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**THE EFFECTIVENESS OF JUVENILE
CORRECTIONAL FACILITIES:
PUBLIC VERSUS PRIVATE MANAGEMENT**

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The Effectiveness of Juvenile Correctional Facilities: Public Versus Private Management

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Abstract

This paper uses data on juvenile offenders released from correctional facilities in Florida to explore the effects of facility management type (private for-profit, private nonprofit, public state-operated, and public county-operated) on recidivism outcomes and costs. The data provide detailed information on individual characteristics, criminal and correctional histories, judge-assigned restrictiveness levels, and home zipcodes—allowing us to control for the non-random assignment of individuals to facilities far better than any previous study. Relative to all other management types, for-profit management leads to a statistically significant increase in recidivism, but, relative to nonprofit and state-operated facilities, for-profit facilities operate at a lower cost to the government per comparable individual released. Cost-benefit analysis implies that the short-run savings offered by for-profit over nonprofit management are negated in the long run due to increased recidivism rates, even if one measures the benefits of reducing criminal activity as only the avoided costs of additional confinement.

JEL Codes: H0; H1; H4; K0; K4

Keywords: Juvenile Crime; Juvenile Correctional Facilities; Recidivism; Prison Privatization; Provision of Public Goods: Nonprofit, For-profit, Public

I. INTRODUCTION

Since its beginnings in the mid-1980s, prison privatization in the United States has provoked several rounds of congressional hearings and hundreds of articles discussing its philosophical, organizational, economic, and legal implications. At year-end 2001, privately operated facilities held over 6.5 percent of America's total adult correctional facility population, representing more than 90,000 adult offenders.¹ And in late 1999, privately operated facilities held almost 30 percent of all juveniles in residential placement, representing more than 30,000 juvenile offenders.² Following the United States' example, many other countries introduced private prison in the 1990s, and many more are considering the idea today.³

Setting off a national debate almost instantly, prison privatization emerged in adult corrections when municipal and state governments—driven primarily by concerns over excessive costs and crowding in public facilities—began in 1985 to contract with private firms to run county jails and state prisons.⁴ Congress held hearings on prison privatization the next year, and almost every criminal justice professional association took a stand on the issue. Despite the protests of many, privatization has continued apace since then, with the capacity of private

¹ Paige M. Harrison & Allen J. Beck, Bureau of Justice Statistics, U.S. Department of Justice, Prisoners in 2001, Bureau of Justice Statistics Bull. 1, 8 (Table 9) (July 2002).

² Melissa Sickmund, Office of Juvenile Justice and Delinquency Prevention, U.S. Department of Justice, Juvenile Offenders in Residential Placement: 1997-1999, 7 Juvenile Offenders and Victims: National Report Series 1, 1 (March 2002). Private organizations also provide court-mandated supervision for thousands of other juveniles through non-residential correctional programs such as mental health and substance abuse treatment programs.

³ Richard Harding, Private Prisons, in 28 Crime and Justice: A Review of Research 265, 268-69 (Michael H. Tonry ed. 2001).

⁴ Private contractors had, in fact, managed adult correctional facilities in a number of U.S. states during the 1800s, but by the beginning of the twentieth century all adult prisons were government run. For discussion of private prisons' historic role in America, see generally Blake McKelvey, *American Prisons: A History of Good Intentions* (1977); Shaneen Borna, Free Enterprise Goes to Prison, 26 *Brit. J. Criminology* 321 (1986); John G. DiPiano, Private Prisons: Can They Work? Panopticon in the Twenty-first Century, 21 *New Eng. J. on Crim. & Civ. Confinement* 171 (1995). For discussion of how and why private prisons returned to the U.S., see David E. Pozen, Managing a Correctional Marketplace: Prison Privatization in the United States and the United Kingdom, 19 *J. L. & Politics* 253 (2003).

secure adult correctional facilities increasing 856 percent between 1991 and 1998.⁵ By the end of 1999, fourteen corporations were operating over 150 private correctional facilities for adults in the United States,⁶ earning combined annual revenues in excess of a billion dollars.

Already a significant owner/operator of juvenile correctional facilities, the private sector began to assume a substantially greater role in juvenile corrections after Congress passed the Juvenile Justice and Delinquency Prevention Act in 1974.⁷ This act formally encouraged communities to develop alternatives to traditional incarceration, and privatization emerged as the primary mechanism for deinstitutionalization.⁸ In 1999, there were approximately 1,100 public and 1,800 private juvenile correctional facilities in operation nationwide,⁹ and by 1990 almost 90 percent of states had at least one contract with a nonprofit private corporation and 60 percent of states had at least one contract with a for-profit corporation to operate a juvenile correctional facility.¹⁰

A. *Prior Literature*

For all the controversy engendered and for all the individuals affected by prison privatization over the last two decades, empirical analysis has lagged the public interest. Two leading surveys of research on prison privatization explicitly lament the paucity of empirical

⁵ Gaylene Styve Armstrong, *Private vs. Public Operation of Juvenile Correctional Facilities* 2 (2001).

⁶ Charles W. Thomas, *Private Adult Correctional Facility Census: A "Real-Time" Statistical Profile*, December 31, 1999 (1999), <http://www.crim.ufl.edu/pcp/census/1999>, visited November 21, 2003.

⁷ Pub. L. No. 93-415, 88 Stat. 1109 (1974) (codified at 42 U.S.C. § 5601 (1994)). In contrast with its episodic role in adult corrections, the private sector—largely in the form of nonprofit charities and organizations—remained a consistently important player in the sphere of juvenile corrections throughout the nineteenth and twentieth centuries. See, for example, Barry Krisberg, *The Legacy of Juvenile Corrections*, 57 *Corrections Today* 122 (1995).

⁸ See Yitzhak Bakal & Harvey Lowell, *The Private Sector in Juvenile Corrections*, in *Juvenile Justice and Public Policy: Toward a National Agenda 196* (Ira M. Schwartz ed. 1992); Daniel J. Curran, *Destructuring, Privatization, and the Promise of Juvenile Diversion: Compromising Community-Based Corrections*, 34 *Crime & Delinq.* 363 (1988).

⁹ Sickmund, *supra* note 2, at 1.

¹⁰ Robert B. Levinson & William J. Taylor, *ACA Studies Privatization in Juvenile Corrections*, 53 *Corrections Today* 242, 248 (1991).

work on the subject, especially concerning recidivism outcomes.¹¹ The empirical research has instead tended to focus on cost and quality-of-confinement comparisons between public and private facilities.¹² Only one study comparing the recidivism rates of public and private facilities, by Lonn Lanza-Kaduce and Karen Parker, has garnered any significant attention, and it has been roundly criticized for its small sample size and errors in design and methodology.¹³ Moreover, no comparative recidivism analysis has ever considered the distinction between for-profit and nonprofit management in the private juvenile corrections industry. Given the large role played by both for-profit and nonprofit institutions in juvenile corrections,¹⁴ the traditional public-versus-private dichotomy provides an overly simplistic framework for evaluating privatization.

The Florida Department of Juvenile Justice (D.J.J.), our data source for this study, rates the correctional facilities under its care on recidivism and cost performance in its annual Program

¹¹ Gerald G. Gaes, Scott D. Camp, & William G. Saylor, *The Performance of Privately Operated Prisons: A Review of Research*, in *Private Prisons in the United States: An Assessment of Current Practice*, app.2, at 2, 31 (Douglas McDonald *et al.* eds. 1998); Kenneth L. Avio, *The Economics of Prisons*, 6 *Eur. J.L. & Econ.* 143, 151 (1998).

¹² Representative examples of public-versus-private studies in the U.S. include: William G. Archambeault & Donald R. Deis, Jr., *Cost Effectiveness Comparisons of Private versus Public Prisons in Louisiana: A Comprehensive Analysis of Allen, Avoyelles, and Winn Correctional Centers* (1996); Harry Hatry *et al.*, *The Urban Institute, Comparison of Privately and Publicly Operated Correctional Facilities in Kentucky and Massachusetts* (1989); Charles H. Logan, *National Institute of Justice, Well Kept: Comparing Quality of Confinement in a Public and a Private Prison* (1991); Douglas C. McDonald, *The Costs of Operating Public and Private Correctional Facilities, in Private Prisons and the Public Interest* 86 (Douglas C. McDonald ed. 1990).

¹³ Lonn Lanza-Kaduce & Karen F. Parker, *A Comparative Recidivism Analysis of Releasees from Private and Public Prisons in Florida* (1998) (finding that, relative to comparable inmates released from public prisons, inmates released from private prisons had a lower recidivism percentage on four of five indicators). For the key critiques of this study, see Florida Department of Corrections, Bureau of Research and Data Analysis, *Preliminary Assessment of a Study Entitled: "A Comparative Recidivism Analysis of Releasees from Public and Private Prisons in Florida"* (1998); Gaes, Camp, & Saylor, *supra* note 11, at 28-30. These criticisms remain salient for the subsequent, published version of the study. Lonn Lanza-Kaduce, Karen F. Parker, & Charles W. Thomas, *A Comparative Recidivism Analysis of Releasees from Private and Public Prisons*, 45 *Crime & Delinq.* 28 (1999). Three additional studies have compared recidivism rates of public and private releasees, though none of these attempted to account for differences between individuals assigned to different correctional facilities. Peter W. Greenwood, Susan Turner, & Kathy Rosenblatt, *Evaluation of Paint Creek Youth Center: Preliminary Results* (1989); Dale K. Sechrest & David Shichor, *Quick Fixes in Corrections: Reconsidering Private and Public For-profit Facilities*, 75 *Prison J.* 457 (1995); W. Clinton Terry, Lisa Stolzenberg, & Stewart J. D'Alessio, *Private versus Public Placements: A Study of Recidivism among Adjudicated Juvenile Offenders*, 48 *Juvenile & Family Court J.* 33 (1997).

¹⁴ Nonprofits play a much smaller role in the private adult corrections sector: For-profit corporations manage the vast majority of private adult correctional facilities in the United States, including 100 percent of the secure private facilities.

Accountability Measures (P.A.M.) reports.¹⁵ These P.A.M. reports provide the starting point for our analysis, but our study differs from and expands upon them in at least four important ways. First and most fundamentally, our study distinguishes facilities by management type—private for-profit, private nonprofit, public state-operated, and public county-operated—while the P.A.M. reports do not. Second, our study uses multiple definitions of recidivism, including a binary success-failure variable for both criminal charges and for adjudications, a survival-time measure, and variables for sixteen specific categories of crime. The P.A.M. reports use only a binary success-failure variable for adjudications. Third, our study incorporates many more explanatory variables than the P.A.M. reports do in order to control as much as possible for differences in the populations served by different types of correctional facilities. And fourth, our cost-benefit analysis is entirely novel.

One other area of prior research merits a brief mention: studies of boot camps' effects on recidivism. MacKenzie, Wilson, and Kider's recent meta-analysis of 29 studies "found no overall difference in recidivism between boot camp participants (both juveniles and adults) and comparison samples."¹⁶ The U.S. Office of Juvenile Justice and Delinquency Prevention reached a similar conclusion.¹⁷ It is unclear, however, how relevant these results are for the case of Florida, as all of Florida's juvenile boot camps have the same distinctive management type—primary management by county sheriff's departments, with state-level oversight. Whether or not the Florida model of boot camp management affects recidivism remains an open question.

¹⁵ For example, Florida Department of Juvenile Justice, Justice Research Center, Inc., *The 2003 PAM Report: A Two-Year Analysis* (December 2002), available at <http://www.djj.state.fl.us/statsnresearch/mr/2003-1programaccountabilitymeasurereport.pdf>, visited November 21, 2003. The annual production of these P.A.M. reports is mandated by Florida Law. Fla. Stat. Ann. § 985.412(4)(a)(b) (1997).

¹⁶ Doris Layton MacKenzie, David B. Wilson, & Suzanne B. Kider, *Effects of Correctional Boot Camps on Offending*, 578 *Ann. Amer. Acad. Pol. & Soc. Sci.* 126, 126 (2001).

¹⁷ National Criminal Justice Association, U.S. Department of Justice, *Juvenile Justice Reform Initiatives in the States: 1994-1996* 30-33 (1997).

B. *Basic Design of Our Study*

This paper attempts to fill an empirical void in the debate over prison privatization. Using a unique dataset containing detailed information on over 5,000 juvenile offenders and 110 juvenile correctional facilities¹⁸ in Florida, we investigate the effects of correctional facility management type—including public, private for-profit, *and* private nonprofit models—on releasees’ recidivism outcomes and on monetary costs to the State of Florida.¹⁹ By investigating the effects of facility management type on recidivism outcomes, this study achieves, necessarily, a second purpose: shedding light on the impact of numerous personal and socio-demographic characteristics on recidivism risk.²⁰

By using the extensive information on the criminal history, residential locations, judge-assigned restrictiveness levels, and socio-demographic characteristics of the youths observed in the sample, we are able to control for individual variation in the propensity to recidivate—and, consequently, for the non-random assignment of individuals to facilities on the basis of these characteristics—far better than any previous analysis. It is important to note, however, that we are not able to control for the non-random assignment of juveniles to facilities on the basis of any additional factors observable to juvenile corrections officials but not to the researcher. Thus, the important caveat remains that the estimated differences across facility management types may be

¹⁸ The Florida Department of Juvenile Justice, in its official reports, refers to correctional facilities under its supervision as “programs” rather than “facilities.” The two terms can be thought of as interchangeable; all correctional programs are located within a specific facility. We use “facilities” throughout this paper for clarity and consistency.

¹⁹ As the Florida D.J.J. does in its P.A.M. reports, we therefore assume that correctional facilities have the potential to influence offenders’ post-release criminality. This influence could result from differentials in correctional facility features such as staff-inmate interactions, implementation of rehabilitative and other programmatic services, policies and procedures, and general atmosphere and ideology.

²⁰ Currently, there is deep disagreement over what characteristics of an offender influence his or her probability of recidivating, and to what extent. See Dean J. Champion, *Measuring Offender Risk: A Criminal Justice Sourcebook* 92-93 (1994).

driven in part by non-random assignment on unobserved factors.²¹ Many aspects of the analysis and results that follow, however, limit the likelihood that non-random assignment on unobserved factors affects the qualitative nature of the main conclusions of the paper.

By exploring both recidivism and costs, we are able to examine the two key variables of interest in the economic literature on prison privatization. In a nutshell, economic theory predicts that private for-profit correctional facilities should operate efficiently due to the profit motive, but in the absence of explicit linkages between revenues and recidivism outcomes, they might make decisions designed to increase profits at the expense of increased recidivism.²² Currently, the standard private prison contract in the United States remunerates the corporate operator based on the number of person-days of confinement supplied, subject to some minimal level of amenities. A for-profit prison operator thus has almost no contractual incentive to provide rehabilitation opportunities or educational/vocational training that might benefit inmates after release, except insofar as these services act to decrease the current cost of confinement.²³ Decreasing recidivism likely has a bigger role in the objective functions of publicly operated facilities and private nonprofit facilities, if for no other reason than that the profit motive is not as strong. Some commentators have argued that, of all the correctional facility management types, private nonprofit operators ought to have the most success at decreasing recidivism due to their

²¹ A second caveat inherent in attempts to study recidivism is that the theoretically relevant dependent variables—time devoted to criminal activity and the intensity thereof—cannot be directly measured. Traditionally, researchers have employed a binary “success-failure” measure as a proxy recidivism variable. See Michael D. Maltz, *Recidivism* 23 (1984). Moreover, measured recidivism is the product of both offender behavior and enforcement activity. Lacking information on the behavior of the various Florida police and prosecutorial bodies, this study could not attempt to resolve the potential problems with simultaneity and enforcement activity effects by means of explicit controls. However, these problems are not a significant concern to the extent that the inclusion of variables describing individual, criminal history, and neighborhood characteristics and, in particular, the twenty judicial circuit dummy variables controls for the variation in the propensity of an individual, given a level of criminal behavior, to be charged and adjudicated.

²² See Avio, *supra* note 11, at 150; Oliver Hart, Andrei Schleifer, & Robert W. Vishny, *The Proper Scope of Government: Theory and an Application to Prisons*, 112 *Quart. J. Econ.* 1127 (1997).

²³ See Peter Schmidt & Ann D. Witte, *An Economic Analysis of Crime and Justice: Theory, Methods and Applications* 345-46 (1984).

organizational and programmatic flexibility, their mission focus, their use of volunteers, and their freedom from political and profit constraints.²⁴ Overall, then, without explicit linkages between revenues and recidivism outcomes we might expect private nonprofit facilities to have lower rates of recidivism, while we would generally expect for-profit facilities to have higher rates of recidivism but to be able to operate at a reduced per-capita cost.

In Florida, the Department of Juvenile Justice does in fact evaluate the correctional facilities it oversees on the basis of recidivism and costs.²⁵ Because facilities' revenues are not directly linked to assessments of their recidivism performance except through the possible elimination of particularly poorly performing facilities, this linkage is not likely to be strong for the majority of facilities. Still, it is important to bear in mind that our study analyzes the relative performance of facility management types in the presence of extensive evaluation and monitoring of recidivism activity. In the absence of such evaluation and monitoring, economic theory predicts that the performance of private for-profit facilities in terms of reducing recidivism is likely to be worse.

II. BACKGROUND ON FLORIDA D.J.J. AND DATA

A. *Background on Florida*

The State of Florida has a number of features that make it suitable for a study on the impact of correctional facility management type on recidivism. Behind only California, Florida has the largest total number of juvenile offenders under correctional supervision—on October 27, 1999, juvenile correctional facilities in Florida were holding 6,813 offenders in residential

²⁴ Daniel L. Low, Nonprofit Private Prisons: The Next Generation of Prison Management, 29 *New Eng. J. on Crim. & Civ. Confinement* 1, 4, 55-56 (2003); Richard Moran, A Third Option: Nonprofit Prisons, *N.Y. Times*, August 23, 1997, at 23.

²⁵ See, for example, Florida Department of Juvenile Justice, The 2003 PAM Report, *supra* note 15.

placement²⁶—and it has over 100 facilities holding these offenders. Crucial to the aims of this study, Florida is the only state with a significant sample ($n > 10$) of facilities managed each by a public entity, a private for-profit entity, and a private nonprofit entity. Just as crucial, Florida appears to be the only state that comprehensively tracks and records the post-release criminal behavior of all juvenile offenders.²⁷

Of all the U.S. states, Florida also operates the largest number of juvenile boot camps²⁸—the particular type of juvenile correctional facility that has aroused the most interest and scrutiny over the past decade.²⁹ Boot camps are a distinct type of juvenile correctional facility, designed to shock their youths (or, in boot camp jargon, their “recruits”) into compliance with military-style discipline. All-male in Florida except in one instance, juvenile boot camps target youths ages 14 to 18. Procedures for selecting youths for boot camps vary across counties, but all youths assigned to boot camps must, in the opinion of D.J.J. commitment managers, “have medical and psychological profiles conducive to successfully completing an intensive work, educational, and disciplinary program.”³⁰ After sanctioning the creation of juvenile boot camps in 1989, the Florida Legislature authorized county governments to implement and operate them, subject to a contractual agreement with the D.J.J.³¹ As a result, the juvenile boot camps

²⁶ Sickmund, *supra* note 2, at 2.

²⁷ For its diligence in the tracking and recording of youth recidivism, the Florida D.J.J. has received recognition from the National Center for Juvenile Justice under a National Institute of Justice program that identifies best practices in the use of juvenile data. See Florida Department of Juvenile Justice, Bureau of Data and Research, 2001 Program Accountability Measures Report: A Two-Year Analysis 2 (March 2001), available at <http://www.djj.state.fl.us/rnd/mr/accountability.html#2001-4>, visited November 21, 2003.

²⁸ Koch Crime Institute, *Juvenile Boot Camps and Military Structured Youth Programs: 2000 Directory* (2000).

²⁹ See MacKenzie, Wilson, & Kider, *supra* note 16.

³⁰ Fla. Stat. Ann. § 985.309(4) (1995). The primary considerations for boot camp selection, according to D.J.J. officials, are that the youths do not have any physical problems that would make the rigorous exercise program dangerous, and that they do not suffer from any mental illnesses requiring psychotropic medication.

³¹ Fla. Stat. Ann. § 985.309(1) (1995).

operating in Florida are all run by county sheriff's departments with oversight from the D.J.J.³² In this way, along with one youth development center that is also county-operated, Florida's boot camps are fundamentally distinct from other juvenile correctional facilities not only because of their policies and procedures but also because of sheriff's departments' role in managing them. Recognizing the difference between county and state management, we treat the boot camps and the youth development center run by sheriff's departments as a fourth category of juvenile correctional facility—separate from the public state-operated, private for-profit, and private nonprofit facilities—in our study, referring to them as *County* facilities.

B. Data Overview

The primary data source for this study is the internal database that the Florida Department of Juvenile Justice maintains for juvenile offenders under its care. We were granted access to the D.J.J.'s records on all youths released from a Florida-based juvenile correctional facility between July 1, 1997 and June 30, 1999. These data provide complete histories of the experience of each individual in the Florida juvenile justice system, including records of all past arrests, adjudications,³³ sentences, and facility assignments. The data also provide some basic socio-demographic information such as date of birth, race, and zipcode of residence. 16,164 youths are included in the full sample.

The D.J.J. tracks the criminal activity of all juvenile offenders for one year after their release so that if a releasee commits a recidivism offense while still a juvenile (under 18 years of age), our data indicate the date and type(s) of crime(s) for which he or she was charged and/or

³² Florida Department of Juvenile Justice, Bureau of Data and Research, A Profile of Recruits Admitted to Department of Juvenile Justice Boot Camp Programs Between Inception and March 15, 1997, 1 Research Digest 1, 1 (May 1997), available at http://www.djj.state.fl.us/RnD/r_digest/Issue1/issue1.pdf, visited November 21, 2003.

³³ An adjudication, in the vernacular of the juvenile justice system, is analogous to a conviction in the adult justice system.

adjudicated.³⁴ For our analysis, we restrict attention to those individuals who were exactly 17 years of age or younger at the time of release. This restricts the sample to 8,400 individuals, about whose correctional placements and subsequent charges/adjudications we have complete information.³⁵

Table 1 describes the number of facilities and individuals released from these facilities by management type and restrictiveness level. Florida law determines five restrictiveness levels for juvenile correctional facilities, ranging from minimum risk to maximum risk.³⁶ A restrictiveness level is assigned to each adjudicated individual by his or her judge, reflecting the judge's evaluation of the appropriate detention environment for the individual. According to the D.J.J., "[h]igher restrictiveness levels are characterized by tighter physical security, closer supervision, ... longer lengths of stay, [and] more intensive treatment and overlay services such as mental health and drug treatment."³⁷ As the table clearly demonstrates, only one of the facilities below moderate restrictiveness level (Level 3) is operated by for-profit or county management, and none of the maximum restrictiveness level (Level 5) facilities are operated by nonprofit or state management.³⁸ Moreover, the minimum restrictiveness level (Level 1) facilities are all non-

³⁴ In the analyses that follow, we use both criminal charges and adjudications to measure recidivism. Other possible definitions of recidivism include subsequent arrests and correctional placements, but we lack data on these. Because they represent sentenced crimes, (re-)adjudications provide the most reliable indicator of (known) recidivism behavior; for this reason, the Florida D.J.J. also uses adjudications to evaluate recidivism. See, for example, Florida Department of Juvenile Justice, The 2003 PAM Report, *supra* note 15, at 36.

³⁵ For individuals observed multiple times in the sample (repeat recidivists), we include only their first correctional placement as an observation. Including the subsequent correctional placements of these youths would have had the effect of oversampling individuals with shorter sentences.

³⁶ Fla. Stat. Ann. § 985.03(45) (1997). Since the time of this study's evaluation period, the Florida D.J.J. has ceased using the "minimum risk" classification; the D.J.J. now classifies these facilities as "non-residential." See Florida Department of Juvenile Justice, The 2003 PAM Report, *supra* note 15, at 1-6.

³⁷ Florida Department of Juvenile Justice, Bureau of Data and Research, 2000 Outcome Evaluation Report, app.1, at 8 (February 2000), available at http://www.djj.state.fl.us/RnD/mr/2000-7/2000-7_Appendix1.pdf, visited November 21, 2003. This report also contains descriptions of the five restrictiveness levels. *Id.* at 8-16.

³⁸ Whereas the Florida D.J.J. refers to minimum risk facilities as "Level 2" facilities, low risk facilities as "Level 4," moderate risk facilities as "Level 6," high risk facilities as "Level 8," and maximum risk facilities as "Level 10," for simplicity's sake we refer to minimum risk facilities as "Level 1" facilities, low risk facilities as "Level 2," and so on. *Id.*

residential (the juveniles committed to them are allowed to return home at night), and may therefore be substantially different in nature from the other facilities. This suggests that an analysis that compares the performance of facility management types across all restrictiveness levels may not be comparing like facilities. Consequently, in the analyses that follow we restrict our attention to the facilities in moderate and high restrictiveness levels (Levels 3 and 4) in order to ensure maximum comparability.³⁹ This restriction decreases the sample size to 5,322 youths.

Descriptive statistics are presented in Table 2 for the sample of individuals 17 years of age or younger at the time of release from a Level 3 or a Level 4 facility. Seventy percent of these individuals had a subsequent criminal charge and 51 percent had a subsequent adjudication within one year of release. In most cases, the data provide the exact date of all recidivism offenses, so for 2,660 individuals who had a subsequent adjudication within one year of release, we were able to construct a time-until-recidivism variable (*Survival Time*)⁴⁰ to reflect how long each individual lasted before re-offending. The mean survival time for the recidivists in the sample is 124 days. For the 3,703 individuals who were charged with a subsequent criminal offense, our data also indicate the exact nature of the offense(s).⁴¹ The most common offense for which individuals were subsequently charged is assault and battery (21 percent of the sample), followed by felony weapon offenses (15 percent) and burglary (14 percent). The means of these sixteen *Recidivism - Charged* criminal categories do not sum to 0.70 because most of the recidivist youths were charged with multiple crimes.

³⁹ In a previous version of this paper, we ran many of the same regressions without this restriction. Patrick Bayer & David E. Pozen, *The Effectiveness of Juvenile Correctional Facilities: Public versus Private Management* (Discussion Paper No. 863, Yale Univ. Economic Growth Center, July 2003). The results without this restriction are largely similar, although restricting the analysis to the more direct comparison of Level 3 and Level 4 facilities increases the magnitude and statistical significance of the results concerning facility management type in all cases.

⁴⁰ Throughout the paper, the names of all variables used in regressions appear in italics.

⁴¹ Unfortunately, we were unable to adequately link adjudications after release with corresponding charges. Consequently, we were unable to create distinct variables that characterize re-adjudication in specific crime categories.

The criminal history variables in Table 2 reflect the categories of crimes for which individuals were formally charged within the Florida system prior to placement in a correctional facility during the evaluation period. The individual characteristics listed in Table 2 provide basic information on the youths' age, gender, race, and length of stay under their correctional facility's care. The typical length of stay in a facility is a little over half a year. The neighborhood characteristics in this study all come from the 1990 Census of Population and Housing except for *Crime Rate in Zip*, which comes directly from D.J.J. records on delinquency referrals by zipcode. The facility and peer characteristics in Table 2 include information about facilities' restrictiveness level as well as cost and compositional information. Note that in the discussion that follows we treat restrictiveness levels as both facility and individual characteristics. This reflects the fact that each juvenile is explicitly assigned a restrictiveness level by the judge, and is subsequently placed in a correctional facility that handles only individuals in that restrictiveness category.

The last category of variables in Table 2, facility management type, characterizes facilities as: *State*, *For-profit*, *Nonprofit*, or *County*. The *State* facilities are those directly controlled by the D.J.J., while the *County* facilities are boot camps (primarily) and youth development centers managed by county sheriff's departments, with oversight from the D.J.J.⁴² The *For-profit* and *Nonprofit* facilities are all privately operated. While privatization of correctional facilities can take a variety of forms, for the purposes of this study a facility's management type is determined by its operational administration—whatever entity has total operational administration of the facility, even if it does not own the facility, is deemed its manager. The extent to which Florida's juvenile justice system is privatized is reflected by the

⁴² The *State* and *County-operated* facilities are therefore both publicly operated, but we consider them separately because of their very different management structures. See discussion in Section IIA *supra*.

fact that 50 percent of the juvenile offenders in our sample were released from private nonprofit correctional facilities, and 19 percent were released from private for-profit facilities (19 percent and 12 percent were released from public D.J.J. facilities and county-operated facilities, respectively). The small number of juveniles who served sentences in adult correctional facilities does not appear in this sample.

A final, important set of dummy variables—specifying which of Florida’s twenty geographically-defined judicial circuit courts assigned an individual to the facility under study—is not reported in Table 2.⁴³ The inclusion of these variables in the analysis below controls for regional variation in an individual’s propensity to recidivate, for variation in prosecutorial, police, and sentencing practices across jurisdictions, and for any regional variation in the cost of operating a correctional facility.

C. Facility Characteristics by Management Type

Table 3 summarizes the key characteristics of the four facility management types. With 64 facilities, *Nonprofit* is by far the most common management type, and *County* is the least common management type with 9 facilities. *For-profit* facilities have the highest recidivism rates as measured both by charges and adjudications, and *County* facilities the lowest. *For-profit* facilities also have the shortest mean *Survival Time* for those individuals who are re-adjudicated. Without any consideration of individual characteristics, therefore, these measures would suggest inferior recidivism performance by the *For-profit* facilities. Before drawing any conclusions about the effects of facility management type on recidivism, however, it is important to control

⁴³ For information on Florida’s judicial circuit system for juvenile crime, see Florida Department of Juvenile Justice, Juvenile Justice Organizational Fact Sheet, <http://www.djj.state.fl.us/statsnresearch/factsheets/organization.html>, visited November 21, 2003; Florida Department of Juvenile Justice, Juvenile Justice Regional and Circuit Map, http://www.djj.state.fl.us/agency/circ_region-key_map.pdf, visited November 21, 2003.

for differences in the backgrounds and offending histories of individuals assigned to each facility management type, as these differences likely influence their propensity to recidivate.

Indeed, the next set of statistics in Table 3 immediately suggests that the *For-profit* facilities serve the most challenging clients, followed by *County* facilities: Compared to releasees from these two management types, *State* and *Nonprofit* releasees have, on average, fewer prior felony charges. The longer average *Length of Stays* and older average *Age at Exits* of youths in *For-profit* and *County* facilities also likely derive, at least in part, from having more serious offenders assigned to these facilities.⁴⁴ The overall *Cost per Release* measure indicates that *State* and *Nonprofit* facilities are more expensive to the D.J.J. on a per-capita basis than the *County* and *For-profit* facilities. This cost differential does not seem to reflect the extra security costs of maintaining a more dangerous inmate population, but it may derive from economies of scale, as the cheaper *County* and *For-profit* facilities are substantially larger on average than the other management types.⁴⁵ Whether facility size should be used as a control variable or viewed instead as the endogenous choice of the facility manager is a question we explore in detail below.⁴⁶

The final set of statistics in Table 3 indicates the prevalence of different facility programming types across the four management type categories. The Florida D.J.J. classifies all

⁴⁴ The longer stays of youths in *For-profit* facilities may also derive, to an extent, from deliberate attempts by the corporate operators to maintain occupancy by making it more difficult for inmates to accumulate the “good behavior” points necessary for early release. See, for example, Burton A. Weisbrod, *The Nonprofit Economy* 40 (1988). In Florida, juvenile correctional facility operators have significant discretion to lengthen or shorten their inmates’ length of stay. Judges recommend sentence lengths, but as the D.J.J. states on its website, “Juvenile offenders are committed to [correctional] programs for an indeterminate length of time. They must complete an individually designed treatment plan, based on their rehabilitative needs, as one of the requirements for release. Basically if they follow the rules and change their behavior, they have a chance of getting out sooner.” Florida Department of Juvenile Justice, *Juvenile Justice Residential & Correctional Facilities*, <http://www.djj.state.fl.us/rescorrfacilities>, visited November 21, 2003.

⁴⁵ Note that the mean facility size reported in Table 3 is averaged across facilities rather than individuals, which explains why it does not match the overall mean reported in Table 2. All other means in Table 3 are reported for individuals in facilities of the given management type.

⁴⁶ See Section III G *infra*.

juvenile correctional facilities under its supervision not only by their restrictiveness level, but also by their programming type. A facility's programming type refers to the program of services and activities it offers its inmates; correctional facilities with the same programming type tend to have similar philosophies, guidelines, and strategies concerning their treatment of offenders. As a result, including controls for programming type ought to go a long way towards isolating the specific effects of facility management type on releasees' recidivism behavior. Table 3 reveals that most programming types in our sample are run under one or two management types, with *Nonprofit* facilities host to the greatest number of programming types and *County* facilities the least. Only youth development centers are operated by all four of the management types. Full descriptions of each programming type are provided in the Appendix.

III. RESULTS

A. *The Effect of Management Type on Recidivism*

To predict recidivism, we use a linear probability model relating recidivism to facility management type and other control variables, including variables that characterize criminal history, individual attributes, neighborhood attributes, facility attributes, and judicial circuit assignments. In the analyses that follow, we consider multiple definitions of recidivism, including (i) whether a releasee was subsequently adjudicated; (ii) whether a releasee was subsequently charged with any crime; and (iii) whether a releasee was subsequently charged in each of sixteen specific categories of crime.

Table 4 reports the parameter estimates for the facility management type variables for various specifications of a regression that uses *Recidivism - Adjudicated* as the dependent variable. Standard errors are adjusted for clustering at the facility level throughout the entire

analysis. The *State*, *Nonprofit*, and *County* coefficients are interpreted relative to the omitted category: *For-profit*. The specification shown in the first column essentially restates information from Table 3 in regression form. Without controlling for any other characteristics of the correctional facilities or their inmates, youths released from *For-profit* facilities have the highest probability of being re-adjudicated—57.3 percent of them are re-adjudicated within one year of release. Youths released from *County* and *Nonprofit* facilities are, respectively, 8.8 and 7.9 percentage points less likely to recidivate and these results are both statistically significant at the 5 percent level. Youths released from *State* facilities are 6.3 percentage points less likely to recidivate (significant at the 10 percent level).

The second column in Table 4 controls for observable individual characteristics including sex, race, age at first offense, age at exit, and the length of time in the facility. The third column includes controls for the individual's criminal history, including the number of prior felonies, the nature of past crimes, and whether the restrictiveness level of his/her facility is moderate versus high. This restrictiveness level, as it reflects the judge's evaluation of the appropriate detention environment for the individual, likely picks up aspects of an individual's criminal history and propensity to recidivate unobserved elsewhere in the data. The fourth column of Table 4 adds controls for the individual's home neighborhood, correctional facility, and peers while in commitment. The neighborhood controls include the unemployment rate, the per capita income in the neighborhood, the racial composition of the neighborhood, and the average youth crime rate in the neighborhood. This last variable is particularly valuable since it controls for any unobserved characteristics of the neighborhood that increase the likelihood of all youths in the neighborhood to commit crime. The facility and peer variables control for the racial composition of other juveniles in the same facility and the average number of days juveniles spend in the

facility. Finally, the fifth column of Table 4 includes additional controls for the judicial circuit in which the individual was adjudicated prior to being assigned to the facility under evaluation. The inclusion of this judicial circuit information, which provides a measure of control for regional variation in an individual's propensity to recidivate as well as variation in prosecutorial and police practices across jurisdictions, has little effect on the parameter estimates.⁴⁷

The estimates in the final column of Table 4 imply that relative to youths released from *For-profit* facilities, comparable youths released from *State* facilities are 5.3 percentage points less likely to be re-adjudicated within a year (statistically significant at the 5 percent level); youths released from *Nonprofit* facilities are 6.0 percentage points less likely to be re-adjudicated (statistically significant at the 1 percent level); and youths released from *County* facilities are 7.1 percentage points less likely to be re-adjudicated (statistically significant at the 5 percent level). Confirming the intuition provided in Table 3, the change in parameter estimates from column 1 to column 5 of Table 4 implies that, relative to the other management types, *For-profit* facilities are indeed assigned individuals more likely to recidivate on the basis of observable characteristics. Yet since the estimates for the facility management type coefficients decline only 15 to 25 percent from the first to the fifth column, it appears that observable differences in individual, facility, neighborhood, and regional variables across facilities operated by different management types explain only a small portion of the raw differences in recidivism.

Table 5 replicates the analyses performed in Table 4 using *Recidivism - Charged* as the dependent variable instead of *Recidivism - Adjudicated*. The coefficients in this case are slightly larger than those reported in Table 4, consistent with the additional likelihood that individuals

⁴⁷ The inclusion of the judicial circuit information does, however, significantly raise the predictive power of the model, to an unadjusted R² value of .075. In general, recidivism at the individual level is difficult to predict, so these low R² values are not surprising. See Champion, *supra* note 20, at 83 (discussing the low predictive ability of existing models of recidivism risk).

are charged with a subsequent crime within a year of release (70 percent) relative to being re-adjudicated (51 percent). Again, the coefficients decline only slightly from the first to the final column as the full set of controls is included in the regression. The final estimates for the facility management type coefficients in column 5 of Table 5 imply that relative to youths released from *For-profit* facilities, comparable youths released from *State*, *Nonprofit*, and *County* facilities are, respectively, 7.3, 5.8, and 8.5 percentage points less likely to be charged for a criminal offense within a year of release. All of these estimates are statistically significant at the 1 percent level. These results provide additional support for the conclusion that *State*, *Nonprofit*, and *County* facilities are more effective at reducing recidivism than *For-profit* ones.

B. *More General Predictors of Recidivism*

Table 6 provides estimates for the full specification used to generate column 5 of Table 4.⁴⁸ A number of interesting results emerge. Compared to otherwise identical males, female releasees are 16 percentage points less likely to be re-adjudicated. Black juveniles are 14 percentage points more likely to recidivate, although it is important to point out that race may stand in for other socio-economic differences in this case. The two age variables have a small but significant effect on youths' recidivism risk: Youths who are released at a younger age and who committed their first criminal offense at a younger age are more likely to be re-adjudicated (within a fixed time period). The length of a youth's stay in a correctional facility, however, does not seem to have a discernible effect on his or her recidivism behavior, likely because a

⁴⁸ In its P.A.M. report using the same cohort of offenders as our study does, the Florida D.J.J. identified four factors as significant to a youth's probability of recidivating—gender, age at release, age at first adjudication, and number of prior adjudications—and used only these four risk factors in its regressions. Florida Department of Juvenile Justice, 2001 Program Accountability Measures Report, *supra* note 27, at 30. We also found these four factors to have a significant impact on recidivism risk, but we found number of prior felonies to be a better predictor of recidivism than number of prior adjudications and numerous other factors to significantly predict recidivism as well.

youth's restrictiveness level assignment and criminal history already adequately capture the effect of past offenses on his/her propensity to recidivate.

Recidivism is, by and large, an increasing function of the number of prior felonies, with youths with seven or more prior felonies 8.0 percentage points more likely to recidivate than those without any prior felonies—and this is over and above the effect of the particular prior felonies included in the analysis. Of the specific crime categories included, a history of felony drug offenses, auto theft, petty larceny, or prior escapes from correctional facilities makes an individual especially more likely to recidivate (beyond having an additional prior felony more generally). The neighborhood characteristics, including the neighborhood youth crime rate, have very little predictive power once the set of individual and criminal history variables are incorporated into the analysis. These neighborhood results provide more evidence that the final specification shown in column 5 of Table 4 is fairly robust to additional selection bias, as one would certainly expect these variables to have predictive power in the absence of sufficient controls for the individual's own recidivism risk.⁴⁹ Of the facility and peer characteristics, exposure to peers who have longer average commitments has a negative effect on recidivism.

C. Recidivism in Specific Crime Categories

Using information on the exact offense(s) with which the recidivists in the sample were charged, Table 7 reports results for sixteen separate crime categories across the facility management types. This analysis augments those of the previous tables, as it reveals the precise criminal areas in which different management types have better or worse performance. Note that these totals need not sum to the total effect shown in Table 5 as individuals can be charged in

⁴⁹ Indeed, these variables are highly significant in regressions including only neighborhood controls.

multiple categories. Also note that full controls, including the judicial circuit dummies, are included in all regressions.

Significant performance differentials arise in a number of important crime categories. Relative to otherwise identical youths released from *For-profit* facilities, youths released from *State* facilities are significantly less likely to be charged with assault and battery, felony weapon offenses, felony sex offenses, auto theft, petty larceny, or trespassing; youths released from *Nonprofit* facilities are significantly less likely to be charged with felony sex offenses, auto theft, robbery, or trespassing; and youths released from *County* facilities are significantly less likely to be charged with felony drug offenses, felony sex offenses, auto theft, burglary, petty larceny, robbery, or trespassing. These results suggest that certain management types may be particularly well suited to dealing with (that is, decreasing the likelihood of) certain categories of recidivism crimes: *County* facilities, for example, seem especially successful at reducing felony drug offenses, burglary, and petty larceny among their releasees. In no criminal area are releasees from *For-profit* facilities significantly less likely to recidivate than comparable releasees from a facility of a different management type.⁵⁰

D. *Survival Analysis*

⁵⁰ In a previous version of this paper, we also considered a specification of the basic recidivism regression that allowed for interactions between facility management type and five key individual characteristics—gender, race, age at exit, age at first offense, and length of stay—in order to examine whether certain types of individuals fare better or worse under specific management types. See Bayer & Pozen, *supra* note 39, at Table 11. Our notable findings included: males do relatively better in *For-profit* facilities, while females do relatively better in all other types of facilities; black individuals do relatively better in *State* and (especially) *Nonprofit* facilities; older individuals do relatively better in *State* facilities; and, perhaps most interestingly, otherwise identical individuals serving longer versus shorter sentences are less likely to recidivate when released from *For-profit* facilities, so that individuals serving especially long sentences actually have better recidivism results on average when released from *For-profit* facilities. Given the facilities' ability to lengthen or shorten an offender's sentenced commitment period, this finding might mitigate concern over the possible financial incentives of for-profit facilities to extend commitments artificially. See discussion in note 44 *supra*.

Table 8 reports results for various specifications based on an analysis of survival time. These specifications are able to glean additional information from the precise timing of recidivism in the first year, which leads to more precise estimates of the relative effectiveness of the different facility management types. The first column reports the result of a proportional hazards model, while the second and third columns present alternative specifications of column 1 assuming, respectively, Weibull and exponential distributions. All three specifications include the full set of control variables, including judicial circuit dummies, and use adjudications as the measure of recidivism.

The results are consistent across the three specifications: In all cases, youths released from *State*, *Nonprofit*, and *County* facilities have significantly lower daily hazard rates than comparable releasees from *For-profit* facilities. Releasees from *State*, *Nonprofit*, and *County* facilities have hazard rates approximately 13, 17, and 19 percent lower, respectively, than otherwise identical individuals released from *For-profit* facilities. These estimates are significant at the 5, 1, and 5 percent levels, respectively, and again imply that *For-profit* facilities have systematically worse recidivism performance.

E. Costs to the State

While *For-profit* correctional facilities perform worse than *State*, *Nonprofit*, and *County* facilities with respect to recidivism, they may still be desirable as a public policy tool if they come at a cheaper cost to the state.⁵¹ The Florida D.J.J.'s data also provide information on each facility's average cost to the state per release. Cost in this instance is defined as the annual

⁵¹ In adult corrections, the Florida Legislature requires that for-profit facilities come at a cheaper cost to the state. By law, the Florida Correctional Privatization Commission "may not enter into a contract [with a corporate operator] ... unless [it] determines that the contract or series of contracts in total for the facility will result in a cost savings to the state of at least seven percent over the public provision of a similar facility." Fla. Stat. Ann. § 957.07(1) (1993).

amount spent by the Florida D.J.J.;⁵² it averages approximately \$24,089 per release. With the average individual having spent 194 days in a facility, this works out to \$124 per day. The final column of Table 8 reports the results of a regression of the average cost to the state per release on the full set of control variables. In this case, the regression is run at the facility level, weighted by the number of individuals released from each facility and controlling for facility averages for the full set of controls included in the recidivism regressions.

The results imply that *For-Profit* facilities do in fact generally require a smaller outlay by the Florida D.J.J. per release, once the characteristics of the facilities and the individuals assigned to these facilities are taken into account. Specifically, the D.J.J. pays \$11,563 more annually per the release of a comparable individual from *State* facilities and \$6,123 more per release from *Nonprofit* facilities relative to *For-profit* facilities. These results are statistically significant at the 1 percent level. Comparable releases from *County* facilities cost the D.J.J. \$2,760 more annually on average than *For-profit* releases, though this result is not statistically significant. The difference between these estimates and the raw differences in costs reported in Table 3 suggest that *For-profit* facilities are handling more costly juveniles in terms of observable characteristics. The coefficients on the controls in the cost regression imply, for example, that individuals with more felonies are more costly to house in a correctional facility. Some of these additional costs may be related to the increased difficulty of rehabilitating these individuals while other costs may be related to greater security precautions they require.

⁵² Data were not available on other possible sources of public funding for the correctional facilities, such as federal grants or local school board allocations. D.J.J. expenditures represent the bulk of all the facilities' public funding, however. Apart from public funding, private for-profit and non-profit correctional facilities may have other sources of income available to them; for-profit facilities can potentially draw on investment income and budget allocations from their parent corporations, while nonprofit facilities can potentially draw on donations, grants, and endowment income. Since we do not have information on these possible extra-governmental income flows, our results reflect only facilities' cost-effectiveness from the perspective of the Florida D.J.J.

F. Programming Type

In order to understand better why recidivism performance and costs differ across management types, Table 9 shows results for our main specifications after controlling for facility programming type—each facility’s self-determined set of philosophies and practices. Column 1 of Table 9 is comparable to column 5 of Table 4; column 2 is comparable to column 5 of Table 5; column 3 is comparable to column 1 of Table 8; and column 4 is comparable to column 4 of Table 8. Once again, *For-profit* is the omitted management type category, and *Boot Camp* is the omitted programming type category. In all four of the specifications, the results for *State* and *Nonprofit* facilities remain quite similar to those reported in the previous tables: These management types continue to have significantly superior recidivism performance to that of *For-profit* facilities using all measures, and they continue to cost more to the state per comparable individual released. In the case of *County* facilities, on the other hand, adding the programming type controls changes the results substantially. Now, the recidivism performance of *County* facilities becomes statistically indistinguishable from that of *For-profit* facilities, but their cost per release becomes far lower—an annual average of \$26,047 less per comparable release relative to *For-profit* facilities. It is important to point out, however, that since all *County* facilities have only one of two programming types, *Youth Development Center* or *Boot Camp*, these results simply reflect how the single youth development center operated by a county compares to the youth development centers operated by the other management types.

Interpreted relative to the case of boot camps, the results in the lower part of Table 9 indicate the relative effectiveness of the different programming types. The recidivism performance of boot camps looks very good, as all of the other major programming types have statistically inferior recidivism performance on at least one measure and in most cases on all

three. These better returns in terms of recidivism do come at an increased cost, though, as the other programming types typically cost the state much less than boot camps. More generally, it is important to keep in mind that all of the boot camps operated in Florida are *County*. Thus, to evaluate the performance of Florida's boot camps relative to other programming types run by a different management type, one must weigh the combined effect of *Boot Camp* versus another programming type and *County* versus another management type. In most comparisons, Florida's boot camps give rise to substantial decreases in recidivism rates at an increased cost easily justifiable by a cost-benefit analysis.

G. Facility Size

In order to shed further light on why recidivism performance and costs differ across management types, Table 10 explores the impact of including facility size as a further control.⁵³ As Table 3 makes clear, one of the key differences between *For-profit* and *County* facilities versus *State* and *Nonprofit* facilities is the relatively large size of *For-profit* and *County* facilities. In conducting our analyses, therefore, an interesting question arises concerning how to treat facility size. On the one hand, facility size might be thought of as an endogenous choice of the facility manager. If increased size allows the facility manager to reduce per-capita costs at the possible expense of greater rates of recidivism, it would not be appropriate to include facility size as a control variable. On the other hand, if one assumes facility size is correlated with unobserved individual characteristics or is simply pre-determined by the D.J.J., one might want

⁵³ As yet another way to explore the possible factors behind our recidivism results, we also conducted an analysis of the "best and worst" facilities in our sample, where we compared facilities' actual *Recidivism - Adjudicated* rates to the rates predicted by the regression reported in Table 6 without including the facility management variables, and then ranked the facilities on the basis of that differential. These results were broadly consistent with the relative prevalence and overall recidivism performance of each management type, and they indicated that our primary recidivism results are not driven by a few particularly excellent or substandard facilities in one or more of the management type categories.

to use facility size as an extra control variable. Thus, in order to provide a clear picture of the extent to which this latter assumption would affect our results, Table 10 repeats the analyses of Table 9 controlling for facility size.

As one might have expected, smaller facilities produce significantly better results with respect to recidivism at a significantly higher cost. Yet while part of the differences between the performance of *For-profit* facilities and the performance of *State* and *Nonprofit* facilities can therefore be explained by size differences, size differences do not explain very much; when facility size is added as a control, the results for *State* and *Nonprofit* facilities are broadly similar to before. The magnitudes and statistical significance of their coefficients generally decline relative to their levels in Table 9, but these two management types continue to outperform *For-profit* facilities by a wide margin in terms of recidivism while costing more to the D.J.J. In a more considerable change from Table 9, *County* facilities' *Recidivism - Adjudicated* performance becomes significantly better than that of *For-profit* facilities with the inclusion of the facility size control. The cost savings offered to the D.J.J. by *County* facilities over *For-profit* facilities, meanwhile, is halved but remains substantial at \$12,476 annually per comparable individual released.

Overall, then, when facility size and programming type are both added to the full set of controls, *State* and *Nonprofit* facilities continue to have substantially better recidivism performance than *For-profit* facilities, but they come at a higher cost to the state. *County* facilities also offer better recidivism performance than *For-profit* facilities, and they come at a lower cost to the state. *County* facilities therefore seem clearly preferable to *For-profit* facilities from the perspective of the D.J.J., while a more precise cost-benefit analysis is necessary to

determine whether the recidivism benefits of *State* and *Nonprofit* facilities justify their additional costs relative to *For-Profit* facilities.

IV. COST-BENEFIT ANALYSIS

Taken together, the results presented above imply that *For-profit* management leads to a statistically significant increase in recidivism but at significantly lower costs when compared to *Nonprofit* and especially to *State* facilities. This raises an interesting question for public policy: Are the immediate cost savings offered by *For-Profit* facilities enough to justify the future costs associated with increased recidivism? To provide a better sense of the magnitudes involved in this trade-off, Table 11 presents a comparison of the costs and benefits of the different management types.

Our cost-benefit analysis is conducted for the mean individual (15.8 years of age) in the sample used in the analyses presented above (17 years of age or less at the time of release from a moderate or high risk facility). We calculate the expected number of future days that this individual, having been released from a facility operated by each of the four management types, would spend in a correctional facility. We then divide the estimated cost differential between management types by this result to arrive at a cutoff value of an expected future day in a correctional facility needed to justify one type of facility versus another. To determine which of these facility types should be preferred, this cutoff value must be compared to the social benefit of avoiding an additional day in confinement (including the avoided costs of the crime and prosecution as well as the cost of confinement).⁵⁴

⁵⁴ For estimates of the costs of juvenile crime (and hence also of the benefits of reduced juvenile recidivism rates), see, for example, Howard N. Snyder & Melissa Sickmund, Office of Juvenile Justice and Delinquency Prevention, U.S. Department of Justice, *Juvenile Offenders and Victims: 1999 National Report* 82-83 (1999); David A. Anderson, *The Aggregate Burden of Crime*, 42 *J. Law & Econ.* 611 (1999).

For this analysis, we seek to provide a lower bound regarding the benefits of other facility management types versus *For-profit* and therefore make assumptions that are either neutral to or favor *For-profit* management in comparison to other management types. First, the calculation of future days in a correctional facility assumes a sentence length of 195 days, equal to the mean sentence length in the current sample. This is clearly a lower bound, given that sentences will subsequently be assigned to older individuals with more criminal experience. Second, the calculation assumes that once released from each type of facility, an individual, while still a juvenile, recidivates according to the mean hazard rate associated with that management type, conditional on the full set of controls used in the analysis reported in Table 8. Once over 18 years of age, the mean individual becomes an adult in Florida's criminal justice system; we report results following two assumptions regarding recidivism rates as an adult. In the first instance (Assumption 1), we assume that recidivism rates fall by one-third between the ages of 18 to 21 relative to the ages of 16 to 18. This assumption is consistent with the decline over time in recidivism rates for all state prison releasees in Florida and serves to minimize differences in future recidivism rates across facility management types.⁵⁵ In the second instance (Assumption 2), we assume that differences in recidivism rates remain as they are for juveniles in our sample. Finally, we allow for the possibility of multiple recidivistic commitments to a correctional facility. In this case, we continue to apply the same hazard rate to an individual that was associated with the original facility management type. This too is a conservative assumption regarding differences between *For-Profit* and other management types, as we assume that the

⁵⁵ Florida Department of Corrections, Recidivism Report: Inmates Released from Florida Prisons July 1995 to June 2001 10-11 (Chart 1) (July 2003), available at <http://www.dc.state.fl.us/pub/recidivism/2003/full.pdf>, visited November 21, 2003.

fact that an individual recidivates once has no effect on the individual's subsequent recidivism rate, future sentence length, or the future costs of confinement.

Turning to the results, the second panel of Table 11 indicates that individuals released from *For-profit* facilities are expected to spend an average of 223 additional days in a correctional facility by their 18th birthday, 2.2 years in the future. This figure reflects the fact that well over half of such individuals recidivate within a year and, consequently, that a significant number will have recidivated twice within this 2.2-year period. A comparable individual released from a *Nonprofit* facility is expected to spend only 194 future days back in a correctional facility. Assuming that recidivism rates decline by one-third between the ages of 18-21 (Assumption 1), which is our preferred assumption, we estimate that individuals released from *State*, *Nonprofit*, and *County* facilities will spend an average of 44, 58, and 66 fewer future days in a correctional facility, respectively, relative to comparable individuals released from *For-profit* facilities. The corresponding numbers generated under Assumption 2 are even larger.

The final panel reports the cutoff value of an additional day spent out of a correctional facility needed to justify the choice of *State*, *Nonprofit*, and *County* facilities over *For-profit* facilities. Following the more conservative Assumption 1, the results imply that five years after release the cutoff value of an additional day spent out of a correctional facility needs to be \$266, \$105, and \$42 to justify the choice of a *State*, *Nonprofit*, and *County* facility, respectively, over a *For-profit* facility. To provide a benchmark from our data, the average daily direct cost to the Florida D.J.J. for the juveniles in our sample is \$124 per day in a correctional facility. Thus, even without accounting for any of the other possible benefits (both private and social) of avoiding recidivism as well as the direct costs of apprehension and prosecution, *County* facilities

emerge as clearly preferable for the D.J.J. to *For-profit* and *State* facilities on the basis of cost savings related to future time spent in a correctional facility.

The results of our analysis for the *Nonprofit-versus-For-profit* comparison come within a standard deviation of the benchmark \$124 cost to the state of a future day spent in a correctional facility. This benchmark, however, does not include any of the benefits of a reduction in crime except for cost savings from avoided confinement. Moreover, as described above, our methodology is conservative in many other dimensions. Consequently, the analysis clearly points to the conclusion that the *Nonprofit* facilities are preferable to the *For-profit* ones from the point-of-view of the state. It is not possible to reach a strong conclusion regarding *State* management versus *For-profit* management since it would depend on what the full social benefits of avoiding future recidivism are. The results of Table 11 do imply, however, that *Nonprofit* and *County* facilities dominate *State* facilities, as they provide slightly better recidivism performance at a substantially lower cost.⁵⁶

V. CONCLUSION

The results of our analysis indicate that for-profit management has a statistically significant impact on recidivism as measured by both one-year recidivism rates (approximately 5 to 8 percent higher than the other management types in terms of adjudications and charges) and by daily hazard rates (approximately 13 to 19 percent higher). However, for-profit management is also associated with significantly lower costs when compared to nonprofit and especially to state-operated (Department of Juvenile Justice-operated) facilities—about \$6,000 and \$11,500

⁵⁶ A comparable cost-benefit analysis based on the results reported in Table 10, which control for facility size and programming type, leads to the same pattern of cutoff values as those in Table 11. This finding again indicates the clearly superior performance of *County-operated* management versus *For-profit* management and provides a point estimate of the cutoff value between *Nonprofit* and *For-profit* management remarkably similar to that reported in Table 11.

per release less than the average cost for a comparable release from a nonprofit and a state-operated facility, respectively.

Consistent with economic theory,⁵⁷ we thus find a trade-off between the benefits of reduced recidivism provided by nonprofit and state management on the one hand and the cost savings associated with for-profit management on the other; in order to determine the relative attractiveness of each correctional facility management type, this trade-off requires a more careful analysis of the magnitudes of these effects.⁵⁸ Using a series of conservative assumptions concerning the future impact of the estimated differences in recidivism rates across management types, our cost-benefit analysis implies that the short-run savings offered by for-profit facilities over nonprofit facilities are reversed in the long-run due to increased recidivism rates. This conclusion holds even if one ignores all the other possible benefits (both private and social) of reducing criminal activity and measures the benefits of reduced recidivism as only the avoided costs of additional confinement. County management outperforms for-profit management both in terms of recidivism and in terms of (direct) cost, and therefore appears clearly preferable for the State of Florida. While state management yields both worse recidivism performance and higher costs than nonprofit and county management, the cost-benefit analysis is inconclusive regarding a comparison of state and for-profit management.

While the possibility remains that unobserved differences in the populations served by each facility management type explain some of the differences attributed to these management types, several components of our analysis provide assurance that such unobserved differences

⁵⁷ See discussion in Section IB *supra*.

⁵⁸ Of course, in determining the relative attractiveness of any facility management type, corrections officials might take into account many considerations other than recidivism and cost, such as facilities' quality of confinement and the quality of their educational, vocational, rehabilitative, and health services. As the Florida D.J.J. recognizes, however, recidivism and cost are fundamental considerations in shaping a corrections system. See, for example, Florida Department of Juvenile Justice, The 2003 PAM Report, *supra* note 15.

would be unlikely to change the qualitative nature of our results. First, this study includes far more controls for individual, criminal history, judge-assigned restrictiveness level, judicial circuit, facility programming type, neighborhood, and peer characteristics than any previous study of juvenile recidivism. Considering that the inclusion of these numerous important controls reduces the raw differences between management types by only 10 to 30 percent across multiple recidivism measures, it appears highly improbable that remaining unobserved differences in commitment populations explain the estimated differences between facility management types.

These findings have immediate implications for public policy. Certainly, the Florida Department of Juvenile Justice should continue to expand the role of county-operated facilities (which are usually boot camps) and private nonprofit facilities in its portfolio of correctional facilities relative to the role of private for-profit and state-operated facilities. Given the many legal, political, and ethical complications associated with profit-seeking correctional facilities,⁵⁹ it seems easy to recommend a movement away from for-profit facilities in Florida's juvenile justice system. Moreover, given that the Florida D.J.J. explicitly evaluates facilities on the basis of recidivism and costs—thereby providing some incentive for at least the worst-performing facilities to reduce recidivism—the performance of for-profit facilities in jurisdictions that do not collect data and evaluate facilities on the basis of recidivism is likely to be even worse.

The results also suggest that certain facility management types may be particularly well suited to decreasing the likelihood of certain categories of recidivism crimes. County-operated

⁵⁹ For representative scholarly critiques of private prisons, see, for example, David Shichor, *Punishment for Profit: Private Prisons/Public Concerns* (1995); Eric Bates, *Private Prisons*, *The Nation*, January 5, 1998, at 13; John J. DiIulio, Jr., *What's Wrong with Private Prisons*, 92 *Pub. Int.* 66 (1988); Joseph E. Field, *Making Prisons Private: An Improper Delegation of a Governmental Power*, 15 *Hofstra L. Rev.* 649 (1987); J. Robert Lilly & Paul Knepper, *The Corrections-Commercial Complex*, 39 *Crime & Delinq.* 150 (1993); Robert G. Porter, *The Privatisation of Prisons in the United States: A Policy That Britain Should Not Emulate*, 29 *Howard J. Crim. Just.* 65 (1990); Mick Ryan & Tony Ward, *Privatization and the Penal System: Britain Misinterprets the American Experience*, 14 *Crim. Just. Rev.* 1 (1989).

facilities, for example, are especially successful at reducing felony drug offenses, burglary, and petty larceny among their releasees, while state-operated facilities are especially successful at reducing future assault and battery and felony weapon offenses. For-profit facilities do not exhibit superior recidivism performance in any of the sixteen criminal categories, which suggests that their weaknesses in reducing recidivism are systematic.

APPENDIX

PROGRAMMING TYPE DESCRIPTIONS⁶⁰

Wilderness and Work Programs provide services for youths committed by the juvenile court as well as youths tried as adults and sentenced back to the juvenile system. Programs maintain a population of approximately 20 to 25 males between the ages of 15 and 18 years. They operate in an environmentally secure setting in a remote, isolated rural location. They provide academic and vocational training with moderate overlay services such as mental health and drug abuse treatment. The programs also emphasize outdoor activities, labor-intensive work projects, and behavior management. The designed length of stay is 12 months.

Halfway Houses each serve a population of approximately 15 to 30 youths of the same gender between the ages of 14 and 18 years. These programs serve youths who have committed first-degree misdemeanors, felonies, or similar offenses and are classified as moderate risks to public safety. The programs provide an intentional therapeutic environment based on control theory, structured learning, and behavior management techniques that emphasize social skills,

⁶⁰ Except for the descriptions of boot camps, forestry youth academies, and out-of-state programs, the following descriptions of programming types all come from one Florida Department of Juvenile Justice report. Florida Department of Juvenile Justice, 2000 Outcome Evaluation Report, *supra* note 37, app.1, at 11-15 (2000). Some descriptions are adapted slightly.

academics, pre-vocational and vocational training, and life skills. The designed length of stay is three to six months.

Intensive Halfway Houses each serve a population of approximately 15 to 30 offenders between the ages of 14 and 18 years. These programs provide services at the high restrictiveness level similar to those provided by a halfway house at the moderate restrictiveness level. In addition to more intense physical, staff, and procedural security, there is also increased structure and behavioral management to maximize protection of the public. The designed length of stay ranges from six to nine months.

Serious or Habitual Offender Programs each provide services for a population of no more than 25 males who are serious or habitual offenders. These programs are designed for youths ages 14 to 19 years. These programs employ physical security features and procedures to ensure protection of the public. The services provided by these programs are statutorily mandated and the designed length of stay is nine to twelve months.

Youth Development Centers include programs formerly known as training schools. These large institutions serve more than 100 youths of the same gender ranging from 13 to 18 years of age who have committed felonies or violent misdemeanors. Youths who have committed sex offenses are not eligible for admission. These programs provide a high degree of physical and staff security. Minimum security features include a security perimeter fence at least twelve feet high with an inside overhang or razor wire; external facility doors that are accessed electronically or through the use of a key; passage doors that are hardware secure; and windows that must be secure and constructed of break-resistant material. These programs provide services through a multi-disciplinary approach within an institutional setting. Services include behavior

management, academics, vocational training, mental health and substance abuse treatment, physical fitness activities, and health care. The designed length of stay is nine months.

*Boot Camps*⁶¹ are designed as a series of phases. Each camp includes a high-intensity intake on the first day. The next ten to fourteen days, called the forming stage, is an orientation period during which the recruits are oriented to the basics of military protocol and the rules and regulations of the facility. Once orientation has been completed, educational, mental health, and other overlay services are added. Other features of boot camps include: a silence rule (recruits may not speak to one another except under special circumstances); individual rooms; military bearing, discipline, drill, ceremony, and physical training; long, structured days with little or no free time or recreation; a minimum of five hours a day of education; use of different colored hats to designate progress through the program; and transition programs at the end of recruits' stay in order to prepare them for return to "civilian life." Boot camps are typically all-male.

Therapeutic Wilderness Camps each provide services for a population of approximately 30 to 50 emotionally disturbed all-male or all-female youths, generally ages 11 to 16 years. The programs are designed to provide a camp environment that emphasizes outdoor experiential learning, structured peer interaction, teamwork, and personal accountability. The designed length of stay ranges from 12 to 18 months.

Special Needs Programs each serve a population of approximately 10 to 30 youths of the same gender between the ages of 13 and 18 years. These programs provide specialized clinical treatments services in the areas of substance abuse, mental health, developmental disability, or sexual behavior dysfunction. The designed length of stay ranges from 4 to 6 months.

⁶¹ Florida Department of Juvenile Justice, Bureau of Data and Research, Determining Best Practices in Florida's Juvenile Boot Camps 12 (November 2000), available at <http://www.djj.state.fl.us/RnD/mr/2000-11/2000-11.pdf>, visited November 21, 2003.

Sexual Offender Programs provide services for approximately 20 to 30 male sexual offenders ranging in age from 14 to 18 years. These programs provide a continuum of treatment services specifically tailored to the needs of sexual offenders, and focus on overcoming denial, treatment of maladaptive thought patterns, and alleviating or reducing dysfunctional sexual behaviors. The designed length of stay ranges from six to twelve months.

*The Forestry Youth Academy*⁶² functions as a secondary, optional phase to boot camp facilities and is under the arm of the Department of Juvenile Justice. Candidates for the two-year program are approximately 16 years old, have successfully graduated from a boot camp facility, and have been pre-screened by the D.J.J. At this moderate risk facility, education and life skills are linked with discipline and teamwork. Participants receive credit-bearing vocational training in practical forestry skills utilizing the latest technology and nontraditional methodology to ensure the greatest chance of employability upon graduation. Graduates leave the program with a G.E.D. or high school diploma, along with a vocational certification.

Out of State programs refer to The Glen Mills Schools,⁶³ a private, residential school in Pennsylvania for court-adjudicated male delinquents between 15 and 18 years of age. Students are referred to the school by state departments of juvenile justice throughout the country, including the Florida D.J.J. The school has two basic mandates for students: to change behavior from anti-social to pro-social, and to develop life skills that will help sustain this change. Each student receives year-round instruction designed to meet his educational needs.

Intensive Residential Treatment programs are for offenders between the ages of 10 and 13 years. These programs provide services for a population of approximately 25 young males who have committed serious felony offenses, including capital or life felonies. Statutory

⁶² Florida Division of Forestry, Forestry Youth Academy, http://www.fl-dof.com/About_Forestry/youth_academy.html, visited November 21, 2003.

⁶³ The Glen Mills Schools, <http://www.glenmillsschool.org>, visited November 21, 2003.

provisions allow the programs to retain youths until age 21 when necessary. The programs provide intensive treatment services that address the areas of education, behavior management, substance abuse, mental health, sexual behavior dysfunction, life skills, gang-related behavior, and family issues. The designed length of stay ranges from nine to twelve months.

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TABLE 1

INDIVIDUALS AND FACILITIES BY RESTRICTIVENESS LEVEL AND MANAGEMENT TYPE

		Level 1 Minimum Risk	Level 2 Low Risk	Level 3 Moderate Risk	Level 4 High Risk	Level 5 Maximum Risk	Total
State	Releasees <= age 17	411	420	896	126	0	1,853
	Facilities	8	3	18	3	0	32
For-profit	Releasees <= age 17	0	74	821	207	13	1,115
	Facilities	0	1	9	8	2	20
Nonprofit	Releasees <= age 17	860	1,298	2,141	526	0	4,825
	Facilities	24	19	44	20	0	107
County	Releasees <= age 17	0	0	422	183	2	607
	Facilities	0	0	8	1	1	10
	Releasees <= age 17	1,271	1,792	4,280	1,042	15	8,400
	Facilities	32	23	79	32	3	169

NOTE.—Source: Florida Department of Juvenile Justice.

TABLE 2

DESCRIPTIVE STATISTICS FOR SAMPLE USED IN ANALYSIS

Variable	N	Mean	Std. Dev.	Definition
Recidivism				
Recidivism – Charged	5,322	0.70	0.46	1 if client was criminally charged w/in one year of release
Recidivism – Adjudicated	5,322	0.51	0.50	1 if client was adjudicated w/in one year of release
Survival Time - Adjudicat.	2,660	123.5	87.5	Days elapsed from client's release date to date of recidivism offense
Recidivism - Charged:				
Assault Battery	5,322	0.21	0.41	1 if charged w/ assault and battery w/in one year of release
Felony Weapon	5,322	0.15	0.36	1 if charged w/ felony weapon offense w/in one year of release
Misd Weapon	5,322	0.01	0.11	1 if charged w/ misdemeanor weapon offense w/in one year of release
Felony Drug	5,322	0.11	0.31	1 if charged w/ felony drug offense w/in one year of release
Misd Drug	5,322	0.09	0.29	1 if charged w/ misdemeanor drug offense w/in one year of release
Felony Sex	5,322	0.01	0.12	1 if charged w/ felony sex offense w/in one year of release
Misd Sex	5,322	0.00	0.06	1 if charged w/ misdemeanor sex offense w/in one year of release
Auto Theft	5,322	0.10	0.31	1 if charged w/ auto theft w/in one year of release
Burglary	5,322	0.14	0.35	1 if charged w/ burglary w/in one year of release
Grand Larceny	5,322	0.10	0.29	1 if charged w/ grand larceny (excluding auto theft) w/in one year of release
Petty Larceny	5,322	0.11	0.32	1 if charged w/ petty larceny (excluding auto theft) w/in one year of release
Robbery	5,322	0.05	0.22	1 if charged w/ robbery (excluding auto theft) w/in one year of release
Vandalism	5,322	0.05	0.23	1 if charged w/ vandalism w/in one year of release
Disorderly Conduct	5,322	0.04	0.20	1 if charged w/ disorderly conduct w/in one year of release
Escape	5,322	0.02	0.13	1 if charged w/ unlawful escape (from aftercare) w/in one year of release
Trespassing	5,322	0.08	0.28	1 if charged w/ trespassing w/in one year of release
Criminal History				
Felonies	5,322	5.63	5.06	Number of felony charges on client's record
Felonies 0	5,322	0.04	0.20	1 if prior felony charges = 0
Felonies 1	5,322	0.11	0.32	1 if prior felony charges = 1
Felonies 2-3	5,322	0.25	0.44	1 if prior felony charges = 2 or 3
Felonies 4-6	5,322	0.29	0.45	1 if prior felony charges = 4, 5, or 6
Felonies 7+	5,322	0.31	0.46	1 if prior felony charges = 7 or more
Felony Weapon	5,322	0.42	0.49	1 if any felony weapon offense charges on client's record
Misd Weapon	5,322	0.05	0.21	1 if any misdemeanor weapon offense charges on client's record
Felony Drug	5,322	0.16	0.36	1 if any felony drug offense charges on client's record
Misd Drug	5,322	0.18	0.38	1 if any misdemeanor drug offense charges on client's record
Felony Sex	5,322	0.08	0.27	1 if any felony sex offense charges on client's record
Misd Sex	5,322	0.01	0.10	1 if any misdemeanor sex offense charges on client's record
Auto Theft	5,322	0.31	0.46	1 if any auto theft charges on client's record
Burglary	5,322	0.62	0.48	1 if any burglary charges (excluding auto theft) on client's record
Grand Larceny	5,322	0.39	0.49	1 if any grand larceny charges (excluding auto theft) on client's record
Petty Larceny	5,322	0.62	0.48	1 if any petty larceny charges (excluding auto theft) on client's record
Robbery	5,322	0.15	0.36	1 if any robbery charges on client's record
Vandalism	5,322	0.34	0.47	1 if any vandalism charges on client's record
Disorderly Conduct	5,322	0.10	0.30	1 if any disorderly conduct charges on client's record
Escape	5,322	0.11	0.31	1 if any unlawful escape charges on client's record
Trespassing	5,322	0.35	0.48	1 if any trespassing charges on client's record

Individual Characteristics

Female	5,322	0.10	0.31	1 if client is female
Black	5,322	0.50	0.50	1 if client is black
Age at First Offense	5,322	12.55	1.98	Client's age in years at first adjudicated criminal offense
Age at Exit	5,322	15.79	0.96	Client's age in years at exit from facility
Length of Stay	5,322	194.4	109.9	Total length of time (days) spent in facility

Neighborhood Characteristics

Crime Rate in Zip	5,216	360	263	Total number of juvenile referrals in client's home zip code, FY 2000-01
				<i>From: 1990 Census of Population and Housing</i>
Per-Cap Inc Race	4,621	10,488	4,256	Median per-capita income of client's racial group in home zip code, 1990\$
Percent Own Race in Zip	4,621	0.59	0.33	% of inhabitants in client's home zip code of same racial group as client, 1990
Unemployment Rate	4,621	0.07	0.03	% unemployment rate in client's home zip code, 1990
Incarcerated in Zip	4,621	112	302	Number of people incarcerated in client's home zip code, 1990

Facility and Peer Characteristics

Moderate Risk	5,322	0.80	0.40	1 if facility is classified as Moderate Risk (Level 3)
High Risk	5,322	0.20	0.40	1 if facility is classified as High Risk (Level 4)
Cost per Release	5,322	24,089	18,972	Average annual cost (\$) to the Florida DJJ per client released from facility
Facility Size	5,322	55.90	82.01	Daily avg. # of individuals in facility from which individual was released
Percent Black	5,322	0.52	0.50	% of clients released from facility identified as black
Average Stay	5,322	195.50	80.34	Average length of stay (days) in facility for released clients
Same County	5,322	0.28	0.45	1 if facility is located in same county as client's home county

Facility Management Type

State	5,322	0.19	0.39	1 if facility is operated directly by the Florida DJJ
For-profit	5,322	0.19	0.40	1 if facility is operated by private for-profit management
Nonprofit	5,322	0.50	0.50	1 if facility is operated by private nonprofit management
County	5,322	0.12	0.32	1 if facility is operated by a Florida County Sheriff's Department

NOTE.—Source: Florida Department of Juvenile Justice, except as otherwise indicated. Sample used in analysis includes individuals age 17 or less at date of release from a Level 3 or Level 4 facility. All means reported for individuals. Sixty of the 2,720 individuals who were re-adjudicated within a year are missing information concerning the date of their recidivism offense(s). Neighborhood characteristics are constructed for Florida zipcodes only. Individuals with zipcodes from other states are assigned a zero for all neighborhood characteristics, and a dummy variable denoting that an individual has an out-of-state zipcode is included in all regressions. This allows us to maintain the full sample for the regressions, and controls for the potential problem that out-of-state youths are less likely to recidivate in Florida.

TABLE 3

PROFILE BY FACILITY MANAGEMENT TYPE

	State	For-profit	Nonprofit	County
Number of Facilities	21	17	64	9
Clients Released <= Age 17	996	1,028	2,667	631
% Recidivism (Charged) in First Year	69.0%	76.4%	68.1%	65.9%
% Recidivism (Adjudicated) in First Year	51.0%	57.3%	49.4%	48.5%
Mean Survival Time (for those who re-adjudicate in first year)	121.2 (85.0)	117.4 (86.4)	126.1 (89.9)	127.9 (82.7)
Mean Felonies per Individual	5.38 (4.65)	6.40 (5.21)	5.36 (5.07)	5.94 (5.29)
Mean Annual Cost to DJJ per Release (\$)	24,807 (23,013)	20,259 (10,292)	24,952 (20,853)	22,750 (5,181)
Mean Length of Stay (Days)	164 (101)	218 (106)	194 (110)	201 (117)
Mean Age at Exit (Years)	15.79 (0.86)	15.90 (0.84)	15.68 (1.07)	16.10 (0.70)
Mean Facility Size (Daily Avg. # of Individuals)	19.9 (18.6)	37.4 (62.4)	19.4 (10.0)	39.9 (70.9)
Mean % Black Clients per Facility	0.56 (0.13)	0.42 (0.07)	0.47 (0.14)	0.49 (0.14)
Mean % Male Clients per Facility	0.89 (0.31)	0.94 (0.23)	0.86 (0.34)	0.96 (0.20)
Number of Releases by Programming Type:				
Wilderness and Work Program	58	0	368	0
Halfway House – Male	697	199	1,238	0
Halfway House – Female	106	24	280	0
Intensive Halfway House – Male	25	64	221	0
Intensive Halfway House – Female	0	34	23	0
Serious or Habitual Offender Program	0	49	62	0
Youth Development Center	101	631	157	183
Boot Camp	0	0	0	448
Therapeutic Wilderness Camp	0	0	72	0
Special Needs Program	0	0	193	0
Sexual Offender Program	0	0	37	0

Forestry Youth Academy	9	0	0	0
Out of State	0	27	0	0
Intensive Residential Treatment	0	0	16	0

NOTE.—Source: Florida Department of Juvenile Justice. Sample of individuals age 17 or less at date of release from a Level 3 or Level 4 facility. Means are reported for individuals in each facility management type except for the mean facility size, which is reported for all facilities. Standard deviations are in parentheses. Descriptions of each Programming Type are provided in the Appendix.

TABLE 4

THE EFFECT OF FACILITY MANAGEMENT TYPE ON RECIDIVISM (Adjudicated)

Dependent Variable:	Recidivism – Adjudicated				
	(1)	(2)	(3)	(4)	(5)
Estimation Method:	OLS	OLS	OLS	OLS	OLS
State	-0.063 ⁺ (0.038)	-0.061* (0.027)	-0.049 ⁺ (0.026)	-0.052* (0.026)	-0.052* (0.023)
Nonprofit	-0.079* (0.032)	-0.066** (0.021)	-0.056** (0.020)	-0.064** (0.021)	-0.060** (0.019)
County	-0.088* (0.043)	-0.071* (0.033)	-0.069* (0.031)	-0.075* (0.036)	-0.071* (0.032)
<i>Includes Controls For:</i>					
Individual Characteristics		YES	YES	YES	YES
Criminal History, Restrictiveness Level			YES	YES	YES
Neighborhood, Facility and Peer Characteristics				YES	YES
Judicial Circuit Dummies					YES
R ²	0.004	0.046	0.058	0.061	0.075
N	5,322	5,322	5,322	5,322	5,322

NOTE.—Sample of individuals age 17 or less at date of release from a Level 3 or Level 4 facility. For-profit is omitted category. Standard errors, in parentheses, account for clustering of observations at the facility level. The full list of controls, except for the judicial circuit dummies, is shown in Table 6.

⁺, *, ** Statistically significant at the .10, .05, and .01 level, respectively.

TABLE 5

THE EFFECT OF FACILITY MANAGEMENT TYPE ON RECIDIVISM (Charged)

Dependent Variable:	Recidivism - Charged				
Estimation Method:	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS
State	-0.074* (0.032)	-0.066** (0.022)	-0.052** (0.019)	-0.063** (0.020)	-0.073** (0.017)
Nonprofit	-0.083** (0.023)	-0.067** (0.015)	-0.053** (0.014)	-0.052** (0.016)	-0.058** (0.015)
County	-0.104* (0.041)	-0.085* (0.033)	-0.083** (0.026)	-0.086** (0.033)	-0.084** (0.030)
<i>Includes Controls For:</i>					
Individual Characteristics		YES	YES	YES	YES
Criminal History, Restrictiveness Level			YES	YES	YES
Neighborhood, Facility and Peer Characteristics				YES	YES
Judicial Circuit Dummies					YES
R ²	0.055	0.085	0.107	0.112	0.124
N	5,322	5,322	5,322	5,322	5,322

NOTE.—Sample of individuals age 17 or less at date of release from a Level 3 or Level 4 facility. For-profit is omitted category. Standard errors, in parentheses, account for clustering of observations at the facility level. The full list of controls, except for the judicial circuit dummies, is shown in Table 6.

*, ** Statistically significant at the .05 and .01 level, respectively.

TABLE 6

PREDICTING RECIDIVISM WITHIN ONE YEAR

Dependent Variable:	Recidivism - Adjudicated		
Observations:	5,322		
Variable	Estimate	Std. Error	
<i>Facility Management Type</i>			
State	-0.053	0.023	*
Nonprofit	-0.060	0.019	**
County	-0.071	0.032	*
<i>Individual Characteristics</i>			
Female	-0.164	0.025	**
Black	0.141	0.025	**
Age at First Offense	-0.008	0.005	*
Age at Exit	-0.048	0.008	**
Length of Stay (/100)	0.004	0.009	
<i>Criminal History</i>			
Felonies 1	0.040	0.040	
Felonies 2-3	0.027	0.037	
Felonies 4-6	0.052	0.038	
Felonies 7+	0.080	0.043	+
Felony Weapon	-0.005	0.016	
Misd Weapon	-0.016	0.028	
Felony Drug	0.033	0.019	+
Misd Drug	0.032	0.020	
Felony Sex	-0.026	0.023	
Misd Sex	-0.012	0.064	
Auto Theft	0.053	0.016	**
Burglary	0.023	0.021	
Grand Larceny	-0.010	0.013	
Petty Larceny	0.037	0.013	**
Robbery	0.011	0.021	
Vandalism	0.021	0.013	
Disorderly Conduct	0.021	0.023	
Escape	0.049	0.020	*
Trespassing	0.001	0.016	
<i>Facility Restrictiveness Level</i>			
Moderate Risk	-0.010	0.013	
<i>Neighborhood Characteristics</i>			
Crime Rate in Zip (/1,000)	0.004	0.030	
Per-Cap Inc Race (/1,000)	0.007	0.003	**
Percent Own Race in Zip	0.023	0.028	

Unemployment Rate	0.043	0.394	
Incarcerated in Zip (/1,000)	-0.001	0.023	
<i>Facility and Peer Characteristics</i>			
Percent Black	0.015	-0.075	
Average Stay (/100)	-0.041	0.015	**
Same County	-0.006	0.015	

NOTE.—Sample of individuals age 17 or less at date of release from a Level 3 or Level 4 facility. For-profit, Felonies 0, and High Risk are omitted categories. Standard errors account for clustering of observations at the facility level. Judicial circuit dummies are included in the regression.

⁺, *, ** Statistically significant at the .10, .05, and .01 level, respectively.

TABLE 7

RECIDIVISM (Charged) ACROSS CRIME CATEGORIES

Dependent Variable: Observations:	Recidivism - Charged for each crime category 5,322		
	State	Nonprofit	County
<i>Recidivism – Charged:</i>			
Assault Battery	-0.025 ⁺ (0.015)	-0.006 (0.012)	0.004 (0.018)
Felony Weapon	-0.028 ⁺ (0.015)	-0.002 (0.013)	-0.017 (0.016)
Misd Weapon	0.006 (0.005)	0.001 (0.003)	0.002 (0.004)
Felony Drug	-0.019 (0.013)	-0.017 (0.012)	-0.030* (0.014)
Misd Drug	-0.007 (0.011)	-0.004 (0.011)	-0.011 (0.011)
Felony Sex	-0.013* (0.005)	-0.012** (0.004)	-0.015** (0.005)
Misd Sex	-0.001 (0.003)	-0.002 (0.003)	0.002 (0.003)
Auto Theft	-0.035** (0.011)	-0.036** (0.010)	-0.032* (0.014)
Burglary	-0.004 (0.017)	-0.020 (0.016)	-0.054* (0.021)
Grand Larceny	0.000 (0.014)	0.003 (0.013)	-0.004 (0.016)
Petty Larceny	-0.017 ⁺ (0.009)	-0.009 (0.007)	-0.051** (0.014)
Robbery	0.000 (0.010)	-0.012 ⁺ (0.007)	-0.020 ⁺ (0.011)
Vandalism	-0.006 (0.010)	0.000 (0.010)	-0.005 (0.012)
Disorderly Conduct	-0.006 (0.009)	0.001 (0.008)	0.008 (0.010)
Escape	0.008 (0.007)	0.005 (0.005)	0.030 (0.005)

Trespassing	-0.036** (0.010)	-0.021 ⁺ (0.011)	-0.027 ⁺ (0.015)
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NOTE.—Sample of individuals age 17 or less at date of release from a Level 3 or Level 4 facility. For-profit is omitted category. Standard errors, in parentheses, account for clustering of observations at the facility level. The full set of variables shown in Table 6 as well as the judicial circuit dummies are included in all regressions.

⁺, *, ** Statistically significant at the .10, .05, and .01 level, respectively.

TABLE 8

SURVIVAL TIME ANALYSIS AND COSTS TO THE STATE

Specification	Survival Time Analysis			Cost
	Recidivism - Adjudicated	Recidivism - Adjudicated	Recidivism - Adjudicated	Cost per Release (\$)
Estimation Method:	Proportional Hazards (1)	Weibull Distribution (2)	Exponential Distribution (3)	OLS (4)
State	0.875* (0.056)	0.874* (0.059)	0.872* (0.060)	11,563** (3,627)
Nonprofit	0.838** (0.045)	0.834** (0.047)	0.831** (0.049)	6,123** (2,169)
County	0.810* (0.077)	0.811* (0.081)	0.809* (0.082)	2,760 (6,677)
Includes Full Controls	Yes	Yes	Yes	Yes
R ²				0.535
N	5,322	5,322	5,322	111

NOTE.—Sample of individuals age 17 or less at date of release from a Level 3 or Level 4 facility. For-profit is omitted category. Standard errors, in parentheses, account for clustering of observations at the facility level. Full controls are complete set of variables shown in Table 6 along with the judicial circuit dummies.

*, ** Statistically significant at the .05 and .01 level, respectively.

TABLE 9

ROBUSTNESS ANALYSIS – CONTROLLING FOR PROGRAMMING TYPE

Dependent Variable:	Recidivism - Adjudic.	Recidivism - Charged	Recidivism - Adjudic.	Cost per Release (\$)
Estimation Method:	OLS (1)	OLS (2)	Proportional Hazards (3)	OLS (5)
Management Type:				
State	-0.060* (0.030)	-0.082** (0.020)	0.877 (0.071)	12,899** (3,720)
Nonprofit	-0.066* (0.028)	-0.066** (0.017)	0.843* (0.068)	8,048* (3,544)
County	-0.009 (0.025)	-0.007 (0.020)	0.9930 (0.088)	-25,923** (6,154)
Programming Type (results are relative to Boot Camps (448)):				
Halfway House - Male (2,134)	0.101* (0.044)	0.129** (0.036)	1.355* (0.189)	-39,650** (6,658)
Youth Development Center (1,072)	0.101* (0.048)	0.117** (0.040)	1.420* (0.216)	-31,945** (6,384)
Wilderness and Work Program (426)	0.091+ (0.047)	0.136** (0.038)	1.327+ (0.196)	-42,266** (7,111)
Halfway House - Female (410)	0.130* (0.060)	0.102 (0.062)	1.476 (0.354)	-46,049** (11,773)
Intensive Hwy. House - Male (310)	0.127* (0.055)	0.137** (0.047)	1.495* (0.292)	-53,981** (11,687)
Special Needs Program (193)	0.052 (0.065)	0.058 (0.051)	1.169 (0.201)	-40,035** (7,451)
Serious or Habitual Offen. Prog. (111)	0.071 (0.108)	0.106+ (0.062)	1.291 (0.461)	-44,820** (11,896)
Therapeutic Wilderness Camp (72)	0.145 (0.089)	0.124 (0.095)	1.456 (0.385)	9,631 (16,284)
Intensive Hwy. House - Female (57)	0.112 (0.120)	0.140* (0.068)	1.373 (0.721)	-63,485** (16,695)
Sexual Offender Program (37)	0.079 (0.072)	-0.066 (0.059)	1.154 (0.305)	-18,641 (28,851)
Out of State (27)	-0.035 (0.078)	0.048 (0.066)	0.930 (0.236)	-61,106** (13,291)

Intensive Residential Treatment (16)	0.195* (0.078)	0.128 ⁺ (0.066)	1.672 ⁺ (0.441)	6,173 (12,755)
Forestry Youth Academy (9)	0.017 (0.051)	-0.043 (0.048)	0.944 (0.150)	3,787 (9,038)
Includes Full Controls	Yes	Yes	Yes	Yes
N	5,322	5,322	5,322	111
R ²	0.079	0.128		0.762

NOTE.—Sample of individuals age 17 or less at date of release from a Level 3 or Level 4 facility. For-profit and Boot Camp are omitted categories. Standard errors, in parentheses, account for clustering of observations at the facility level. Descriptions of each Programming Type are provided in the Appendix. The number shown in parentheses following each programming type is the total number of individuals age 17 or less released during the evaluation period. Full controls are complete set of variables shown in Table 6 along with the judicial circuit dummies.

⁺, *, ** Statistically significant at the .10, .05, and .01 level, respectively.

TABLE 10

ROBUSTNESS ANALYSIS – CONTROLLING FOR PROGRAMMING TYPE AND FACILITY SIZE

Dependent Variable:	Recidivism - Adjudic.	Recidivism - Charged	Recidivism - Adjudic.	Cost per Release (\$)
Estimation Method:	OLS (1)	OLS (2)	Exponential Distribution (3)	OLS (4)
State	-0.049 (0.030)	-0.078** (0.020)	0.879 (0.076)	9,378** (3,361)
Nonprofit	-0.056 ⁺ (0.029)	-0.062** (0.018)	0.864 ⁺ (0.075)	4,805 (3,086)
County	-0.054* (0.024)	-0.024 (0.027)	0.849 ⁺ (0.075)	-12,476* (5,459)
Facility Size (/100)	0.039** (0.012)	0.015 (0.014)	1.125* (0.052)	-11,760** (4,087)
Includes Full Controls	Yes	Yes	Yes	Yes
N	5,322	5,322	5,322	111
R ²	0.079	0.128		0.793

NOTE.—Sample of individuals age 17 or less at date of release from a Level 3 or Level 4 facility. For-profit is omitted category. Standard errors, in parentheses, account for clustering of observations at the facility level. Full controls are complete set of variables shown in Table 6 along with the judicial circuit dummies, facility size, and the variables characterizing programming type.

⁺, *, ** Statistically significant at the .10, .05, and .01 level, respectively.

TABLE 11

COST-BENEFIT ANALYSIS

	For-profit	State	Nonprofit	County
Predicted Daily Survival Rate	0.99775	0.99804	0.99813	0.99819
Predicted Daily Hazard Rate	0.00225	0.00196	0.00187	0.00181
Expected Cost Difference per Release (\$)		11,563	6,123	2,760
<hr/>				
Expected Future Number of Days in Correctional Facility				
1 year from release	90.8	81.5	78.4	76.6
At age 18 (2.2 years)	223.0	201.4	194.0	189.9
5 years from release – Assumption 1	432.5	389.1	374.3	366.1
5 years from release – Assumption 2	533.6	483.5	466.2	456.5
<hr/>				
Expected Additional Days out of Confinement Relative to For-profit				
1 year from release		9.2 (4.4)	12.4 (3.6)	14.2 (6.6)
At age 18 (2.2 years)		21.6 (10.4)	29.0 (8.5)	33.2 (15.6)
5 years from release – Assumption 1		43.5 (20.9)	58.2 (17.2)	66.4 (30.3)
5 years from release – Assumption 2		50.1 (24.3)	67.4 (19.3)	77.0 (35.4)
<hr/>				
Value (\$) of Additional Day out of Confinement to Justify Choice versus For-profit				
1 year from release		1,253 (526)	496 (163)	196 (302)
At age 18 (2.2 years)		535 (225)	211 (70)	84 (129)
5 years from release – Assumption 1		266 (112)	105 (30)	42 (63)
5 years from release – Assumption 2		231 (98)	91 (29)	36 (55)

NOTE.—Standard errors shown in table (in parentheses) were bootstrapped using the standard errors reported for the corresponding parameters. Assumption 1: recidivism rates fall by one-third between the ages of 18 to 21 relative to the ages of 16 to 18. Assumption 2: differences in recidivism rates remain as they are for the juveniles in our sample.