Does Prison Harden Inmates? A Discontinuity-based Approach*

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Abstract

Some two million Americans are currently incarcerated, with roughly six hundred thousand to be released this year. Despite this, little is known about the effects of confinement on the post-release lives of inmates. Focusing on post-release criminal activity, we identify the effect of prison conditions on recidivism rates by exploiting a discontinuity in the assignment of federal prisoners to security levels. We find that worsening prison conditions significantly increases post-release crime, and that this increase is skewed towards the commission of violent crimes.

> There are similar punishments and crimes called by the same name, but there are no two beings equal in regard to their morals; and every time that convicts are put together, there exists necessarily a fatal influence of some upon others, because, in the association of the wicked, it is not the less guilty who act upon the more criminal, but the more depraved who influence those who are less so.
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> Gustave de Beaumont and Alexis de Tocqueville, 1833

America's jails and prisons house roughly two million inmates (Bureau of Justice Statistics, 2002), nearly twice as many as in 1990 and more (in per capita terms) than

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any other OECD country (OECD, 2001). Current and former prisoners constitute an increasingly large share of the U.S. population, yet little is known about the effects that imprisonment has on the lives of inmates.[1] This omission is unfortunate: each year roughly six hundred thousand are released from incarceration (Bureau of Justice Statistics, 2002), and an estimated two-thirds of those released will be rearrested within three years (Langan and Levin, 2002). This alone means that former inmates account for a significant share of crime. Moreover, unlike most determinants of crime such as the state of the economy, prison conditions are under the direct control of the criminal justice system. Understanding the effect of conditions of confinement on post-release criminal activity is therefore essential to good crime-control policy.[2]

Theory alone cannot tell us whether an increase in the severity of prison conditions will increase or decrease the propensity of inmates to commit crimes after release. Models of "specific deterrence" (Smith and Gartin, 1989), which posit that criminals learn from their own experiences about the severity of penalties, predict that harsher conditions will decrease the propensity to recidivate. If harsh conditions in the present incarceration signal harsh conditions in future incarcerations (for example because of an inmate classification system), deterrence will tend to decrease future criminal activity. Alternatively, if harsher prison conditions correspond to inferior labor market outcomes (as suggested by Western, Kling, and Weiman, 2001) or if prison life induces a taste for violence (Banister, Smith, Heskin and Bolston, 1973), then harsher conditions may lead to more crime following release. More generally,

[1]Research on prison has instead focused on its deterrence and incapacitation effects, largely ignoring the effects of prison conditions on inmates' post-release outcomes. See, for example, Levitt (1996) and Kessler and Levitt (1999). Katz, Levitt, and Shustorovich (forthcoming) estimate the deterrence effects of harsher prison conditions.

[2]For example, the literature on prison privatization has recently focused much of its attention on whether private prisons are likely to provide lower quality services than publicly managed prisons (Hart, Shleifer, and Vishny 1997; Camp and Gaes, 2001). If prison conditions affect rates of post-release crime commission, then providing quality-based incentives to private prison managers becomes an even higher priority.

a growing literature on social interactions highlights the influence of peer effects on behavior (Glaeser, Sacerdote and Scheinkman, 1996). During incarceration, inmates may acquire skills, learn of new prospects, or develop criminal contacts.

In this paper we exploit a feature of the federal inmate classification system to estimate the effect of moving a prisoner to a higher security level. Each federal inmate is assigned a score which is intended to reflect his need for supervision. Which security level an inmate is classified under depends on where his score falls relative to certain predetermined cutoff values. By comparing inmates just at the boundaries between different security levels, we can estimate the effect on recidivism of being assigned to a higher security level. Since conditions of confinement vary dramatically with security level, this setting provides a quasi-experiment for identifying the effect of prison conditions on post-release outcomes.

We find that moving a prisoner from minimum to low security increases his daily hazard rate of rearrest following release by a factor of two, making him likely to be rearrested 50% sooner. This effect is not present in a control population of prisoners who are assigned scores but are not housed with the general prison population, suggesting that our findings are indeed driven by the effect of prison conditions on inmates.

The paper is organized as follows. Section 1 discusses the relationship between security level and conditions of confinement and describes the dataset. Section 2 presents our findings as well as some tests of our identifying assumptions. Section 3 concludes.

1 Background and Data Description

1.1 Inmate Classification and Security Level

Upon entry to the federal prison system, an inmate is processed using an Inmate Load and Security Designation Form (see Figure 1).[3] The Security Designation Data recorded on the form are used to produce the individual's security custody score.[4] Each of seven items contributes points to an overall sum. For example, offenses are grouped into five categories, from lowest severity (such as traffic violations) to greatest severity (such as homicide), and each inmate receives an associated offense severity score ranging from 0 (least severe) to 7 (most severe). Appendix Table 2a provides further details.

Once the score has been computed, it is compared to a set of cutoff values (see Appendix Table 2b) to determine an inmate's security level. Certain additional considerations may intervene to prevent the inmate from being housed in what would otherwise be his security level. For example, deportable aliens may not be housed in minimum security, nor can those who have been convicted of threats to government officials.[5] In some cases security level can be changed at the discretion of a Bureau of Prisons (BOP) official, although such instances appear rare. Once a security level has been assigned to an inmate a BOP employee assigns the inmate to a prison based primarily on location and on the availability of space.[6]

[3]Throughout this section we rely on the Federal Bureau of Prisons' Security Designation and Custody Classification Manual (1985) for details about the procedure for classifying inmates. A copy of the current manual is available at www.bop.gov/progstat/ser5000.html.

[4]The score is intended to predict prisoner misconduct and therefore to measure the supervision needs of individuals. Over time, the score has been refined through continuing research into the predictors of prisoner misconduct (Harer and Langan, 2001).

[5]Other such considerations include medical and mental health, aggressive sexual behavior, offense severity, organized crime, and gang membership.

[6]An inmate can change facilities or security levels during the course of his incarceration, due, for example, to changes in health or to in-prison misconduct. As changes are endogenous, we will focus on security level upon entry to the federal prison system.

An inmate's assigned security level has an enormous impact on his experiences in prison. As Appendix Table 2a details, prisoners convicted of more severe offenses, prisoners with more serious prior records, and prisoners with histories of violence are all, by design, more likely to be placed in more secure facilities. Thus comparing prisoners in different security levels one would find that those housed in more secure facilities are exposed to more violent individuals with more serious criminal histories. Given the growing literature on peer effects and the intensity of contact co-housed prisoners experience, this alone would warrant large security-level effects on post-prison characteristics.

Unfortunately, very few anthropological studies compare facilities with different security levels.[7] Fortunately, ample inmate survey data provides a reasonable account of how life differs across security levels. Sufficient for our purposes, the Survey of Inmates of Federal Correctional Facilities (U.S. Department of Justice, 1991), contains data on inmate demographics, criminal histories, experiences in prison, and self-reported conditions of confinement for a nationally representative sample of federal inmates.[8]

Table 1 presents some simple comparisons across security levels, both in self-reported conditions of confinement and in-prison misconduct. The data strongly confirm the intuition that more secure facilities allow less contact with the community and less freedom of movement. While 14% of minimum security inmates report having been allowed furloughs during their current period of confinement, only 2.5% of low security inmates have had furloughs; for maximum security inmates the figure is below 1%. Similar trends show up in the percent of respondents who have been

[7] Anthropological accounts of life in prison typically focus on one institution, usually maximum security (Sykes, 1958; Conover, 2001).

[8] While using self-reported data to compare conditions across security levels does raise some methodological issues, Camp (1999) has found that such surveys do contain information helpful in making comparisons between facilities.

seriously injured during confinement. Moving from minimum to low security exposes an additional 2.7% to serious injury; moving from low to medium or medium to maximum increases the rate of injury by 1.2% and 1.8%, respectively. On the whole then, the data strongly supports the view that conditions of imprisonment differ dramatically by security level. Higher security prisons involve less contact with the outside world, allow less freedom, and subject inmates to far more violence.

1.2 Data

Our data are a representative sample of 1,205 inmates released from federal prisons in the first six months of 1987 (Harer, 1994). The inmates were followed for three years after release, and information on all post-release arrests during the follow-up period was recorded. Data on demographic characteristics and criminal histories were also recorded, as were the inmates' security custody scores and security levels on entry to the system, when available.[9]

Of the original sample of 1,205 inmates, security level data are missing for 16, and 11 served short sentences in halfway houses that do not have a security designation. Another 216 were placed in administrative facilities for special medical needs; we will later use this sub-sample as a control group in our analysis. Finally, 12 inmates have missing data on score, leaving a total sample of 950.

Table 2 presents summary statistics for this group. Most striking is the fact that half of all of inmates were rearrested within three years of release, a level comparable to most state-level studies of recidivism (Camp and Camp, 1997). Other sample characteristics are less surprising: relative to the U.S. population, the sample contains

[9]In many cases–usually inmates who entered the system prior to the introduction of modern computer records–data from the initial classification form was not available. In these cases score and security level were recorded from the earliest available reclassification form. The components of the score are unlikely to change during confinement, and conditional on time of entry, we find that our conclusions are quite similar (and statistically indistinguishable) across the two groups.

more males, fewer whites, fewer high school graduates, and more previously convicted offenders. Grouping by security level, Table 2 also demonstrates the large changes in these characteristics across levels. For example, the percent of convicts rearrested within 3 years is 38% in minimum security, but jumps to 55% for low security, and is 60% for all levels higher then low. In these level statistics the most dramatic changes occur when leaving minimum security, leading us to suspect that our strongest results will come off this break.

A crucial requirement for our analysis is that security level vary discontinuously with score. As Figure 2 demonstrates, the data confirm what policy implies: the probability of being placed in low rather than minimum security jumps discretely when the score passes the official cutoff of 6. Similar jumps are visible at each cutoff (see Appendix Table 1).

2 Results

Given how drastically prison conditions differ between security levels, it is plausible that the type of an inmate's prison greatly affects his post-prison outcomes. To test this we exploit the fact that the assignment process outlined in Section 1 exhibits discontinuities at several pre-determined cut-off points. Inmates who find themselves at opposite ends of any of these cut-offs are likely to be ex-ante comparable in all underlying attributes, providing us with a quasi-experimental way of testing the effects of security level. A brief discussion of this method and its identifying assumptions is appropriate.[10]

[10]Regression discontinuity is not new to the study of crime. Berk and Rauma (1983) investigate the effects of transitional aid to prisoners on recidivism, exploiting a California policy which extends unemployment insurance to prisoners who work a certain number of hours prior to release. Berk and de Leeuw (1999) also study the California prison system, using a regression discontinuity design to predict the effects of various assignment procedures on in-prison misconduct. More recently, this technique has been used to estimate the effects of financial aid on college enrollment (van der Klaauw

In a regression-discontinuity design, subjects are assigned a treatment condition based on a known and measured assignment score. For federal inmates the security designation score discussed in Section 1.1 serves this purpose. By conditioning our analysis of recidivism on both an inmate's score and the resulting security level, we obtain unbiased estimates of the treatment effect. If the assignment rule were followed without exception we would have a "sharp" RD design. This design assumes that all variables (over which ex-post recidivism differs) vary continuously with the assignment score, while the treatment jumps at the pre-determined cut-off. In essence then, within a small interval around a cut-off the allocation of prisoners to different security levels amounts to a random assignment procedure. We further assume that while recidivism varies continuously with score, assigning an inmate to a higher security level results in an additive shift in log recidivism. In other words, assuming that the two within-group conditional expectation functions are parallel gives us our first design:

$$\ln(Y) = \beta X + \lambda g(score) + \alpha_1 S_6 + \alpha_2 S_9 + \alpha_3 S_{13} + \epsilon. \tag{1}$$

Here Y is years till re-arrest, $g(score)$ is a fourth order polynomial in the security custody score, and S_n are dummies for $score > n$. X is a standard matrix of covariates which predict recidivism; their addition reduces the error on our estimate of the treatment effect.

To illustrate the effect of security level on recidivism, Figure 3 plots median time to re-arrest against score. We focus here on the change between minimum and low security as we have relatively more data at this location and, on the basis of Section 1, expect the largest effect here.

2001), the effect of incumbency on election results (Lee, 2001), and the effects of class size on school performance (Hoxby, 2000).

As a preliminary visual test of our identifying assumptions, Figure 4 plots median predicted time to re-arrest against score. The predicted value is formed from a regression of time to re-arrest on a rich set of covariates.[11] This regression performs quite well in predicting recidivism, with an R^2 of 18%. As the figure shows, the predicted value varies quite smoothly with score and displays no jump between the cutoff values of 6 and 7. Thus a preliminary examination suggests that our identifying assumptions are indeed reasonable.

2.1 OLS Estimation

Estimating Equation (1), our first set of regressions apply the sharp RD design to the sub-sample of prisoners for whom the security custody score solely determined their initial prison placement. As we noted in our data description, this comprises about two-thirds of our sample. Recall that medical and other considerations can override the score in determining final placement. Our first OLS regression on non-overridden prisoners (Table 3, Column 1) suggests that moving from a *minimum* to *low* security facility reduces an inmate's expected time to recidivism by 73%. In Column 2 we include other ex-ante observable inmate characteristics such as sex, age, race, family and educational status. This second regression (Table 3, Column 2) shows that the move from minimum to low security is by far the main predictor of recidivism in the data. Neither of the other two security level cutoffs included (moving from Low to Low/Medium to Medium) proves significant, due primarily to the paucity of the data at those levels.

In the remaining columns of Table 3 we reintroduce those inmates whose security designations were overridden. This biases downward our estimates on the treatment effect of a higher security level, since the pre-determined cut-offs no longer solely

[11] Included in the regression are age and dummies for high school graduate, prior convictions, married, white, male, and employed prior to arrest.

determine the security level of an inmate. Estimating Equation (1) on the whole sample, our coefficient on moving from minimum to low security falls to 42%, but remains significant.

2.2 Hazard Model Estimation

Since the inmates in our sample were followed for only 3 years after release, our measure of recidivism is right-censored. Also, as Kiefer (1988) notes, the distributional assumptions implied by OLS are typically inappropriate for analyzing duration data of this kind. We therefore adopt the Cox proportional hazard model to provide alternative estimates of the effect of security level on recidivism.

In the Cox model, survival-time data is analyzed assuming that an underlying hazard rate of failure is multiplicatively shifted by changes in right-hand-side variables. In our study the underlying function is an inmate's daily probability of re-arrest, with the resulting survival time being the length of time a prisoner remains outside the penal system. The Cox model estimates the form of this hazard function directly off the data, and hence makes no functional form assumptions about the underlying process which generates recidivism. This specification also allows us to take advantage of information about when a prisoner is rearrested. Here, individuals who are not rearrested during the follow-up period are treated as censored observations and do not bias our results.

In particular, the Cox model assumes that the hazard rate of rearrest $h(t)$is given by

$$h(t) = h_0(t) \exp\left(\beta X + \lambda g(score) + \alpha_1 S_6 + \alpha_2 S_9 + \alpha_3 S_{13}\right) \tag{2}$$

where $h_0(t)$ is the baseline hazard function, X is a standard matrix of covariates, $g(score)$ is a fourth order polynomial in the security custody score, and S_n are dum-

mies for $score > n$. The parameters α_n capture the effects of security level on the hazard rate of rearrest. Again, the underlying assumption required to identify the effects of security level is that all omitted characteristics vary continuously with *score*.

Table 4 reports the results of several Cox designs. Following the logic of our OLS analysis, column (1) reports a Cox regression run on only those inmates for whom the security-designation score solely determined their security designations. The coefficient of 2.81 on S_6 indicates that moving from minimum to low security nearly triples the daily hazard rate of re-arrest. As column (2) reports, re-introducing those inmates whose placements were overridden reduces this coefficient to 2.01, a doubling of the daily hazard rate.

Column (3) of Table 4 restricts attention to those inmates who served at least a year of their sentences before being released. If the treatment effect we estimate is due to harsher prison conditions, it seems natural that it would increase with exposure time. Column (3) confirms that prediction; the coefficient on S_6 rises from 2.01 to 2.63. To test whether the effect is larger for inmates with longer stays we interact incarceration time with our cut-off dummies and re-estimate the model on the full sample. Column (4) reports these results, which suggest that each additional year served roughly doubles the effect of moving from minimum to low security.

One plausible explanation of increased recidivism is the acquisition of crime-specific skills while incarcerated; higher security levels may have a greater range of "teachers" available. This learning would tend to increase an inmate's wage to criminal activity relative to their legal wage and lead to more post-release crime. This hypothesis would also predict that inmates in higher security levels are more likely to commit more profitable, pecuniary crimes (such as burglary, larceny, and auto theft) than inmates in lower security levels.

The data seem to reject this hypothesis. We estimate a probit model on inmates re-arrested during the follow-up period, where the dependent variable is a dummy

indicating the inmate was arrested for a nonpecuniary crime such as murder or assault.[12] Inmates placed in low security facilities are considerably more likely to commit nonpecuniary crimes than inmates placed in minimum security, with a coefficient on Score>6 of $0.28, (0.13)$.[13] It seems that more severe prisons create more violent criminals, not more skilled ones. To the degree that violent crimes bear higher social costs, this estimate suggests that harsher prison conditions induce not only increased, but systematically worse crimes.

2.3 Robustness

The estimates we have presented are consistent under the maintained hypothesis that all correlates of recidivism vary continuously with score. While it is not possible to test all covariates, we can ask whether all observed covariates meet this criterion. Figure 4 presented some preliminary visual evidence that predictors of recidivism vary continuously with score. Table 5 tests this claim more formally, regressing demographic characteristics as of entry to prison on dummies for score cutoffs and a fourth-order polynomial in score. As columns (1) through (3) report, none of these characteristics appears to have a discontinuity at the score cutoffs. Thus it seems unlikely that our results are driven by a pre-existing discontinuity at the score cutoffs.

An alternative check on our assumptions is to examine a population with known scores that is not housed in accordance with the security guidelines of those scores. Inmates housed in "administrative" facilities, which are essentially prison hospitals, constitute just such a population. They are housed apart from the general population and are therefore not exposed to the variation in conditions of confinement that we discussed in Section 1. Our dataset contains 211 inmates with known scores who

[12] We categorize manslaughter, homicide, sexual assault, assault, property damage, and sex offenses as nonpecuniary.

[13] This effect is robust to the inclusion of a fourth-order polynomial in score.

were housed in administrative facilities. Overall these inmates exhibit similar rates of recidivism to the general inmate population, and we find that similar demographic characteristics predict recidivism in both groups. As column (5) reports, there is no evidence of a discontinuous relationship between score and recidivism for these inmates. For example, moving an inmate housed in an administrative facility from minimum to low security designation reduces his expected time to rearrest by less than 1%.

A final concern is that our estimates measure the post-prison arrest rate, not necessarily the crime-commission rate. The claim that harsher prison conditions increase the commission of crimes rests on the assumption that the probability of arresting an ex-convict conditional on his having committed a crime does not depend on his former security level. For example, if upon release a low security inmate is subject to more frequent drug tests than his minimum security counterpart, our results may be picking up an increased probability of re-arrest that has nothing to do with increased criminal tendencies.

Although the parole system leaves a great deal of room for individual discretion, most state parole agencies use standardized risk assessment tools to map inmates into supervision levels (Jones et al, 1999). None of the instruments we examined take account of an inmate's former security level, nor look as if their cut-offs coincide with those in the security custody score. Furthermore, the variables these systems do take into account relate primarily to providing the appropriate services (drug users receive drug counselling) and limiting especially newsworthy crimes (former pedophiles are monitored very closely). Finally, the effect of security level on recidivism is visible even if we exclude parole violations from our sample. Thus, while we cannot completely rule out a bias, it seems likely that the coefficients we obtain represent a true treatment effect of security level on recidivism and not just an increased chance of arrest.

3 Conclusion

With over two million inmates currently incarcerated and six hundred thousand inmates released per year, the demographic impact of American prisons can hardly be understated. In this paper we have attempted to understand the impact that incarceration has on inmates' subsequent lives, focusing on perhaps the most serious and socially costly consequence of that incarceration, recidivism into crime. Our findings suggest that inmates respond to harsher prison conditions by recidivating much earlier and into more violent crimes. By exploiting discontinuities in the assignment of inmates to different security levels, we isolate the component of this effect that results directly from differing treatments, from the negative selection the assignment process produces.

To the degree that as an institution, prisons exist to reduce crime (both through deterrence and incapacitation) our estimates serve as counterpoint. The deterrence effect of harsher sentences has been widely studied, and the incapacitation of criminals clearly reduces the immediate commission of crimes. Our results suggest these reductions may come at the cost of future crimes, crimes that may be systematically different from those that preceded incarceration.

Clearly further research is required to illuminate these effects more fully. A richer understanding of the ways inmates respond to both harsher conditions and exposure to more violent peers would allow prison systems to reduce socially costly recidivism by redesigning their assignment systems, both between and within prisons. Prison sentences and conditions could, in principle, be tailored to minimize the social costs of crime, taking into account both current crime deterrence and future crime recurrence. With the volume of prisoners that move through the American system showing no signs of decline, the potential for social gains through such an exercise are considerable.

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Table 1: Security Level and Prison Conditions

Percent of Inmates	Security Level			
	Minimum	Low	Medium	Maximum
Receiving a furlough	14.20%	2.50%	1.60%	0.78%
In cell for > 8 hours per day	49.01	55.21	55.03	58.22
Seriously injured	16.54	19.21	20.45	22.19
Found guilty of prison rule violation for:				
Possession of drugs	0.45	2.02	3.59	15.78
Possession of alcohol	0.11	0.47	2.63	9.53
Possession of a weapon	0.00	0.12	0.99	7.66
Assaulting an inmate	1.07	3.32	5.05	9.38
Assaulting a correction officer	0.00	0.36	1.04	5.94
Number of observations	1782	843	2315	640

Source: Authors' calculations based on U.S. Department of Justice (1991).

Table 2: Summary Statistics

Security level	All	Minimum	Low	>Low
Mean time to rearrest	2.37	2.53*	2.17	2.16
Percent of inmates who are:				
Rearrested within 3 years	46.84	37.83*	54.55	60.23
High school graduates	55.79	64.64*	46.06	44.02
Previously convicted	68.74	58.37*	80.61	82.24
Married as of arrest	38.42	43.54	36.36	29.34
Employed before arrest	53.79	63.69*	44.85	39.38
White	71.26	76.43*	67.88	62.93
Male	92.21	86.12*	100.00	99.61
Number of observations	950	526	165	259

Source: Authors' calculations.

Notes: * denotes difference in means between minimum and low security statistically significant at the 5% level

Table 3: OLS Estimates
Dependent variable: log(years until rearrest)

	(1)	(2)	(3)	(4)
Sample	Sharp	Sharp	All	All
Score>6	-0.7327	-0.6278	-0.5237	-0.4275
	(0.2531)	(0.2490)	(0.1850)	(0.1807)
Score>9	-0.1485	-0.0689	-0.0543	0.0139
	(0.2717)	(0.2657)	(0.2039)	(0.1985)
Score>13	-0.0951	-0.0615	0.2746	0.3216
	(0.4239)	(0.4141)	(0.3101)	(0.3024)
Security custody score	-0.2809	-0.1921	-0.3231	-0.2188
	(0.0834)	(0.0828)	(0.0663)	(0.0660)
$Score^2$	0.0490	0.0365	0.0737	0.0581
	(0.0266)	(0.0261)	(0.0204)	(0.0200)
$Score^3$	-0.0023	-0.0017	-0.0054	-0.0046
	(0.0023)	(0.0023)	(0.0017)	(0.0017)
$Score^4$	0.0000	0.0000	0.0001	0.0001
	(0.0001)	(0.0001)	(0.0000)	(0.0000)
Constant	0.9328	0.4749	0.9414	0.4297
	(0.0435)	(0.1665)	(0.0382)	(0.1441)
Demographic controls?	NO	YES	NO	YES
Observations	645	645	948	948
R^2	0.1235	0.1760	0.1059	0.1611

Source: Authors' calculations.

Notes: Standard errors in parentheses.

Demographic controls include age and dummies for high school graduate, prior convictions, married, white, male, and employed prior to arrest.

Table 4: Cox Proportional Hazard Model Estimates

Sample	(1) Sharp	(2) All	(3) Served at least one year	(4) All
Score>6	2.8143	2.0135	2.6268	0.9308
	(1.2171)**	(0.6721)**	(1.1959)**	(0.4531)
Score>9	1.4426	1.5859	3.2905	0.8435
	(0.6301)	(0.5327)	(1.5425)**	(0.3948)
Score>13	1.5411	1.0471	1.2333	1.4792
	(1.1239)	(0.5175)	(0.7325)	(1.1498)
(Score > 6) * time served				2.1698
				(0.9582)*
(Score > 9) * time served				2.2245
				(0.9609)*
(Score > 13) * time served				0.7755
				(0.4592)
Security custody score	1.9512	1.9842	2.0766	1.8395
	(0.3156)**	(0.2619)**	(0.3999)**	(0.3171)**
$Score^2$	0.8975	0.8816	0.867	0.9287
	(0.0440)**	(0.0337)**	(0.0470)**	(0.0497)
$Score^3$	1.0051	1.0079	1.0085	1.0036
	(0.0042)	(0.0031)**	(0.0043)**	(0.0045)
$Score^4$	0.9999	0.9998	0.9998	0.9999
	(0.0001)	(0.0001)**	(0.0001)	(0.0001)
Score * time served				1.0029
				(0.1508)
$Score^2$ * time served				0.9647
				(0.0449)
$Score^3$ * time served				1.003
				(0.0037)
$Score^4$ * time servd				0.9999
				(0.0001)
Observations	645	948	497	948

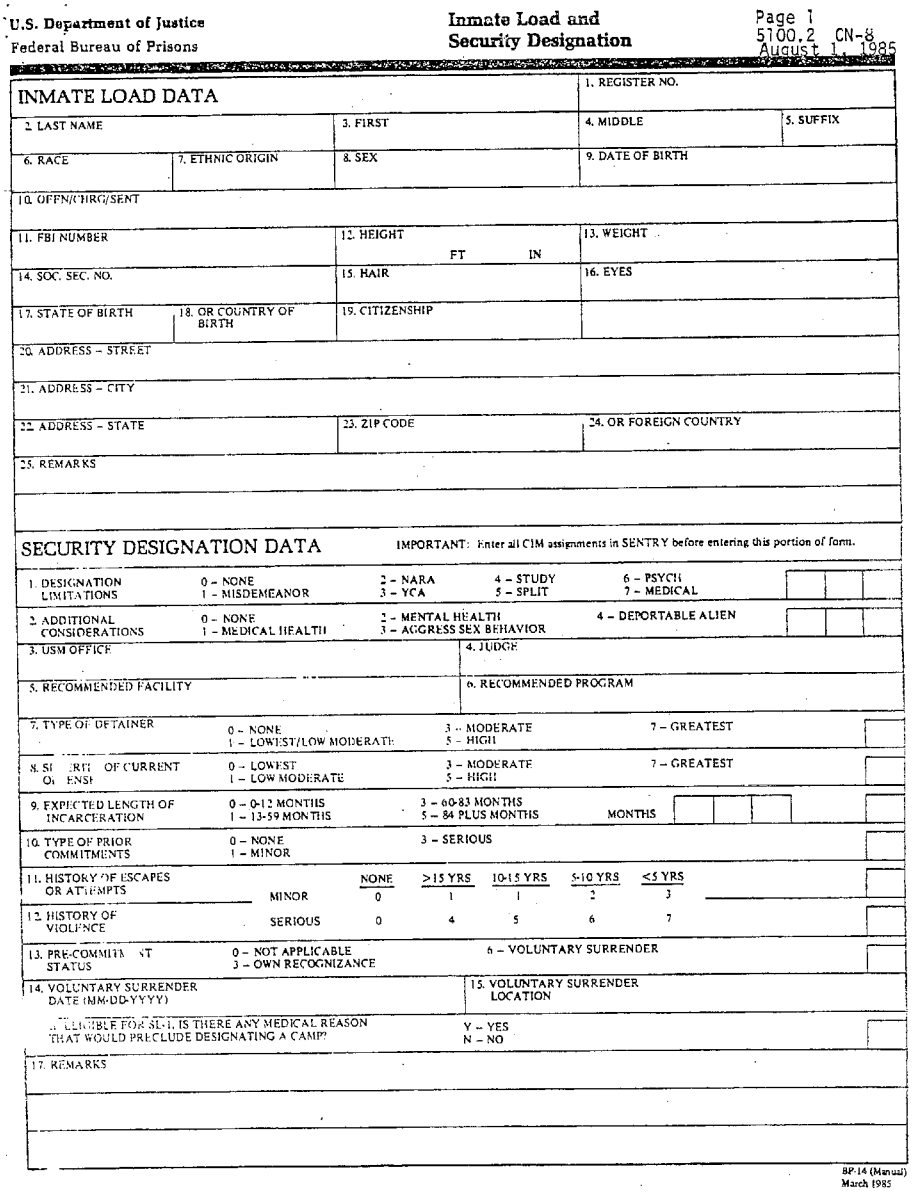
Source: Authors' calculations.
Notes: Standard errors in parentheses.
* significant at 10%; ** significant at 5%

Table 5: Tests of Identifying Assumptions

	(1)	(2)	(3)	(4)
Sample	All	All	All	Administrative
Dependent variable	Age on admission	Years of school	Number of priors	log(years until rearrest)
Score>6	-2.5809	0.3502	1.4528	-0.0070
	(2.3293)	(0.6233)	(1.0522)	(0.2877)
Score>9	-2.2707	0.7151	0.6099	-0.1454
	(2.5675)	(0.6879)	(1.1598)	(0.4516)
Score>13	-0.8485	2.1251	2.2773	-1.0345
	(3.9050)	(1.0366)	(1.7640)	(0.8267)
Score	-2.6991	-0.3508	0.9223	0.0282
	(0.8349)	(0.2240)	(0.3771)	(0.1525)
$Score^2$	0.6155	-0.0075	-0.1002	-0.0544
	(0.2571)	(0.0690)	(0.1161)	(0.0512)
$Score^3$	-0.0418	0.0013	0.0052	0.0071
	(0.0219)	(0.0059)	(0.0099)	(0.0055)
$Score^4$	0.0009	0.0000	-0.0001	-0.0002
	(0.0006)	(0.0002)	(0.0003)	(0.0002)
Constant	38.3821	12.3866	1.5300	0.9190
	(0.4809)	(0.1276)	(0.2172)	(0.0980)
Observations	948	924	948	211
R^2	0.0294	0.1414	0.2365	0.1442

Source: Authors' calculations.
Notes: Standard errors in parentheses.

Figure 1: Inmate Load and Security Designation Form



U.S. Department of Justice
Federal Bureau of Prisons

Inmate Load and Security Designation

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INMATE LOAD DATA

1. REGISTER NO.			
2. LAST NAME	3. FIRST	4. MIDDLE	5. SUFFIX
6. RACE / 7. ETHNIC ORIGIN	8. SEX	9. DATE OF BIRTH	
10. OFFN/CHRG/SENT			
11. FBI NUMBER	12. HEIGHT FT IN	13. WEIGHT	
14. SOC. SEC. NO.	15. HAIR	16. EYES	
17. STATE OF BIRTH / 18. OR COUNTRY OF BIRTH	19. CITIZENSHIP		
20. ADDRESS – STREET			
21. ADDRESS – CITY			
22. ADDRESS – STATE	23. ZIP CODE	24. OR FOREIGN COUNTRY	
25. REMARKS			

SECURITY DESIGNATION DATA IMPORTANT: Enter all CIM assignments in SENTRY before entering this portion of form.

1. DESIGNATION LIMITATIONS	0 – NONE 1 – MISDEMEANOR	2 – NARA 3 – YCA	4 – STUDY 5 – SPLIT	6 – PSYCH 7 – MEDICAL		
2. ADDITIONAL CONSIDERATIONS	0 – NONE 1 – MEDICAL HEALTH	2 – MENTAL HEALTH 3 – AGGRESS SEX BEHAVIOR		4 – DEPORTABLE ALIEN		
3. USM OFFICE			4. JUDGE			
5. RECOMMENDED FACILITY			6. RECOMMENDED PROGRAM			
7. TYPE OF DETAINER	0 – NONE 1 – LOWEST/LOW MODERATE	3 – MODERATE 5 – HIGH		7 – GREATEST		
8. SEVERITY OF CURRENT OFFENSE	0 – LOWEST 1 – LOW MODERATE	3 – MODERATE 5 – HIGH		7 – GREATEST		
9. EXPECTED LENGTH OF INCARCERATION	0 – 0-12 MONTHS 1 – 13-59 MONTHS	3 – 60-83 MONTHS 5 – 84 PLUS MONTHS		MONTHS		
10. TYPE OF PRIOR COMMITMENTS	0 – NONE 1 – MINOR	3 – SERIOUS				

11. HISTORY OF ESCAPES OR ATTEMPTS	NONE	>15 YRS	10-15 YRS	5-10 YRS	<5 YRS	
MINOR	0	1	1	2	3	
12. HISTORY OF VIOLENCE — SERIOUS	0	4	5	6	7	

13. PRE-COMMITMENT STATUS	0 – NOT APPLICABLE 3 – OWN RECOGNIZANCE	6 – VOLUNTARY SURRENDER
14. VOLUNTARY SURRENDER DATE (MM-DD-YYYY)	15. VOLUNTARY SURRENDER LOCATION	
IF ELIGIBLE FOR SL-1, IS THERE ANY MEDICAL REASON THAT WOULD PRECLUDE DESIGNATING A CAMP?	Y – YES N – NO	
17. REMARKS		

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Figure 2: Security Level and Score

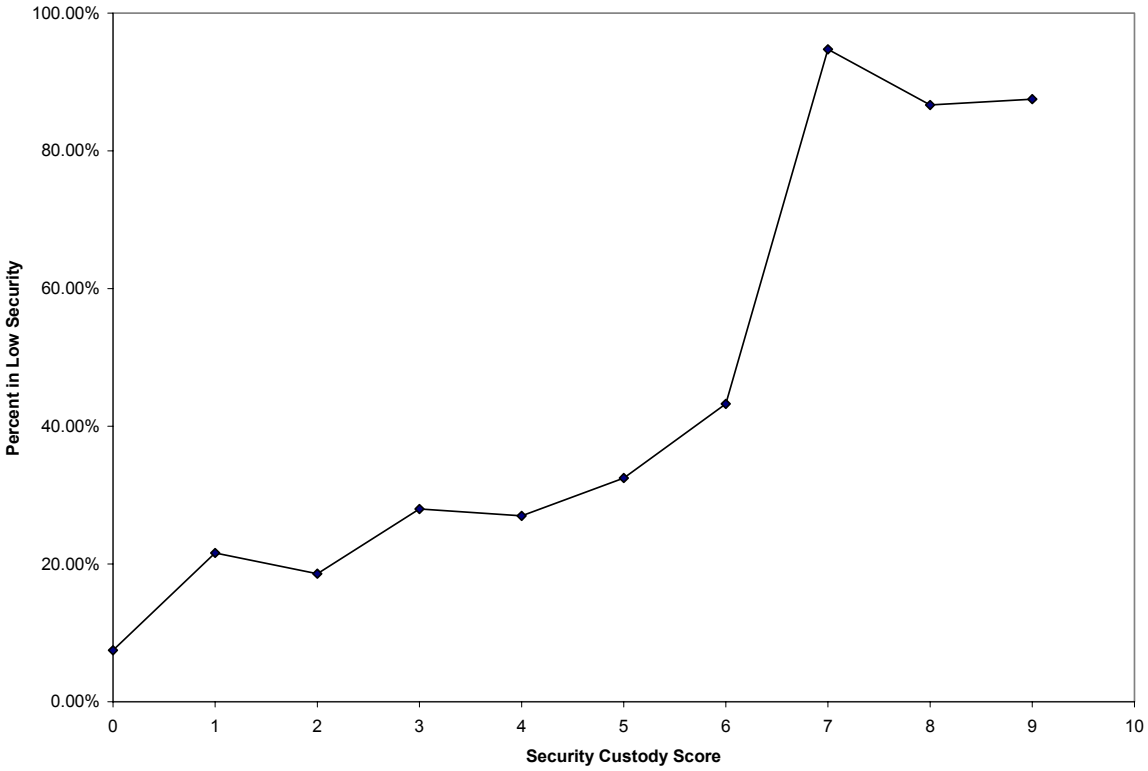


Figure 3: Recidivism and Score

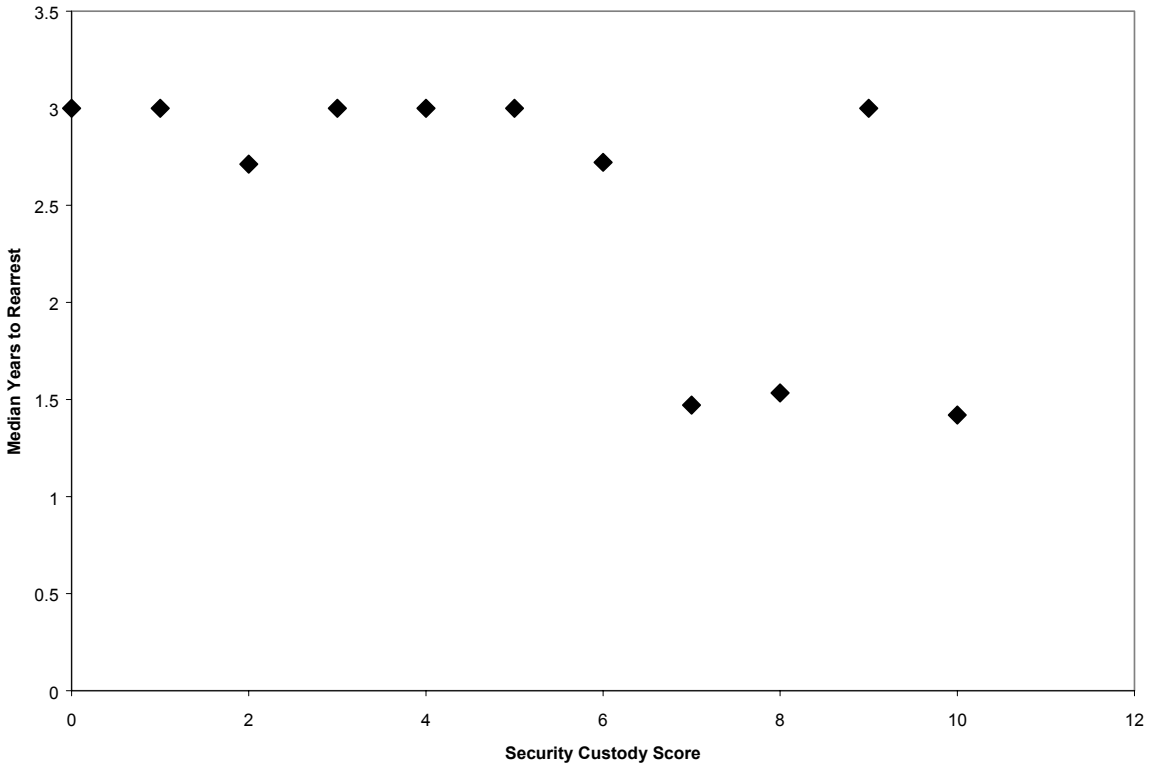
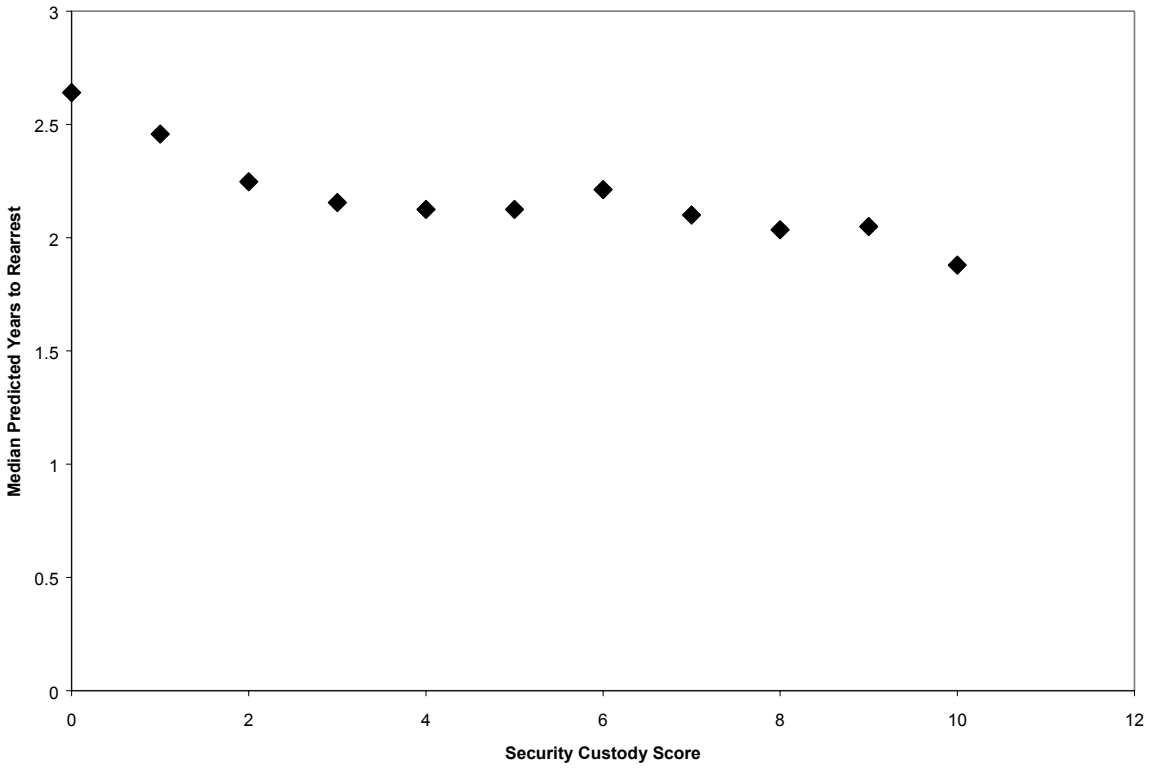


Figure 4: Predicted Recidivism and Score



Appendix Table 1: Score and Security Level

Score	Assigned level	Percent of inmates in security level: Minimum	Low	Low/Med	Medium
0	1	78.35	6.33	2.43	4.87
1		63.04	17.39	6.52	8.70
2		77.78	17.78	0.00	4.44
3		64.29	25.00	1.79	5.36
4		58.23	21.52	10.13	5.06
5		57.45	27.66	0.00	10.64
6		47.73	36.36	6.82	4.55
7	2	3.13	56.25	25.00	9.38
8		10.00	65.00	25.00	0.00
9		9.09	63.64	18.18	6.06
10	3	3.85	26.92	53.85	15.38
11		11.76	5.88	70.59	5.88
12		3.23	3.23	61.29	29.03
13		0.00	18.18	18.18	54.55
14	4	0.00	0.00	0.00	70.00
15		0.00	0.00	10.00	80.00
16		0.00	0.00	12.50	62.50
17		0.00	0.00	14.29	42.86
18		0.00	0.00	22.22	44.44
19		0.00	0.00	0.00	50.00
20		0.00	0.00	50.00	50.00
21		0.00	0.00	0.00	100.00
22		0.00	0.00	0.00	50.00
TOTAL		55.37	17.37	10.21	10.21

Source: Authors' calculations.

Appendix Table 2a: Computing the Security Custody Score

Inmate characteristic	Score Range	
	From	To
Type of detainer (severity of outstanding charges)	0 (None)	7 (Greatest)
Severity of current offense	0 (Lowest)	7 (Greatest)
Expected length of incarceration	0 (0-12 Months)	5 (84+ Months)
Type of prior commitments	0 (None)	3 (Serious)
History of escapes or attempts	0 (None)	7 (Recent Escape)
History of violence	0 (None)	7 (Recent Serious)
Precommitment status (bail, bond, etc. set in trial)	-6 (Voluntary Surrender)	0 (None)
TOTAL	0	36

Appendix Table 2b: Determining the Appropriate Security Level

Score Range	Assigned Security Level	Description	Example
0-6	1	Minimum	Danbury Camp
7-9	2	Low	La Tuna
10-13	3	Low/Medium	Otisville
14-22	4	Medium	Petersburg
23-29	5	High	Leavenworth
30-36	6	High	Marion

Source: Federal Bureau of Prisons (1985).