

# Utah Cost of Crime

## Intensive Supervision (Adults): Technical Report (includes Electronic Monitoring)

December 2012



THE UNIVERSITY OF UTAH

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*Utah Criminal Justice Center*

COLLEGE OF SOCIAL WORK  
COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES  
UTAH COMMISSION ON CRIMINAL AND JUVENILE JUSTICE  
S.J. QUINNEY COLLEGE OF LAW



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**Intensive Supervision (Adults):  
Technical Report  
(includes Electronic Monitoring)**

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Intensive supervision is an intermediate sanction intended to reduce the costs of incarceration, by decreasing the time that offenders spend in jail or prison, while protecting public safety through increased monitoring (Gendreau, Goggin, Cullen, Andrews, 2000; MacKenzie, 2006). Offenders who receive intensive supervision are sentenced to community-based sanctions with increased supervision rather than incarceration. Traditionally, the defining feature of intensive supervision is the increased allocation of resources to surveillance, which can include a range of strategies for monitoring and controlling offenders in the community: increased contact with probation/parole officers, reduced caseload for probation/parole officers, home confinement, Day Reporting Centers, electronic monitoring, and random drug testing (Tonry, 1990). Surveillance-oriented intensive supervision programs (ISP) are designed to reduce recidivism via increased monitoring of offenders' location and activities, which is intended to have a deterrent effect on criminal behavior. In contrast, treatment-oriented ISPs intended to reduce recidivism via the use of monitoring to enforce compliance with treatment and supervision goals, which is believed to result in long-term behavioral change (Brown, 2007).

### **Prior Research**

Research on intensive supervision suggests that surveillance alone is not an effective strategy for deterring criminal behavior. Results from an extensive study that used random assignment to evaluate the effects of ISP at 14 sites in nine states demonstrated that increased surveillance had no impact on rearrest rates when compared to regular supervision or incarceration (Petersilia & Turner, 1993). Similarly, MacKenzie (2006) combined 31 effect sizes, from 13 studies, and found a non-significant increase in recidivism for offenders who participated in ISP when compared to other forms of supervision (probation/parole or incarceration). In fact, in some cases, ISPs have been associated with higher rates of incarceration due to increased detection of technical violations (GAO, 1993; Gendreau et al., 2000). This latter finding suggests that surveillance-oriented ISPs are ineffective—from both a cost and public safety perspective—because they do not reduce the incidence of new crimes but do increase the likelihood that offenders will be returned to jail or prison on technical violations. A separate analysis of intermediate sanction programs that included a treatment component found that those programs were associated with a 10% reduction in recidivism (Gendreau et al., 2000). Increasingly, research indicates that ISPs are more effective when structured in accordance with the principles of effective rehabilitation, combining treatment and rehabilitation programming with intensive monitoring (Andrews, Bonta, & Hodge, 1990; Bonta, 2001).

In a series of cost-benefit analyses, the Washington State Institute for Public Policy (WSIPP) consistently found significant reductions in recidivism for treatment-oriented ISPs when compared to regular supervision (Aos, Phipps, Barnoski, & Lieb, 2001; Aos et al., 2011; Drake, 2009). Surveillance-oriented ISPs were not associated with any statistically significant difference in reoffending when compared to regular supervision. The WSIPP analyses found no difference in recidivism when comparing ISP to incarceration; however, given cost differences between community-based supervision and a secure placement, the authors concluded that ISP was cost effective when compared to prison (Aos et al., 2001). In a meta-analysis of 58 ISPs, Lowenkamp, Flores, Holsinger, Makarios, and Latessa (2010)

found a relationship between the impact of ISPs and program philosophy: treatment-oriented ISPs were associated with statistically significant reductions in recidivism while deterrence-oriented programs were not. Further emphasizing the importance of treatment as a component of ISPs, the authors found that even programs that included well-implemented treatment did not significantly reduce recidivism when it was provided in the context of a surveillance-oriented ISP.

**Electronic monitoring.** Electronic monitoring (EM) is also an intermediate sanction, often implemented within the context of home confinement or a curfew order. Offenders are monitored by probation/parole staff via a range of devices, which include wrist and ankle bracelets, global positioning systems, and voice verification systems (U. S. Department of Justice (USDOJ), 2009). While many EM programs are administered as part of an ISP, the WSIPP studies evaluated electronic monitoring (EM) separately and found no difference in recidivism rates for offenders sentenced to EM when compared to incarceration (Drake, 2009) or regular probation (Aos et al., 2001). These findings are confirmed in MacKenzie's (2006) analysis of eight EM studies and in Renzema and May-Wilson's (2007) systematic review. Renzema and May-Wilson only identified three studies that met inclusion criteria in terms of methodological rigor. Their meta-analysis of those studies showed no effect on reoffending as a result of EM; combining the results of this analysis with the systematic review, the authors concluded that no empirical proof exists to show that EM reduces recidivism. The U.S. Department of Justice (2009), however, argues that the lack of difference in recidivism rates for EM-supervised offenders when compared to incarcerated offenders is justification for the use of EM, because EM is less expensive than prison. Renzema's (2007) analysis supports this assessment, to some degree, as the authors conclude that EM can be appropriate when used "to accomplish realistic goals" rather than as a "knee-jerk reaction to crime, overcrowding, and high costs of running correctional systems" (p. 232).

## Methods

### Inclusion Criteria

A systematic review was conducted, in accordance with the protocol outlined by PRISMA (Moher, Liberati, Tetzlaff, & Altman, 2009), to identify studies for inclusion in this meta-analysis. The research team identified eligibility criteria for population, intervention, setting, outcome, and methodology (see Methods Report for complete explanation of the search strategy). The search was restricted to studies written in English and conducted between 1987 and 2011. Studies had to meet the following criteria to be eligible:

- a) Both the treatment group and the comparison/control group must consist of adult offenders (ages 18 years and older). The treatment group must consist of offenders under some form of intensive supervision (either probation or parole). The comparison group must consist of offenders who are under some form of correctional supervision (probation, parole, or incarceration).
- b) The study must evaluate a criminal justice intervention. Primary prevention programs and programs serving non-court involved populations were excluded. Intensive supervision was defined as increased surveillance, which could include:

smaller caseloads for probation/parole officers, more frequent contact with offenders, home confinement, Day Reporting Centers, and electronic monitoring. Intensive supervision programs that included a treatment component were included; however, the study authors had to explicitly identify the surveillance component as intensive. Studies that evaluated intensive case management and/or treatment, provided within the context of regular supervision, were not eligible for inclusion.

- c) Interventions conducted within the context of any community-based placement were eligible.
- d) The study must include a measure of recidivism—which could be arrest, conviction, incarceration, or failure—as an outcome. Recidivism data from official sources was preferred, but studies using only self-report recidivism measures were also eligible. Offenses committed while the offender was in a secure facility were not included. For comparisons between regular probation and ISP, all offenses were included (both during and post-supervision). Non-criminal outcome measures—such as measures of treatment targets—were excluded from this analysis. The study must report quantitative results that could be used to calculate an effect size. Given the interest in recidivism, dichotomous data were preferred (e.g., odds ratios). If the study only included continuous measures, effect sizes were calculated and converted into odds-ratios (Lipsey & Wilson, 2001) using log odds (see Methods Report).
- e) Both experimental and quasi-experimental studies were eligible for inclusion. Quasi-experimental studies had to use matching or statistical methods to demonstrate equivalence between the intervention and comparison group. Treatment dropouts were not considered an appropriate comparison group. Comparison groups consisting of offenders who refused treatment were included only if the authors conducted analyses that demonstrated that the groups were similar.

### **Retrieving and Screening Studies**

The initial literature searches for ISP and EM were conducted separately. The ISP search identified 1,933 citations, from which researchers pulled 116 studies for further evaluation. Full articles were screened by one researcher, which resulted in 22 studies that met inclusion criteria. Twenty-percent (20%) of the full articles ( $k=22$ ) were double-screened for inclusion by a second researcher; discrepancies between researchers were resolved through discussion. Two of the studies reported on statistically dependent samples and were therefore excluded, which resulted in 20 eligible studies. The EM search resulted in 1,758 citations from which 21 articles were pulled for further evaluation. During the course of screening, researchers realized that the EM studies overlapped with the ISP sample. As a result, the research team made the decision to analyze EM as a sub-group of the ISP sample. Four additional studies, that were not already included as part of the ISP sample, were identified in the EM search and included in the analysis. The total sample for ISP, including EM, is 22 studies, which represent 35 independent comparisons (see Appendix A). From this point forward, the term study refers to independent comparisons.

## Extracting Data

The authors developed a detailed code sheet and manual, which included variables related to study quality, program characteristics, participant characteristics, and treatment variables (see Methods Report for a full description of coding variables). One researcher coded all of the included studies and entered the data into an Excel spreadsheet. Ten percent (10%) of included studies were double-coded ( $k=3$ ), by a second researcher; discrepancies in coding were resolved through discussion with the research team. To assess study quality, the researchers used a modified version of The Maryland Scale of Scientific Rigor (Aos et al., 2001; Gottfredson, MacKenzie, Reuter, & Bushway, 1997). Studies that received a rating lower than three (unmatched comparison group or no comparison group), out of five possible points, were excluded. Where studies reported multiple measures of recidivism, researchers selected the broadest measure (e.g., arrest over conviction and conviction over re-incarceration). Outcome data were collected on general recidivism and technical violations. Studies were classified as surveillance-oriented if: the study authors described it as surveillance oriented; if the authors made no reference to treatment activities for offenders; or if the authors described it as treatment-oriented but indicated that less than half of the intervention sample had actually received treatment. Studies were coded as treatment-oriented if: the authors described it as treatment-oriented and at least half of the intervention group received the intended treatment.

## Analysis

Data were coded into an Excel spreadsheet, which allowed researchers to calculate descriptive statistics for the full sample. The researchers then recoded variables, to condense data into comparable units wherein each study contributed only one effect size to each outcome measure, and entered those into *Comprehensive Meta-Analysis* (CMA, version 2). Using CMA, the researchers assessed heterogeneity using the  $Q$  and I-squared statistics (see Results section). The  $Q$  statistic is a test of the null hypothesis: a significant value ( $p < .05$ ) indicates that the variation between studies was greater than one would expect if the difference could be explained entirely by random error (Borenstein, Hedges, Higgins, & Rothstein, 2009). Because the  $Q$  statistic is not a precise measure of the magnitude of dispersion between studies, the researchers conducted additional analyses to quantify the proportion of variance that could be attributed to differences in study characteristics (e.g., setting, population, intervention). The I-squared statistic (values range from 0% to 100%) provides an estimate of how much of the variation between studies can be explained by random error: values near 0 indicate that all of the difference can be explained by random error. Values at 25%, 50% and 75% are, respectively, considered low, moderate, and large heterogeneity (Piquero & Weisburd, 2010; Sedgwick, 2012). Given the range of study characteristics present in this sample, a random effects model, which assumes variability between studies (Piquero & Weisburd, 2010), was used to generate a summary effect size for each outcome measure. All data was coded and transformed into odds-ratios, with values above 1 indicating a negative treatment effect and values below 1 indicating a positive treatment effect (i.e., reduced recidivism rates for offenders who participated in treatment).

## Results

### Sample Characteristics

The majority of comparisons (k=31) were from studies conducted in the United States (U.S.) and were unpublished technical reports (see Table 1). While the majority of studies received a five out of five on study quality (k=21), fourteen of those were conducted by the same authors as part of a multi-state project. Eight of the studies examined EM as a mechanism for enforcing the conditions of supervision. The follow-up period ranged from six months to five years. All of the studies included a measure of new criminal behavior. Twenty studies also included a measure of technical violations; however, those were not included in this analysis, which was focused on the costs of new crime. Total sample size ranged from 18 to 828 and the entire sample describes 3,517 offenders in treatment groups and 3,689 offenders in comparison groups (see Appendix B).

**Table 1** Characteristics of Studies Included in Meta-analysis (k=35)

Characteristics	Frequency	%
<b>Publication type</b>		
Peer-reviewed journal	20	57
Unpublished technical report	11	31
Book	4	11
<b>Sample location</b>		
U.S.	30	86
Canada	1	3
Other	4	11
<b>Methodological Quality</b>		
5: Random Control Trial (RCT)	21	57
4: High quality quasi-experimental <sup>1</sup>	3	11
3: Quasi-experimental with testing or matching	11	31

<sup>1</sup>Employs a quasi-experimental research design with a program and matched comparison group, controlling with instrumental variables or Heckman approach to modeling self-selection; May also include RCT with problems in implementation.

Twenty-four studies made comparisons between ISP and regular supervision, seven compared ISP to incarceration, and four compared different forms of ISP (see Table 2). Eighteen studies evaluated treatment-oriented ISPs and 17 evaluated surveillance-oriented ISPs. Sixteen studies evaluated a sample of probationers, nine evaluated a sample of parolees, and the rest evaluated samples that included both probationers and parolees.

**Table 2** Characteristics of Study Comparisons

Study Comparisons <sup>1</sup>	ISP compared to:		
	Regular Supervision	Incarceration	ISP
<b>Total Sample</b>	24	7	4
<b>Orientation</b>			
Surveillance-oriented	12	5	--
Treatment-oriented	12	2	4
<b>Sample</b>			
Probationers	10	5	1
Parolees	7	--	2
Mixed	7	2	1

<sup>1</sup>Number of studies

### Meta-analysis

Thirty-five (35) comparisons were included in the meta-analysis. Results are reported below, separated by comparison type (ISP compared to regular supervision, ISP compared to prison or jail, and electronic monitoring).

**ISP compared to regular supervision.** General recidivism was examined in 24 studies in which ISP was compared to regular supervision (see Appendix C). In 13 of those, results favored the intervention (four were significant at  $p < 0.05$ ). The odds-ratios for general recidivism for ISP as an enhancement to regular supervision ranged from 0.33 to 2.96. The random effects mean odds-ratio was 0.87 (95% CI of 0.69 to 1.10), indicating no significant difference in recidivism between the intervention and comparison groups. The  $Q$  test showed that the distribution of the effect sizes was significantly heterogeneous ( $Q = 60.75$ ,  $df = 23$ ,  $p < 0.001$ ). This finding was expected given the range of offenders and program orientations included in the meta-analysis and confirmed by the I-squared statistic ( $I^2 = 62.14$ ), which indicated that a moderate amount of the variance can be attributed to study-level differences.

**Program orientation.** Twelve studies examined general recidivism among offenders in a surveillance-oriented ISP, of which three showed results that favored treatment (none significant at  $p < 0.05$ ). The random effects mean odds-ratio was 1.18 (95% CI 0.97 to 1.44), indicating a non-significant increase in recidivism for the intervention group. The  $Q$  test was not significant ( $Q = 10.64$ ,  $df = 11$ ,  $p = 0.48$ ). Twelve studies examined general recidivism with offenders in a treatment-oriented ISP, of which nine favored the intervention group (four significant at  $p < 0.05$ ). The random effects mean odds-ratio was 0.64 (95% CI 0.48, 0.85), which indicates a significant reduction in recidivism for the intervention group. The  $Q$  test was significant ( $p < 0.05$ ). The between groups  $Q$  test was significant ( $Q = 12.09$ ,  $df = 1$ ,  $p < 0.001$ ), which confirms that there is a statistically significant difference in recidivism for offenders under intensive supervision who receive treatment when compared to offenders who do not receive treatment.

**ISP compared to incarceration.** Recidivism was examined in seven studies in which ISP was compared to incarceration (see Appendix C). In three of those, results favored the intervention (one was significant at  $p < 0.05$ ). The odds-ratios for general

recidivism ranged from 0.50 to 2.54. The random effects mean odds-ratio was 1.01 (95% CI 0.61, 1.67), which indicates no difference between the intervention and comparison groups. The *Q* test showed that the distribution of the effect sizes was significantly heterogeneous ( $Q=39.17$ ,  $df=6$ ,  $p<0.001$ ).

**Program orientation.** Five studies examined general recidivism with offenders in a surveillance-oriented ISP, of which two showed results that favored the intervention (one significant at  $p<0.05$ ). The random effects mean odds-ratio was 1.00 (95% CI 0.59 to 2.03), indicating non-significant intervention effects. The *Q* test was significant ( $p<0.001$ ), which indicates significant study-level differences ( $I^2=89.52$ ). Only two studies examined recidivism for offenders in a treatment-oriented ISP; neither showed significant reductions in recidivism for the intervention group. Given the limited sample, the results were not combined through meta-analysis to generate a summary effect.

**ISP compared to other programming.** Four studies made comparisons between two variations of ISP; two of these studies were testing different treatment modalities (Johnson & Hunter, 1995; Larson, 1989, both of which evaluated the use of CBT within the context of ISP) and two were evaluating different surveillance strategies (Boyle & Ragusa, 2011, which compared ISP to a Day Reporting Center; Jolin & Stipak, which compared two ISPs, one of which used EM). All four were treatment-oriented. None of the studies demonstrated statistically significant results. Because the studies were making comparisons that were substantively different from the other evaluations of ISP, none were included in subsequent analyses (Johnson & Hunter included other comparison groups that are included in the analyses and Jolin & Stipak are included in the EM analysis).

**Electronic monitoring.** General recidivism was examined in eight studies (see Appendix C). The random effects mean odds-ratio was 1.13 (95% CI of 0.68 to 1.88), indicating a non-significant increase in recidivism for the intervention group. The *Q* test was significant ( $p<0.001$ ).

### **Limitations**

The strength of a meta-analysis rests on the comprehensiveness of the search strategy. While the research team sought to identify all eligible studies, the possibility exists, and is in fact likely, that those efforts failed to identify all the extant research on Intensive Supervision Programs (ISP). In some cases, the researchers were unable to obtain studies that were identified as eligible evaluations. Further, the strength of a meta-analysis is dependent on the quantity and quality of the available primary research. Finally, the studies included here reflect significant heterogeneity in terms of offenders, settings, dosage, implementation fidelity, and outcome measures. In many cases, the study authors did not provide sufficient information to allow for moderator analyses of relationship between those characteristics and treatment effect. Further, the relatively small sample of included studies made it difficult to conduct moderator analyses where sufficient information was available.

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### **Included Studies**

Note: The studies marked with an asterisk (\*) were included in the analyses. The other studies listed are eligible but statistically dependent.

### ***Electronic Monitoring***

\*Bonta, J., Wallace-Capretta, S., & Rooney, J. (2000). A quasi-experimental evaluation of an intensive rehabilitation supervision program. *Criminal Justice and Behavior*, 27(3), 312-329.

\*Finn, M. A., & Muirhead-Stevens, S. (2002). The effectiveness of electronic monitoring with violent male parolees. *Justice Quarterly*, 19(2), 293-312.

\*Jolin, A., & Stipak, B. (1992). Drug-treatment and electronically monitored home confinement: An evaluation of a community based sentencing option. *Crime & Delinquency*, 38(2), 158-170.

\*Jones, M., & Ross, D. L. (1997). Electronic house arrest and boot camp in North Carolina: Comparing recidivism. *Criminal Justice Policy Review*, 8(4), 383-403.

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\*Marklund, F., & Holmberg, S. (2009). Effects of early release from prison using electronic tagging in Sweden. *Journal of Experimental Criminology*, 5(1), 41-61.

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### ***Intensive Supervision***

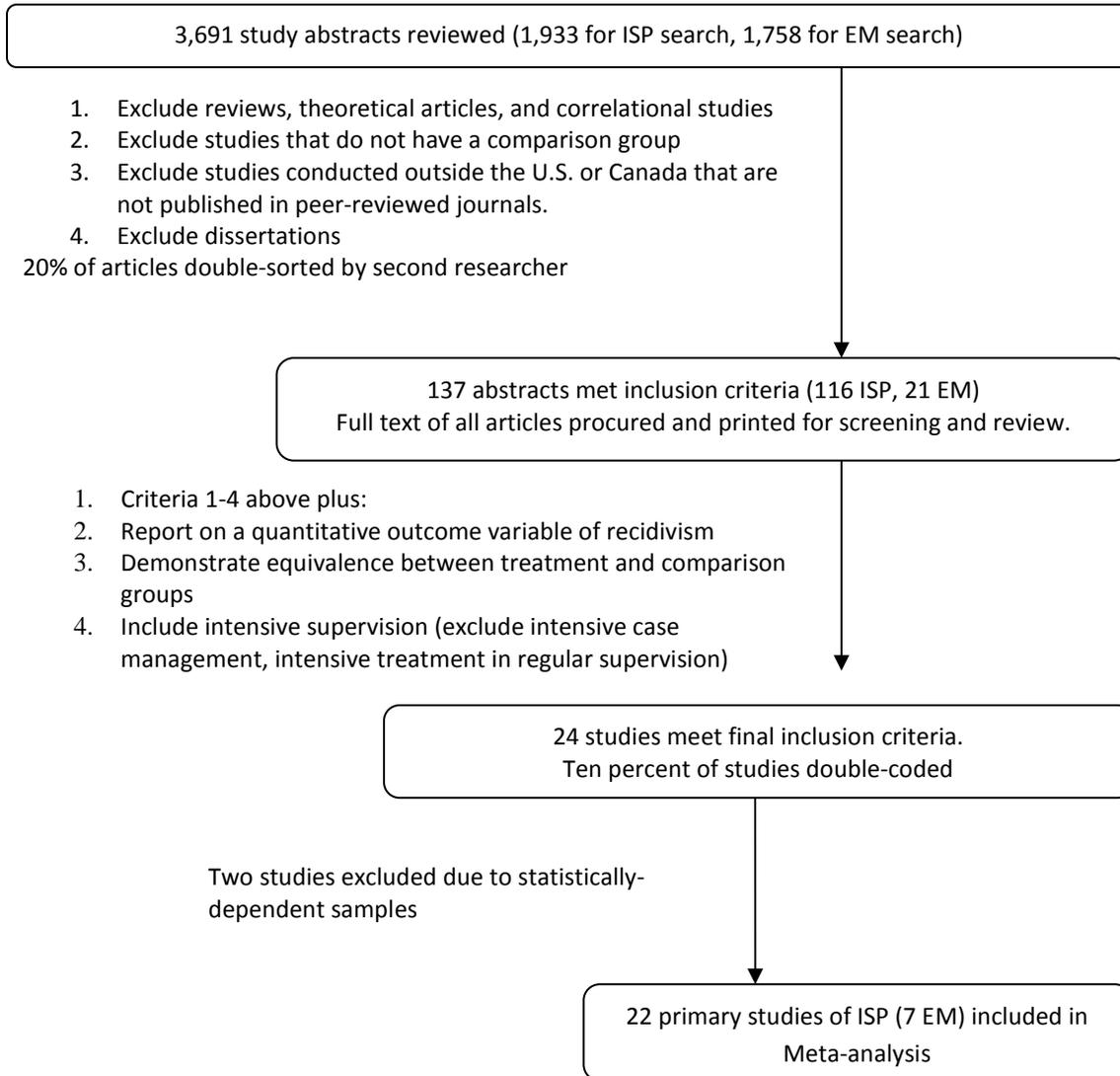
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## Appendix A: Search Results

Search: Title and Abstract  
Search Limiters: Date Range  
(1987-2011), English



## Appendix B: Table of Included Studies

Author	Date	N in each group		Study Design	Intervention		General Recidivism	
		Intervention	Cg		Type	Compared to	Odds-Ratio	95% CI
<b>Bonta et al.</b>	2000	54	100	Convenience	Tx <sup>1</sup> , EM	Incarceration	1.05	0.52, 1.46
<b>Boyle et al.</b>	2011	204	198	RCT	Tx	ISP	0.87	0.57, 1.05
<b>CJRC</b>	1994	118	97	Matching	Surveillance	Regular	1.98	0.88, 4.45
<b>Deschenes et al.</b>	1995a	76	48	RCT	Surveillance	Incarceration	0.98	0.45, 2.02
<b>Deschenes et al.</b>	1995b	95	81	RCT	Surveillance	Regular	0.65	0.30, 1.41
<b>Finn &amp; Muirhead-Stevens</b>	2002	128	158		Surveillance, EM	Regular	1.09	0.60, 2.00
<b>Johnson &amp; Hunter</b>	1995	47	51	RCT	Tx	ISP, Surveillance	0.86	0.35, 2.09
<b>Johnson &amp; Hunter</b>	1995	47	36	RCT	Tx	Regular	0.49	0.20, 1.23
<b>Johnson &amp; Hunter</b>	1995	51	36	RCT	Surveillance	Regular	0.56	0.23, 1.39
<b>Jones &amp; Ross</b>	1997	229	164	Convenience	Surveillance	Incarceration	2.54	1.84, 3.51
<b>Jolin &amp; Stipak</b>	1992	64	98	Convenience	Tx, EM	ISP	1.51	0.80, 2.88
<b>Killias et al.</b>	2010	115	117	RCT	Tx, EM	Regular	0.67	0.37, 1.19
<b>Larson</b>	1989	9	9	RCT	Tx	ISP	0.10	0.00, 2.27
<b>Latessa et al.</b>	1998a	109	94	RCT	Tx	Regular	0.96	0.55, 1.67
<b>Latessa et al.</b>	1998b	109	97	RCT	Tx	Regular	0.79	0.44, 1.40
<b>Latessa &amp; Vito</b>	1988	55	42	Matching	Tx	Regular	0.92	0.44, 1.90
<b>Marklund &amp; Holmberg</b>	2009	260	260	Convenience	Surveillance, EM	Incarceration	0.57	0.40, 0.83
<b>Paparozzi &amp; Gendreau</b>	2005	240	588	Matching	Tx	Regular	0.42	0.31, 0.57
<b>Pearson</b>	1988	208	85	Convenience	Tx	Regular	0.47	0.24, 0.90
<b>Petersilia &amp; Turner</b>	1990a	85	85	RCT	Surveillance	Regular	0.52	0.45, 0.62
<b>Petersilia &amp; Turner</b>	1990b	52	51	RCT	Surveillance	Regular	0.46	0.16, 1.31
<b>Petersilia &amp; Turner</b>	1990c	80	86	RCT	Tx	Regular	1.08	0.69, 1.71
<b>Petersilia &amp; Turner</b>	1990d	12	12	RCT	Surveillance	Incarceration	0.50	
<b>Petersilia et al.</b>	1992a	89	84	RCT	Surveillance	Regular	0.80	0.62, 1.03
<b>Petersilia et al.</b>	1992b	26	24	RCT	Surveillance	Regular Supervision	0.57	0.18, 1.86
<b>Petersilia et al.</b>	1992c	26	24	RCT	Tx	Regular	0.09	0.02, 0.38
<b>Petersilia et al.</b>	1992d	24	26	RCT	Tx	Regular	0.24	0.06, 0.93

Author	Date	N in each group		Study Design	Intervention		General Recidivism	
		Intervention	Cg		Type	Compared to	Odds-Ratio	95% CI
Petersilia et al.	1992e	29	29	RCT	Tx	Regular	0.87	0.68, 1.13
Petersilia et al.	1992f	59	56	RCT	Tx	Regular	0.86	0.59, 1.25
Petersilia et al.	1992g	28	25	RCT	Surveillance	Regular	1.00	
Raynor & Vanstone	1996	107	164	Convenience	Tx	Incarceration	0.92	0.57, 1.50
Smith & Akers	1993	218	266	Matching	Surveillance	Incarceration	0.95	0.62, 1.47
Turner & Petersilia	1992a	130	91	RCT	Surveillance	Regular	1.53	0.86, 2.70
Turner & Petersilia	1992b	239	219	RCT	Surveillance	Regular	1.16	0.80, 1.69
Turner et al.	2007	95	88	Convenience	Surveillance, EM	Regular	0.88	0.39, 2.01

**Total Sample = 7,206**

<sup>1</sup>Tx=Treatment-oriented ISP