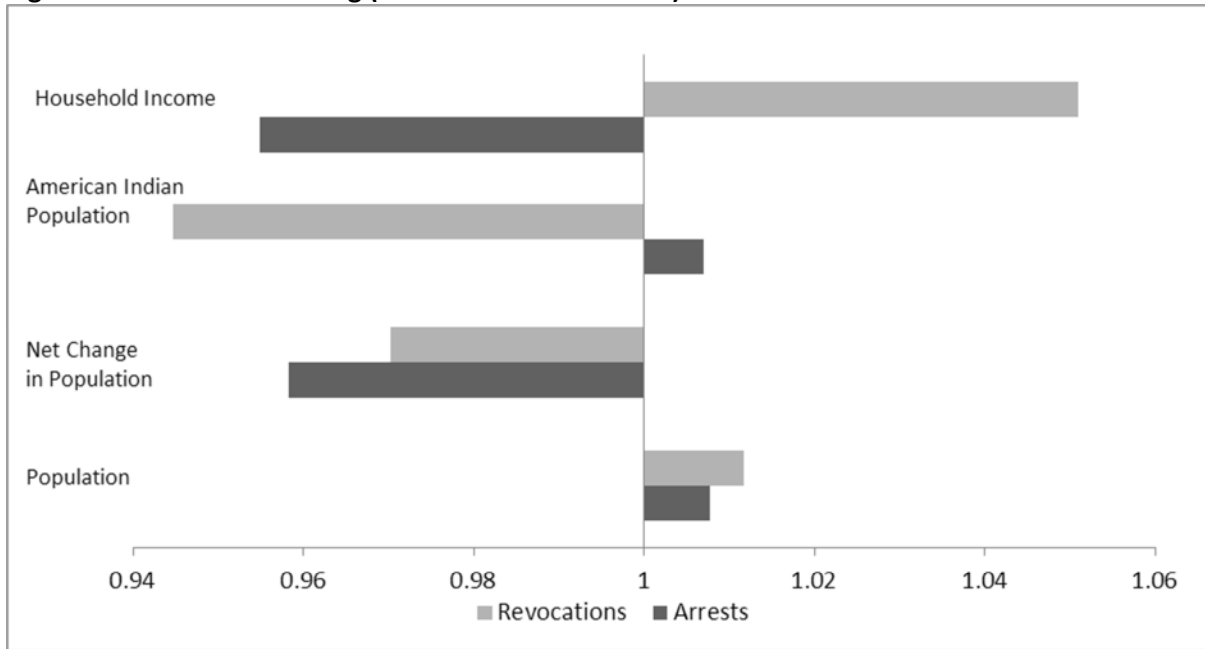
- Figure 4 shows estimates (the first set of bars) of how re-arrests and revocations differ with population (millions). *Districts with large populations have lower arrest rates and revocation rates* when risk and protective factors are held constant. Although both effects are statistically significant, the substantive differences are small.
- Districts that experienced an *increase in population between 2000 and 2006 had higher rates of re-arrests and revocations* when offender risk and protective factors were held constant. The effects shown in the figure are for a 10 percent increase/decrease in population. The effects are significant at $p < 0.001$ and appear large.
- The figure shows the effect of increasing the percentage of Native Americans in a district by 1 percent. There is no statistically significant effect on arrests. There is a statistically significant increase in revocations – i.e., districts with a larger proportion of Native Americans have higher revocation rates.
- Finally the figure shows how arrests and revocations vary with household income. The figure shows the effect attributable to a \$10,000 difference in average family incomes. Both effects are statistically significant at $p < 0.001$. *New arrests increase with income but revocations decrease with income.*

¹¹ This is known as a *fixed-effect model*. Researchers sometimes use *random-effect models* instead, but whatever the merits of the random-effect model over the fixed-effect model (i.e. efficiency), the computing software (Stata) will not estimate a gamma survival model with random effects.

¹² A survival model provides no equivalent statistics to an explained variance. The likelihood is improved by about one percent, implying that the addition of districts does not greatly improve explanatory power. A chart of district-specific confidence intervals for the fixed-effects shows that the confidence intervals practically overlap. As is often the case with large samples, a finding that is statistically significant does not necessarily imply that the finding is materially important.

¹³ The analysis file lacks good district-level variables. Nevertheless, a small set of district-level variables from Census data were included in the analysis. Details are provided in the appendix.

Figure 4. Risk of Recidivating (Arrests and Revocations) for District-Level Variables



While the analysis shows that recidivism and revocation rates differ with district characteristics, we lack any theoretical basis for interpreting these effects.

Recidivism and The Offender’s Environment

A problem with district-specific variables is that they may reflect nothing about the environment facing offenders. For example, offenders in a high-income state may themselves live in relative poverty. To examine the relationship between recidivism and offender living conditions, the study analyzed fourteen variables available at the Census tract. (The offender’s address determined the relevant Census tract.) One factor score explained most of the variance across those fourteen variables, and inspection showed that the factor score essentially captures measures of *poverty and transience*.

When the factor score (poverty/transience) is added to the model, recidivism and revocations both increase. The size of the effect for recidivism is 0.92, which is significant at $P < 0.001$. The size of the effect for revocations is 0.90, which is significant at $P < 0.001$. These effects are for a standard deviation change in the poverty/transience index. Thus, **when other risk and protective factors are taken into account, the neighborhood where an individual returns for supervision is an important factor in the success of his or her supervision. Offenders who return to neighborhoods that are seen as impoverished and transient have higher failure rates.**

Recidivism and Probation Officer Characteristics

Plausibly offenders’ outcomes may vary across probation officers. One approach to investigate this would be to estimate a random-effect hierarchical model, but the computing software did not provide for a random-effect for the gamma survival model. Furthermore, given the large number of probation officers employed by the federal system, using fixed-effects was impractical.

Instead, the study also examined how arrests and revocations varied with officer characteristics, including years of experience (as a federal probation officer and additional years in law enforcement) and education (advanced degree of a Bachelor's degree or higher).

On average, a federal offender is supervised by a probation officer who has 10 years of experience in the federal probation system (mean=10.45). Twenty-five percent of offenders are supervised by officers with six or fewer years of experience. Twenty-five percent of offenders are supervised by officers with fifteen or more years of experience. When we take state or local law enforcement experience into account the average experience increases from 10 to 11 years.

Most officer are supervised by probation officers with an advanced degree –more than half have IBachelor's degrees, somewhat less than half have Masters degrees, and a few have doctorates.

Contrary to what we would expect, findings show that both arrest and revocation rates increase with officer experience in the federal probation system. Similarly, arrest and revocations rates increase when an officer has an advanced degree.

One might expect probation outcomes to improve with probation officer experience and professional training, but that is not the case. However, adding these variables to the model explains very little residual variance (the likelihood improves by less than 1 percent) and improvements in the predictions of recidivism are negligible. We can speculate about this finding from the research on Evidence-based Practices (EBP). The research suggests, that regardless of the education or experience level of officers, if supervision is not consistent with risk, needs, and responsivity principles, there is no theoretical basis to believe that officer education and experience by itself will impact offender outcomes (unless principles of EBP are entrenched in their education/experience). Furthermore, research has demonstrated that the most effective approach for changing behavior in the community supervision context is through cognitive behavioral techniques, which involve exercises and instructions designed to alter offenders' dysfunctional thinking patterns. Likewise, research suggests that the quality and nature of the relationship between the client and the officer have an impact on outcomes.¹⁴

¹⁴ For a general discussion of community corrections programming see: National Research Council. (2008). *Parole, Desistance from Crime, and Community Integration*. Washington, D.C.: National Academies Press; Petersilia, J. (2009). *When Prisoners Come Home: Parole and Prisoner Reentry*. New York: Oxford University Press.

And for a meta-analysis of cognitive behavioral therapy see: Lipsey, M., Landenberger, N., & Wilson, S. (2007). *Effects of Cognitive-Behavioral Programs for Criminal Offenders*. www.campbellcollaboration.org/reviews_crime_justice/index.php: The Campbell Collaboration, Campbell Systematic Reviews.

Appendix. Data and Methodology

Data Assembly

The analysis file was assembled for for OPPS from federal supervision records from OPPS's internal case management database (Probation and Pretrial Services Automated Case Management System or PACTS), demographic information on probation officers from OPPS's Officer Profile Survey, information about the communities to which offenders' return and district-level data from the U.S. Census Bureau, and arrest records from the AO's Access to law Enforcement Systems (ATLAS) database and the Federal Bureau of Investigations (FBI).

The analysis presented in this report uses multiple data sources (i.e., PACTS, Officer Profile Survey, , ATLAS, FBI, and Census data) from that analysis file. The data used for the current study are described below.

Offenders in the Analysis File

This study is based on 245,362 terms of federal supervision commenced between October 1, 2004 and September 30, 2010. A term of supervision refers to a *continuous period of community supervision*. Data on these supervision terms were current as of September 30, 2010 and almost 45 percent of the terms were ongoing at that time. The analysis includes only offenders serving either a term of probation supervision (23 percent of offenders on supervision during the study period) or a term of supervised release (TSR, 77 percent of offenders).

We eliminated the following offenders from the analysis: Offenders in Guam, Puerto Rico, Northern Mariana Islands and the U.S. Virgin Islands (criminal history information was poor in these districts); the few offenders who were older than 65 or under 18 (the vast majority of offenders are within the age cohort that we retained for analysis); offenders whose supervision terms began and ended on the same day (i.e. detainers); offenders without any rap sheets (i.e., they have no rap sheets pre- or post-dating their supervision terms); offenders with other charges pending, and non-citizens in the country illegally (we were not always certain of the deportation dates).

Assembly of Offender Data (Offender Supervision Terms and Characteristics of Offenders)

The Probation and Pretrial Services Automated Case Tracking System (PACTS) provided the basic building blocks for assembling histories for offenders serving terms of probation and supervised release. For this study, we used the following PACTS data from the analysis file: offender characteristics including demographics and criminal histories and details about offender supervision terms including the type of supervision they are on and probation officers' assessment of offender risks, needs and strengths. These variables are described in table A1 below. The items with an asterisk are from the probation officer's assessment of the offender. Probation officers assess offenders' risks and needs on numerous dimensions including: criminal patterns and violence; financial, employment, and educational needs; substance abuse issues (current problems and prior substance abuse); mental health issues (current and prior mental health problems); and, family, basic and medical needs.

The analysis file also contains data from the BOP on offenders' prison terms including the time spent incarcerated. We used these data from the analysis file for the current study (see table A1).

Table A1. Offender Data: Description of Study Variables	
Variable Label (Variable Name)	Variable Description
Offender Sentences	
Type of Supervision (TSR)	The type of federal supervision the offender was sentenced to (1=TSR, 0=Probation).
Time Spent Incarcerated (PRESUPV_INCAR_DY)	The total number of days the offender was spent incarcerated in federal prison before being released to federal supervision (only for offenders on TSR).
Sentence Length (SUPV_SENT_DY)	The total number of days the offender was sentenced to federal supervision.
Demographic Characteristics	
Offender Gender (GENDER)	Offender's gender (2=Male, 1=Female).
Ethnicity (HISP)	Offender's ethnicity (1=Hispanic, 0=Not Hispanic).
Black (BLACK)	Offender is black (1=Black, 0=Not Black).
White (WHITE)	Offender's race is white (1=White, 0=Not White).
Other (OTHER)	Offender's race is something other than "white" or "black" (1=Other, 0=Not White or Black).
Offender's Age (AGE)	Offender's age in years when supervision began.
Offender's Age: 18-21 Years (AGE1821)	Offender's age was between 18 and 21 years when supervision began. (1=Yes, 0=No).
Offender's Age: 22-25 Years (AGE2225)	Offender's age was between 22 and 25 years when supervision began. (1=Yes, 0=No).
Offender's Age: 26-34 Years (AGE2634)	Offender's age was between 26 and 34 years when supervision began. (1=Yes, 0=No).
Offender's Age: 35-45 Years (AGE3545)	Offender's age was between 35 and 45 years when supervision began. (1=Yes, 0=No).
Offender's Age: 46-65 Years (AGE4665)	Offender's age was between 46 and 65 years when supervision began. (1=Yes, 0=No).
Education Level (EDUCATION_LEVEL)	The highest level of education attained by the offender at the time supervision began.
Criminal Histories	
Number of Prior Arrests* (RPI_NUM_ARRESTS)	The number of times the offender was arrested prior to the instant offense that resulted in his/her term of supervision. The maximum number arrests recorded is 15.
History of Absconding* (RPI_PREV_ABSCONDED)	The offender absconded from a previous period of supervision. (1=Yes, 0=No)
Criminal Activity on Supervision* (CRIMINAL_SUPER_ASSESS)	The offender was arrested or had his supervision revoked for new criminal conduct while under active criminal justice supervision in the community. (1=Yes, 0=No)

Table A1. Offender Data: Description of Study Variables

History of Domestic Violence* (DOMESTIC_ASSESS)	The current offense or offender's record includes charges that involve domestic violence and/or investigation uncovered indications of domestic violence corroborated by evidence such as calls to the police for domestic violence or disturbing the peace and/or sign/records of physical or psychological abuse of a domestic partner. (1=Yes, 0=No)
Most Serious Incident Offense (OFFENSE_CODE1R)	The most serious offense that the offender was convicted of that resulted in the current term of supervision.
Other Risk/Protective Factors	
Unemployed* (UNEMP_ASSESS)	The offender's probation officer has determined that the offender has the capacity to work but is not now employed. (1=Yes, 0=No)
Strong Educational Foundation* (STRONG_EDUC_ASSESS)	The offender has an advanced professional degree or is certified in a technical area. (1=Yes, 0=No)
Basic Needs* (BASIC_NEEDS_ASSESS)	Assessment of offender needs for services in the area of stable housing, food, clothing, and or community associations. The offender's probation officer has identified one or more of the following basic needs: unstable residence, food/clothing/shelter needs, and/or lacks productive community associations. (1=Yes, 0=No)
Medical Problems* (MEDICAL_NEEDS_ASSESS)	The offender has medical problems that interfere with his/her ability to work or establish constructive community ties. (1=Yes, 0=No)
Drug Abuse Problem* (DRUG_ABUSE2)	The offender reports current drug abuse or a history of drug abuse (including abuse of opiates, methamphetamines, cocaine) or there is documented evidence of past abuse (e.g., prior treatment experiences; prior positive drug tests; drug-related employment or family instability) or there is evidence that the offender is currently abusing drugs (e.g., positive drug test, physical signs) or the offender has a history of drug abuse and has been recently assessed to be at high risk of relapse at the current time. (Does not include one or two instances of drug usage or very infrequent experimentation). (1=Yes, 0=No)
Alcohol Abuse* (ALC_ABUSE)	The offender reports current alcohol abuse or a history of alcohol abuse or there is documented evidence of past abuse (e.g., prior treatment experiences; pattern of DUI arrests; alcohol-related employment or family instability) or there is evidence that the offender is currently abusing alcohol (e.g., positive alcohol test, physical signs) or the offender has a history of alcohol abuse and has been recently assessed to be at high risk of relapse at the current time. (Does not include the casual use of alcohol). (1=Yes, 0=No)
Mental Health Problem* (GEN_MH_ASSESS)	The offender has a current or historical mental health problem: the offender's history includes a professionally diagnosed mental health disorder (depression, bi-polar disorder, schizophrenia, or other mental health problem); the offender is currently undergoing mental health treatment or counseling; the offender is currently or has been in the past on a prescribed regimen of psychotropic medication to stabilize professionally diagnosed mental health disorder; the offender shows signs of mental illness such as threats of suicide or attempted suicide in the past, psychotic symptoms (e.g., auditory/visual hallucinations, delusions), or withdrawal (poor hygiene, refusal to leave home, drastic changes in physical appearance); or, there is documented evidence that the offender is currently a victim of abuse or was a victim in the past. (1=Yes, 0=No)
Institutional Adjustment Problems* (INSTITUTIONAL_ADJUST)	Reports from prison authorities document disciplinary action take to address more than minor or multiple infractions of institutional or

Table A1. Offender Data: Description of Study Variables

	Community Correction Center rules. (1=Yes, 0=No)
Strong Pro-Social Support* (STRONG_SOCIAL_ASSESS)	There is an individual or support group in the community aware of the offender's circumstances and committed to helping the offender meet objectives (including a family member, employer or co-worker, friend, church group, coach, AA sponsor, etc.). (1=Yes, 0=No)
Highly Motivated to Change* (MOTIVATED_ASSESS)	The offender has a good attitude about moving forward, has been cooperative, and has taken an active role in setting objectives and making plans to accomplish them. (1=Yes, 0=No)
Life Skills* (SKILLS_ASSESS)	The probation officer has identified skills or talents that the offender has that could be used to improve employment prospects and/or promote pro-social connections (includes skills that are self-taught or learned on-the-job as well as those gained through formal education training. (1=Yes, 0=No)

Source: Administrative Office of U.S. Courts, Office of Probation and Pretrial Services. (October, 2004). *Probation Officer's Manual: Post-Conviction Supervision Case Planning Module*; and, Administrative Office of U.S. Courts, Office of Probation and Pretrial Services. *AOUSC Diagram Report: PACTS Help Files 5.0*

Assembly of Recidivism Data: Arrests and Revocations

We assembled *arrest data* for offenders in the analysis file from arrest records extracted from ATLAS (Access to Law Enforcement Systems) and from the FBI's CCH system. ATLAS is a web-based application used by probation officers to access criminal history information for supervised offenders.¹⁵ Although electronic, the ATLAS data are reported as text files. Consequently, there were two phases to extracting the arrest records. The first was to parse the arrest data from the text-based rap sheets (including the arrest date and arrest charge). This first step provided literal descriptions of the charged offense: *arrest strings*. The second was to parse the myriad of arrest strings into meaningful offense categories – the National Crime Information Center (NCIC) codes. The NCIC maintains a list of Uniform Offense Codes in order to standardize criminal offenses at the national level. As of May 29th 2007, there were 50 general categories employed by the NCIC. The NCIC codes were then collapsed into ten broader offense categories used by the AOUSC: Violent, Property, Drug, Sex Offense, Firearms, Escape/Obstruction, Public Order, Technical, Immigration, and Other.

¹⁵ The ATLAS system accesses offenders' criminal histories through NLETS (formerly known as the National Law Enforcement Telecommunications System), a computer system that retrieves criminal history information from the FBI and state computer networks. The Interstate Identification Index (III), a component of the Integrated Automated Fingerprint Identification System and maintained by the FBI, is an index system for identifying the location of automated criminal history records. III maintains the dictionary of federal and state identifiers for each person, which ATLAS uses in its request for an offender's criminal history. At the time these data were assemble, criminal histories from the District of Columbia, Maine, and Vermont were not available to ATLAS (they currently have data in ATLAS). For these states, we extracted local arrest records from the FBI's Computerized Criminal History's (CCH) database. Otherwise we use the FBI's CCH data for arrests by federal agents, which do not get reported in the state databases.

For the study, we also examined how well the statistical model predicts the “dangerousness” of an offender. For this analysis, we classified recidivism into to five offense categories: violent, property, sex, drug and other. The categories and their component parts are listed in table A2, below. The table reports the number of times that each of the specific offenses occurred. Placement of offenses into violent, property, drugs, sex and other is judgmental.

Table A2. Major Offense Categories and Component Parts					
VIOLENT		PROPERTY		OTHER	
Arson	31	Bribery	8	Antitrust	1
Assault	5,907	Burglary	996	Civil Rights	6
Crimes against Person	35	Damage Property	353	Conservation	21
Homicide	236	Embezzlement	44	Election Laws	1
Kidnapping	299	Extortion	14	Escape	791
Organized Crime	5	Forgery	671	Family Offense	330
Robbery	912	Fraud	1,398	Gambling	35
Threats	112	Larceny	2,920	General Conspiracy	18
Weapons	726	Money Laundering	20	Health/Safety	17
		Property Crimes	8	Immigration	785
		Smuggling	11	Material Witness	4
		Stolen Property	333	Military	18
		Stolen Vehicle	329	Moral Decency	59
		Tax Revenue	27	Obscenity	49
				Public Order	381
				Public Peace	449
				Sovereignty	1
				Unknown	1,834
SEX					
Sex. Exploitation of Minor	7				
Sexual Assault	392				
Sex Offense	342				
DRUGS					
Drugs	9,003				

We were unable to classify about 6 percent of the arrests; hence, they appear as “unknown” in the other category. Likely there exists a small amount of misclassification among the offenses identified in the table. Moreover, offenses such as “assault” include both assault with battery and simple assault. It is often difficult to distinguish between the more and less serious forms of offenses based on arrest records.

Thirty percent of the arrest charges are for drug-related crimes but it is difficult to distinguish between possession and sales, and within sales, by low-level and high-level distribution. Twenty-eight percent of the arrest charges are for violent crimes, and of those, assaults dominate (seventy-one percent of violent crimes). Property crimes account for about twenty-four percent of the arrest charges, and of those larceny and fraud predominate (sixty-seven percent). About three percent of the new charges are for sex offenses and about sixteen percent are classified as other.

Some of the other offenses are uniquely federal. Immigration offenses are an illustration. Analysis excluded all aliens who were within the country illegally else immigration violations would likely be a

larger category. Also arrests for technical violations of the conditions of supervision do not appear in this list.

Data on *revocations* were assembled from PACTS – probation officers provide a reason that supervision ended in PACTS, including a revocation.

Assembly of District-Level Data, Data on Offender’s Environments, and Officer Characteristics

District-level variables were assembled from FedStats, an online database that provides statistics compiled from various Federal Government agencies, including the U.S. Census Bureau.¹⁶ Table A3 below lists the district-level variables used for the analyses, and describes those variables.

Table A3. District-Level Data: Description of Study Variables	
Variable Label (Variable Name)	Variable Description
Population (POPULATION)	The 2006 estimated number of people who live in the district from the U.S. Census Bureau, Population Estimates Program (PEP).
Net Change in Population (NET_CHANGE)	The net change in districts population from April 1, 2000 to July 1, 2006 (from the U.S. Census Bureau, PEP)
American Indian Population (INDIAN)	The proportion of American Indian/Alaskan Native persons in the district (from the U.S. Census Bureau, County Population Estimates by Demographic Characteristics)
Household Income (INC_HOUSEHOLD)	The average household income in the district (from the U.S. Bureau of Economic Analysis, Regional Economic Information System)

Source: <http://www.fedstats.gov/>

To examine the relationship between recidivism and offenders’ environments, the study analyzed fourteen variables (listed in table A4 below) from the U.S. Census Bureau that provide information on the communities offenders reside. These fourteen variables were available at the Census tract level. Offenders’ addresses from PACTS were used to determine the relevant Census tract. Principal components factor analysis was used to create one factor score that explained most of the variance across those fourteen variables, and inspection showed that the factor score essentially captures measures of *poverty and transience*.

Table A4. Census Variables in the Poverty/Transience Factor (POVERTY)	
Census Variable	Variable Description
c00t_pnhs	Percent of persons 25 years and over in the census tract in 2000 with less than 9th grade education (no high school education).
c00t_pdrop	Percent of persons 25 years and over in the census tract in 2000 with a 9th through 12th grade education but no diploma (some high school).
c00t_punemp	Percent of persons 16 years of age and over in the census tract in 2000 in the civilian labor force who were unemployed.

¹⁶ <http://www.fedstats.gov/aboutfedstats.html>

Table A4. Census Variables in the Poverty/Transience Factor (POVERTY)

Census Variable	Variable Description
c00t_pnotlf	Percent of families and subfamilies with children where no parent is in the labor force.
c00t_hhinc	Median household income in 1999 in the census tract in 2000. A median household income of 200,001 indicates > \$200,000.
c00t_pwelf	Percent of households in the census tract in 2000 with public assistance income in 1999.
c00t_faminc	Median family income in 1999 in the census tract in 2000. A median value of 200,001 indicates > \$200,000.
c00t_pcinc	Per capita income in 1999 in the census tract in 2000.
c00t_perpov	Percent of persons for whom poverty status is determined in the census tract in 2000 below the poverty level in 1999.
c00t_perpovh	Indicator that the poverty rate for the census tract in 2000 was high poverty (greater than or equal to 40 percent).
c00t_pinpov	Percent of persons for whom poverty status is determined in the census tract in 2000 whose ratio of income to the poverty level in 1999 is under 1.00.
c00t_prenoc	Percent of occupied housing units in the census tract in 2000 that were renter occupied.
c00t_ru200	Percent of specified renter occupied housing units in the census tract in 2000 with monthly gross rent under \$200.
c00t_hhval	Median value of specified owner occupied housing units in the census tract in 2000. A median value of 1,000,001 indicates > \$1,000,000.

Officer profile data came from a self-report survey administered to probation officers by the OPPS in 2010. Table A5 lists the variables in the study. We matched about 80% of the officer profile data with the supervision records. We presume that failure to match resulted from one of two reasons. First, not all active probation officers completed the officer profile survey. Second, some probation officers supervised offenders prior to 2010 but retired before the survey. Thus, there could be some selection bias but it seems unlikely that any biases would materially impact the study findings.

Table A5. Officer Profile Survey Data: Description of Study Variables

Variable Label (Variable Name)	Variable Description
Experience as a Federal Probation Officer	The number of years experience as a federal probation officer.
Experience in Law Enforcement	The number of years of additional experience in law enforcement (including state and local).
Education Level	The education level of the probation officer.

Definitions and Additional Technical Details

Defining Recidivism

A supervision terms begins when an offender first enters active supervision. For offenders entering probation, the term typically follows sentencing. For offenders entering terms of supervision

release, the term typically follows release from prison. Therefore the beginning of a community supervision term, and hence the initiation of the time-at-risk for recidivism, is clearly identified. A term ends when the offender is removed from active supervision, but analysis is complicated by the fact that many offenders who appear in the analysis file have open terms; that is, they have not yet completed their terms. The offender is considered to be at risk between the date when he or she enters supervision and the date when he or she leaves active supervision, or the last observed date for active terms.

For the study, analysts were able to identify when an offender entered active supervision, when he or she left active supervision (or the last observed date when the term remained open), and arrests that occurred during active supervision. The term ended with an arrest provided an arrest occurred before the term ended and the arrest satisfied two criteria. First, the arrest had to be for a serious crime. At the time of this study, serious crimes excluded traffic violations, obstruction of justice, liquor law violations, public peace, invasion of privacy and prostitution. Traffic violations and obstruction of justice predominated. Second, the arrest could not have been for a technical violation of the conditions of supervision. Simply put, the computing algorithm ignored arrests for minor crimes and for technical violations.

When an arrest occurred for a serious crime during the period of active supervision, we defined this as criminal recidivism, and we associated the date of the arrest as the date of recidivism. When an arrest occurred, it defined the outcome. That is, community supervision may have been revoked following an arrest for a serious crime, but the computing algorithm would not define this as a revocation.

For the outcome to be defined as a revocation, the term had to satisfy two criteria. The first criterion is that the term could not have ended with an arrest. The second criterion is that the close code either had to indicate that the term ended with a revocation or there must have been an arrest for a revocation. When these two criteria were satisfied, we considered the term to end with a revocation. The remaining decision was to put a date on when the revocation occurred. If there was an arrest for a revocation, we used that date; otherwise, if there was an inactive date, we used that date; and finally, if there was neither an arrest for a revocation nor an inactive date, we used the date that the term was closed by the probation officer.

Subsequent to preparing this analysis file and performing the analysis reported in this paper, after further investigations and in continuing consultation with the Office of Probation and Pretrial Services, we modified the definition of a revocation. Currently, the definition of a revocation requires that the term end with a close code indicating a revocation; the date of the revocation is always the date the case was closed. We also exclude some types of cases, including offenders who had pending cases at the time they entered supervision and illegal immigrants, from the analysis of recidivism. Because of these changes, and because the analysis file developed for OPPS continues to change with time, recent tabulations of recidivism will not exactly match those reported in this paper.

Arrests

Offenders may have multiple arrests during the study period. For this study, we took the first arrest. Additionally, offenders may have multiple arrests on the same day. Where an offender has more than one arrest on the same day we took the most serious charge. The arrest data were coded into the National Crime Information Center (NCIC) codes. The NCIC codes are in order of seriousness and we used this ordering to select the most serious offense when there were multiple arrests on the same day. This selection process is described in more detail in a technical report titled: *A Study of Federal Post-Conviction Supervision: Predicting Criminal Recidivism & Evaluating Supervision Strategies*.

The study provides arrest rates for serious offenses. There is no absolute standard for classifying offenses as more and less serious. Twenty-eight states report offense severity (e.g., felonies, misdemeanors, petty offenses, and infractions) for arrests. A crosstab between offense severity and the arrest categories, in these states, revealed that a number of arrests were often for misdemeanors, infractions, and petty offenses. Based on this finding, we established a rule that all arrests that were reported as misdemeanors, petty offenses or infractions 75% or more of the time would be categorized as a minor offense. Consequently, the following arrests were considered “minor” offenses for the purposes of the analysis and were excluded (i.e., if one of these offenses was the first arrest we used the first subsequent re-arrest offense that was a “serious” offense): traffic, liquor, obstructing police, obstruction, anti-trust, relatively minor crimes against persons (e.g., misdemeanors for harassment, reckless endangerment), election laws, invade privacy, military, public peace, and prostitution. Offense categorized as unknown and some of the offenses that fall under the category “other” might have been classified as less serious.

Risk and Protective Factors

Statistical model building led to a model with twenty risk and protective factors that predicted recidivism defined as a new arrest during the period of supervision. Figure 3 in the body of the report identifies those risk and protective factors. The figure calibrates the risk and protective scores in two ways. The first approach is to assume that the risk/protective factor is a switch: It is either present or absent. For example, being male is a switch: the unit change is the risk factor of being male instead of female. The number of prior arrests and age are not switches, and for those, the figure shows the effect of the entire range for the number of arrests (0 to 15) and the figure suppresses the effect of age (18 to 65) to preserve the scale for the other effects.

The second approach is to measure the effect of the risk/protective factor as a standard deviation change (rather than a unit change). For the number of arrests and age the standard deviation change was computed about the mean value for arrests and age because the model was nonlinear for those two variables.

Regardless of the calibration, the interpretation is much the same. At one extreme, the number of prior arrests is clearly a risk factor. At the other extreme, being motivated to change and being older rather than young are strong protective factors.

Responsible Officer

The analysis file identifies up to thirteen probation officers who sequentially had responsibility for supervising an offender. It is not unusual for an offender to move from officer-to-officer, but a single probation officer typically handles the offender throughout that offender's term. Even when multiple probation officers share responsibility, a single offender typically supervised the case for more than fifty percent of the term's duration.

All offenders had at least one probation officer; nearly 40 percent had two or more officers, about 17 percent three or more, about 7 percent four or more, about 3 percent had five or more, and less than 1 percent had six or more. Consequently, for meaningful analyses we needed to identify one officer who was responsible for the offender during their supervision term – the *responsible officer*.

For 60 percent of offenders, a single officer had responsibility for the offender and therefore is the *responsible officer* for those offenders. When there is more than one officer, the officer who spent the largest proportion of calendar time on the case is identified as the *responsible officer* for the offender. (Calendar time is measured in days from when an officer took responsibility until data collection ended, the term ended, or case responsibility was transferred to another officer.) Across all cases, a single officer accounted for 87% of the time on average. In at least 90 percent of the cases, a single officer accounts for a majority of the time. Thus, it seems justifiable to identify the officer who spent the largest proportion of time on the cases as the *responsible officer*.