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Implementation and Outcomes for California's GPS pilot for High Risk Sex Offender Parolees[1]

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ABSTRACT

In November 2006, California passed Proposition 83 mandating that all sex offenders be monitored by GPS for life. The law was passed without sufficient evidence regarding the effectiveness of GPS monitoring on sex offenders, and lacked a clear plan for how these new provisions would be implemented. This study provides a much needed test addressing the effectiveness of GPS monitoring for high risk sex offenders supervised in the community. Using data from a GPS pilot program in San Diego California in 2005, 94 high risk sex offenders monitored by GPS and 91 high risk sex offenders were followed for 18 months. The results showed that there were no significant differences between groups with respect to overall recidivism rates, although GPS offenders were less likely to abscond or fail to register as a sex offender. Additionally, we found that GPS offenders were less likely to be charged of committing a new crime, but more likely to violate a special condition of GPS supervision. Overall, GPS monitoring appeared to prevent parolees only from committing lower level offenses, which calls into question the utility of this particular supervision tool as a deterrent for the sex offender population.

INTRODUCTION

Despite the relatively small sex offender population in comparison with the overall offender population, the sex offender population has been front and center in public policy discussions over the past decade, largely due to high profile crimes and (Cohen & Jeglic, 2007).

Sex offender supervision in the community has been largely guided by a series of laws, often resulting from high-profile cases, which have increasingly restricted the movements of these offenders living in the community. For example, the federal *Jacob Wetterling Act* (1994) requires sex offenders to provide local law enforcement agencies with their current address for inclusion in a publicly available statewide sex offender registry (Levenson & Cotter, 2005; Levenson & Hern, 2007). The *Wetterling Act* was later enhanced by the passage of *Megan's Law,* which mandated that states develop and implement a mechanism to notify the public about sex offenders living in the community (Levenson & Cotter, 2005). Today, many states, including California, maintain public databases accessible on the internet which allows users to search for information by offender name or by geographical location.

Jessica's Law is the most recent sex offender legislation to influence the treatment of sex offenders in the nation. Initially passed in Florida in 2005, the law sought to tighten existing laws to protect children from sexual predators (Levenson & D'Amora, 2007). Two of the major components of *Jessica's Law* include establishing mandatory minimum sentences and the use of global positioning satellites (GPS) to track the location of sex offenders (National Conference of State Legislatures, 2007). As of 2007, at least 29 states in addition to Florida had put into place similar laws that provided for the GPS monitoring of sex offenders, and 17 states had established mandatory minimum sentencing requirements for sex offenders (National Conference of State Legislatures, 2007).

In November 2006, California voters overwhelmingly approved the State's own version of *Jessica's Law*, known as Proposition 83 (Prop 83). The passage of Prop 83 resulted in nearly 400 changes to existing California law, affecting the manner in which sex offenders are sentenced, released, and monitored in the community (Boyd, 2008; California Sex Offender Management Task Force, 2007). These changes, among other things, made existing laws governing the movement of sex offenders in the community more restrictive, included a requirement that all sex offenders be monitored using GPS during probation or parole, and required that all registered felony sex offenders be monitored by GPS for life following discharge from community supervision (California Sex Offender Management Task Force, 2007; National Conference of State Legislatures, 2007). In addition, Prop 83 prohibited sex offenders from residing within 2,000 feet of any school, daycare, or other place where children congregate, and allowed local jurisdictions the discretion to implement residency requirements for released sex offenders that are even more restrictive (California Sex Offender Management Board, 2008).

Prop 83 was passed without a plan for how it would be implemented statewide or clear empirical evidence that the use of GPS monitoring would reduce reoffending among sex offenders in the community and ultimately, increase public safety. Foreshadowing the passage of Prop 83, the California Department of Corrections and Rehabilitation (CDCR) had already begun to use GPS technology to monitor sex offenders. In June 2005, CDCR launched a pilot program to investigate the efficacy of GPS monitoring on high risk sex offenders in San Diego County. Using data from the pilot, this study addresses the implementation and effectiveness of GPS monitoring on high risk sex offenders (HRSO) supervised in the community. This analysis examines and compares outcomes for both parolees monitored by GPS and a comparison group of high risk sex offenders from the same parole units. This study fills important research gaps with respect to the use and effectiveness of GPS monitoring for sex offenders, as well as high risk sex offenders in general.

SEX OFFENDERS: RECIDIVISM RATES AND PUBLIC SAFETY CHALLENGES

Sex crimes are particularly damaging to victims and raise fear and concern among community members and society as a whole. Given this heightened concern, reducing sex crime victimization is an important goal of public safety officials, and the

supervision of sex offenders in the community plays a critical role in increasing public safety and reducing the number of sex crimes committed by sex offenders. A recent study conducted by the Department of Justice, Bureau of Justice Statistics (BJS) examined the recidivism rates of sex offenders released from prison in 15 states (including California) and found that 43% were rearrested for some type of crime within three years of release, of which 5.3% of were rearrested for a new sex crime (Langan, Schmitt, and Durose, 2003). In contrast, the rearrest rate for non-sex offenders for any type of crime was much higher, 68.4%, although only 1.3% committed a new sex crime (Langan et al., 2003). This means that a sex offender released from prison is 25% less likely than a non-sex offender to be rearrested within 3 years of release from prison for any type of crime, but is 4 times more likely to be rearrested for a sex offense compared to a non-sex offender.

However, assessing the "true" rate of recidivism among sex offenders for sex offenses is difficult. Sex offenses are generally underreported, which is a major factor when considering the accuracy and reliability of reoffense rates among sex offenders. Since a large number of sex crimes are typically underreported by victims or are not detected by authorities, the actual rate of recidivism is largely unknown, and generally underestimated in official crime reports (California Sex Offender Management Board, 2008). Consequently, the results reported in the BJS study, which rely exclusively on official crime data, likely reflect the minimum predicted level of recidivism.

Other research findings indicate that recidivism rates for sex crimes among sex offenders might be slightly higher. A series of meta-analyses examining the sex crime recidivism rates among sex offenders found that the sex crime recidivism rate for sex offenses among sex offenders after five years was approximately 13%, while the recidivism rate for non-sex-offenses was about 36% (Hanson & Bussiere, 1998; Hanson & Morton-Bourgon, 2005). The higher levels of sex offense recidivism reported in these studies might be attributed to longer follow-up periods and the use of self-report data in a portion of the studies used in the analysis.

Although the sex crime recidivism rates for sex offenders are overall relatively low, some types of sex offenders might have much higher rates of sexual recidivism compared to others. Some research estimates that the sexual recidivism rates of certain high risk sex offenders[6] could be as low as 50% and as high as 70-80% (Hanson, 1998). Additional research has attempted to identify characteristics, either static or dynamic, that can be used to predict the likelihood that an individual will re-offend. Sexual deviancy and antisocial attitudes have been found to be the strongest predictors related to sexual recidivism (Hanson & Bussiere, 1998; Hanson & Morton-Bourgon, 2005).

Intermediate Sanctions and Electronic Monitoring

Regardless of the perceived or actual risk that sex offenders pose to the public, the level of community supervision placed on sexual offenders has steadily increased, culminating in the use of GPS monitoring to continuously track their movements. While the use of electronic monitoring, and GPS monitoring in particular, is relatively new for sex offenders, it has been used as an intermediate sanction for the general offender population for several decades (MacKenzie, 2006; National Research Council, 2008; Tonry & Lynch, 1996). Intermediate sanctions were designed as alternative punishments that were less severe than prison but more severe and restrictive then probation (Lurigio & Petersilia, 1992; MacKenzie, 2006; Tonry & Lynch, 1996). A variety of punishments are used as intermediate sanctions, including house arrest, electronic monitoring, intensive supervision, boot camps, day reporting centers, community service, and fines (MacKenzie, 2006; Tonry & Lynch, 1996).

In addition to being used as an alternative to incarceration, intermediate sanctions can also be used as a back-end supervision tool to deter parolees and probationers from committing new crimes by restricting opportunities in the community to recidivate (Finn and Muirhead-Stevens, 2002; MacKenzie, 2006; Tonry & Lynch, 1996). The theory behind intermediate sanctions is that increased surveillance of offenders (often in smaller, more intensive caseloads) in the community will reduce recidivism by limiting both an offender's capacity and opportunity to commit new crimes (Lurigio & Petersilia, 1992; MacKenzie, 2006). Electronic monitoring (EM) as an intermediate sanction has been used either in lieu of or in addition to traditional parole or probation supervision (Crowe, 2002; Gable & Gable, 2005; National Research Council, 2008). EM was first used as a type of disposition in 1983 when a New Mexico judge sentenced a probation violator to EM for one month (Renzema, 1992). Spurred on by a growing prison population, by 1993, every state used some form of EM to manage offenders in the community (Crowe, 2002; Gable & Gable, 2005; MacKenzie, 2006), and today, between 110,000 and 120,000 offenders supervised in the community are monitored by EM (Gable, 2007). Initially, EM was most commonly used to monitor offenders who had committed relatively minor offenses (e.g., drug possession, DUI, domestic violence, welfare or housing fraud, minor weapons charges) (Crowe, 2002; Gable & Gable, 2005); over time, it has been used on a variety of offender types and risk levels (Crowe, 2002) and applied across a number of correctional domains including pretrial supervision, jail release programs, probation and parole supervision, and treatment enhancement.

There have been both positive and negative findings with respect to the efficacy of EM on offender behavior, although much of the literature examining the use of EM suffers from significant methodological weaknesses, and is largely descriptive in nature (Finn & Muirhead-Stevens, 2002; Renzema & Mayo-Wilson, 2005). For example, a recent meta-analysis of 154 studies examining the use of EM for moderate and high risk offenders found that most evaluation studies lacked sufficient methodological

rigor to be included in the analysis (Renzema & Mayo-Wilson, 2005). With only three studies remaining after applying the selection criteria, the authors concluded that EM had no appreciable effect on recidivism.

Other research indicates that EM is a promising strategy. A number of studies have found that between 70 and 94% of offenders successfully completed EM programs (Brown & Roy, 1995; Rogers & Jolin, 1989; Roy & Brown, 1995). These initial studies, however, failed to examine other outcomes, such as new arrests or revocations. Studies that analyzed these outcomes produced mixed results (Glaser &Watts, 1992; Petersilia and Turner, 1992). Glaser and Watts (1992) found that probationers being monitored by EM had fewer rule violations and revocations compared to a control group, although offender characteristics were not controlled to account for differences between groups.

Research using more sophisticated methodologies has found that EM is not an effective tool in reducing recidivism among offenders (Bonta et al., 1999; Genderau & Goggin, 1996; MacKenzie, 2006; Petersilia & Turner, 1992). For example, using random assignment, Petersilia and Turner (1992) found no significant differences with regard to the number of arrests between probationers assigned to an EM program and those assigned to routine probation. Differences were detected only when examining technical violations alone: probationers on EM or another form of intensive supervision committed violations faster than offenders on regular probation. Similar findings regarding the effectiveness of EM on recidivism have been supported by other studies (Bonta et al., 1999; Genderau & Goggin, 1996; MacKenzie, 2006), concluding that EM does not significantly reduce recidivism, even after controlling for offender risk and need (Bonta et al., 1999). Perhaps most informative is MacKenzie's (2006) review of EM research. Of the eight studies reviewed, there were no significant differences in the effect sizes of the individual studies, which ranged from 6.60 to .78, or in the combined effect size across studies of 1.17 with regard to recidivism.

Little research has investigated the impact of EM on an offender's decision to abscond from supervision. While some research has found that offenders supervised via EM are more likely to fail to appear in court (Cadigan, 1991), in contrast, other research has found that EM reduces the likelihood that an offender will not appear in court (Cooprider & Kerby, 1990). These initial studies should be viewed with caution, as neither study used a comparable control group. More recently, Padgett, Bales and Blomberg (2006) examined the use of EM, including GPS, among a large sample of high risk offenders in Florida. A majority of the participants monitored on GPS or another form of EM had committed some type of violent offense (including sex offenses), while one third and one quarter of participants had committed a property or drug offense, respectively. This study found that the use of EM (including GPS) reduced the likelihood of committing a technical violation and absconding from supervision by more than 90%, and reduced the likelihood of committing a new offense by more than 94% among offenders on EM relative to a comparable group of non-EM participants. A more recent study by Bales and colleagues (Bales et al. 2010) of electronic monitoring/GPS for medium and high risk offenders in Florida revealed that EM reduced the risk of failure by 31 percent; GPS reduced the risk six percent compared with radio frequency EM.

Evidence supporting the efficacy of EM with regard to reducing recidivism among sex offenders is mixed. Finn and Muirhead-Stevens (2002) examined the use of EM on a group of violent male parolees in Georgia. The study found that after controlling for individual characteristics, likelihood of success on parole, and prior criminal history, there were no differences between parolees monitored by EM and a comparison group. The study did find that EM was useful for some specific types of offenders, such as sex offenders. Sex offenders were less likely to recidivate or remained in the community longer when on EM compared to other violent offenders. Although no information about treatment participation was available, the authors asserted that lower recidivism rates among sex offenders might have been due to participation in treatment programs. Similarly, an examination of the use of GPS on 250 sex offenders in New Jersey found that, after one year, only one GPS-monitored sex offender had committed a new sex crime, and 19 had committed a new non-sex crime; however, no control group was included in the evaluation (New Jersey State Parole Board, 2008).

A recent GPS pilot project in Tennessee, similar to the San Diego pilot, found no statistically significant differences between GPS-monitored sex offenders and a comparison group of sex offenders with regard to parole violations, new criminal charges, or the number of days prior to the first violation (Tennessee Board of Probation and Parole and Middle Tennessee State University, 2007).

SUPERVISION OF HIGH RISK SEX OFFENDERS IN CALIFORNIA: DEVELOPMENT OF THE PILOT PROJECT

California focuses supervision and monitoring of sex offenders on those determined to have the highest risk of sexual reoffending. Although, at the time of the pilot, CDCR did not have a uniform definition or validated assessment instrument to systematically determine if a sex offender was high risk. Parole Agents assessed the risk of offenders based on a non-validated assessment instrument which included categories for commitment offense, prior criminal record, and deviant sexual orientation. Consequently, risk levels were determined based on agent perceptions, rather than validated indicators of risk.[7] HRSO offenders' were defined as those whose commitment offense was sexual or related to an established pattern of deviant sexual behavior, victimized one person over a long period of time, evidenced same sex pedophilia, multiple victims, etc. Approximately 1,900 of the almost 9,000 sex offenders on parole in the state were classified as HRSO.[8] The CDCR's approach to management of these parolees was based on the "containment" model (see English et al., 1997) which prescribes sex offender

treatment to help offenders learn to develop internal control over deviant sexual impulses as well as supervision and monitoring to ensure offender compliance with treatment and conditions of release.[9] The HRSO caseloads were designed to determine which offenders were high risk, and devote resources to preventing, or quickly detecting, a return to sex offending behavior. HRSO parolees were supervised more intensively as part of small, specialized caseloads. While an average parole caseload in California consisted of approximately 70 parolees, an HRSO caseload consisted of approximately 40 parolees at a time.

The California State Budget Act for Fiscal Year 2004-2005 authorized and funded CDCR to place 500 HRSO parolees in the state on GPS monitoring. The CDCR elected to implement the GPS program incrementally, beginning with a pilot in San Diego County. This incremental approach would enable the CDCR to gain initial experience with the GPS monitoring system and to address any implementation issues that arose prior to expanding the program state-wide. In June 2005, the CDCR launched the GPS pilot program as an enhancement to HRSO supervision. The pilot allowed for up to 80 high risk sex offenders to be monitored at any given time in San Diego County.

Initially, Parole Agents supervised 30 HRSO parolees, 20 of which were subject to GPS monitoring and the remaining 10 were subject to traditional HRSO supervision. By December 2005, however, due to early indications that supervision of GPS parolees was highly labor intensive, and informal survey results from other jurisdictions, the Division of Adult Supervision (DAPO) decided to reduce the caseloads even further for GPS agents so that they were only responsible for the supervision of 20 HRSO GPS parolees.

The CDCR's pilot program utilized an active GPS monitoring system. Parolees wore a one-piece ankle unit, which took a data point every minute and transmitted the location of the parolee and data approximately every ten minutes. If there was an urgent event (e.g. strap tamper, zone violation), the unit transmitted an immediate notification. GPS agents also utilized software, which allowed them to view the "tracks" or movements of a parolee at any given time over any period of time. All other aspects of supervision and treatment were the same for both HRSO parolees and HRSO parolees under GPS supervision. Parolees remained on GPS until they either successfully completed parole or were removed as a result of a revocation.

At the outset of the GPS monitoring program, CDCR identified the following goals related to offender monitoring and behavior:

- Reduce sexual and violent recidivism among HRSO parolees;
- Enhance detection of parole violations and risky behavior by increasing the supervision of HRSO parolees;
- Increase HRSO parolee compliance with conditions of parole;
- Identify or exclude HRSO parolees as suspects in new crimes by sharing GPS information with other law enforcement agencies; and,
- Build partnerships with other law enforcement agencies to reduce crime.

This paper addresses the implementation and outcomes of the GPS pilot project, as well as the extent to which CDCR's goals for the pilot were realized. Specifically, the following questions were addressed:

1. What were the characteristics of the pilot group and how did they differ from HRSO parolees statewide?
2. What were major implementation issues; how were challenges addressed?
3. What type of supervision did GPS offenders receive and how did this compare with high risk sex offenders on routine HRSO caseloads?
4. How did the GPS monitoring work in terms of alarms, offender compliance?
5. What were the recidivism outcomes in terms of technical violations, arrests, convictions and returns to custody?

STUDY DESIGN

Constructing Study Groups

To measure the efficacy of GPS monitoring on sex offender behavior, it is important to compare parolees participating in the GPS program against a group of sex offenders with similar characteristics who were not enrolled in the GPS pilot. A randomized experimental design in which participants have an equal probability of being assigned to either a GPS caseload or a traditional HRSO caseload would have been optimal, as between group differences could be directly attributed to GPS and not preexisting background differences between the two groups (e.g. offense history, drug use). However, since a randomized design was not possible, the GPS and control groups were carefully constructed to minimize any between-group differences as outlined below.

The GPS pilot was implemented in San Diego County using four existing HRSO caseloads. To determine whether an HRSO parolee met the criteria to be monitored using GPS, a Parole Agent or supervisor completed a Risk Evaluation form. The form

included several indicators (e.g. multiple victims, escalation of violence, serial victims) used to determine which offenders would be monitored intensively as part of an HRSO caseload. After a parolee was identified as a HRSO parolee, additional factors were used to determine if they should also be subjected to GPS monitoring. This determination was made based on a parolee's combined score on the Static-99,[10] the amount of time since their most recent release from prison, and agent knowledge and judgment. For each of the four HRSO caseloads, the 20 parolees with the highest scores were enrolled in GPS monitoring, while the remaining HRSO parolees were transferred to one of two new HRSO caseloads for intensive supervision.[11]

A total of 80 GPS units were available to be used at any time throughout the course of the pilot. When offenders were removed from the GPS caseload, either due to successful completion of parole or revocation, the available unit was placed on the HRSO parolee with the next highest GPS assessment score associated with that particular agent. If an HRSO with an extremely high assessment score was released onto parole at a time when no GPS units were available, the local parole unit had the ability to remove a parolee from GPS supervision and transfer the unit to another parolee deemed higher risk.[12] DAPO also retained some additional GPS units in the event that a newly released HRSO parolee required GPS monitoring, and it was deemed unsafe to remove a unit from another HRSO already being supervised by GPS. A total of 94 HRSO parolees were placed on GPS between June and November, 2005, and 91 HRSO parolees were used as a comparison group during that same time period. The follow-up period for both groups was 18 months.

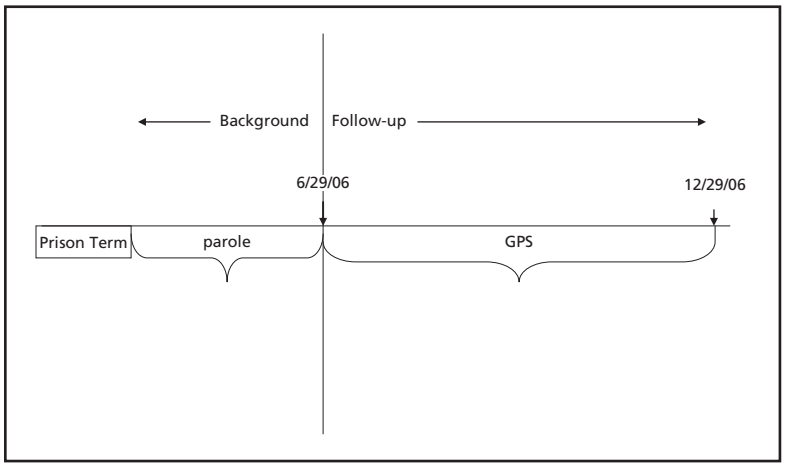
DATA COLLECTION

Detailed information was gathered for each GPS and comparison HRSO parolee. Background characteristics were collected from several sources. Information about a parolee's prior criminal history was obtained by reviewing rap sheets. For each arrest entry on the rap sheets, information was extracted regarding the arrest date and charges, disposition date and charges, and sentence (e.g. length and type of sentence, including information on fines, restitution), as well as any information regarding jail or prison terms served. Data were also obtained from parolee case files which were reviewed at the San Diego parole offices by project staff. Parolee case files were used to obtain information regarding parolee demographics, employment, education, substance abuse, marital status and children, living arrangements, terms and conditions of parole, and Static-99 scores.

Additional parolee information was collected during the implementation phase of the pilot. Parolee files were reviewed for information regarding the date and nature of parole agent contacts (e.g. home visits, office visits), treatment referrals and participation, parole violations and new arrests, housing, employment, romantic relationships, and drug testing and drug use. This information was collected for the first six months of follow-up. This information was also extracted from the Revocation Scheduling and Tracking Systems (RSTS), which documents parole violations and revocations, was available for 18 months of follow-up.[13]

For GPS participants, information was also gathered regarding any events or incidents that occurred while wearing the device. Data were obtained from the GPS vendor for each GPS participant. The vendor data included tracking information such as dates and events (e.g. strap tampering, unit charging, low battery alarms), as well as the dates and times units were attached and removed from participants. Figure 1 presents a schematic of the background data collection, subject enrollment and implementation and follow-up period.

Figure 1: Schematic of Data Collection



The implementation of the pilot project was examined through a series of interviews with Division of Adult Parole Operations (DAPO) personnel, including parole staff at the unit and CDCR headquarters level, Parole Agents supervising GPS caseloads and representatives from the Parole Agents Association of California (PAAC). In addition, interviews were conducted with sex offender treatment providers working with HRSO parolees, various law enforcement personnel, and staff from the District Attorney's office. Lastly, a representative from the GPS vendor was interviewed. These interviews were conducted in order to obtain information regarding the implementation process, including the participant selection process, the integration of GPS information into parolee supervision, the impact of GPS supervision on parolee behavior and attitudes, training and workload issues, collaboration and information sharing with other agencies, and overall program success. Interviews were conducted in two waves. Wave 1 interviews took place between January and March of 2006 and lasted for between 45 and 90 minutes. Three follow-up interviews took place in June of 2006 and lasted 30 minutes each. A total of 6 parole agents were interviewed in wave 1. The second wave of interviews took place between April and May of 2008. Eight parole agents as well as DAPO administrators and headquarters staff participated in the interviews, which lasted between 45 and 90 minutes. In addition, a series of focus groups with GPS parolees were conducted between April and May 2008 in an effort to gain insight into their experiences under GPS supervision. A total of 7 focus groups were conducted, ranging in size from 2 to 12 parolees for a total of 41 participants.

RESULTS[14]

Comparing Study Participants with High Risk Sex Offenders (HRSO) Statewide

Characteristics of the GPS study group (combined GPS and HRSO) were compared to HRSO offenders statewide (see Table 1). GPS study participants were older than HRSO offenders statewide and were more likely to have two prior strikes under the state's Three Strikes Law. Virtually all HRSO parolees in California and the GPS study group were male. Nearly half were white and most were released from their most recent incarceration around the age of 40. Almost half were released onto parole after serving terms for new offenses, as opposed to serving time for a parole violation. The most common offenses for which offenders were incarcerated was for committing a lewd act with a child or for "other sex crimes." In addition to sex offenses, nearly 20 percent of offenders were sentenced for property, drug or other crimes. Study participants, on average, had been released for longer periods of time compared to HRSO offenders statewide; however, the majority of offenders had been released for six months or less when the study period began. Consequently, while study participants were similar to HRSO offenders in San Diego County, they did differ from the HRSO offenders statewide.

Table 1: California Sex Offender Parolees
Persons on CDCR Parole in Study Window, June 30th - Nov 30th 2005

	All California (n=2709)	GPS Study (n=185*)
	Pct	Pct
Sex		
Male	99.2%	99.5%
Ethnicity		
Black	26.2	29.5*
Hispanic	22.3	14.8
White	46.4	51.9
Other/Unknown	5.1	3.8
Age at Release		
<20	0.3	0.0**
20-29	15.9	12.0
30-39	28.7	22.4
40-49	33.8	33.9
50-59	14.5	24.0
60-69	5.0	5.5
70+	1.9	2.2
Mean age	41.4	44.2***
Last Status		
New Admission	54.1	53.0
PV return with new term	9.4	12.6
PV return to custody	33.7	32.8
Pending Revocation	2.8	1.6
Offense Group		
Rape	5.9	2.7*
Lewd Act with Child	36.1	36.6
Oral Copulation	3.4	4.9
Sodomy	1.1	0.5
Penetration with Object	2.0	0.5
Other Sex Offense	20.9	27.9
Other Crime Against Persons	10.6	7.7
Property Crime	7.2	5.5
Drug Crime	7.5	10.4
Other Crime	5.3	3.3

(continued on next page)

Table 1 (cont'd): California Sex Offender Parolees
Persons on CDCR Parole in Study Window, June 30th - Nov 30th 2005

	All California (n=2709)	GPS Study (n=185*)
	Pct	Pct
Time on the Street		
0-3m	44.1	35.5
4-6m	11.3	12.0
7-9m	8.3	8.7
10-12m	6.7	8.2
1-1.5y	10.0	9.3
1.5-2y	8.5	11.5
2-2.5y	6.8	8.7
2.5-3+y	4.2	6.0
Mean (mo)	8.9	10.8*
Prior Offenses		
0	59.8	58.5
1-2	20.3	20.2
3-5	14.9	13.7
6+	5.1	7.7
Prior Serious Offenses		
0	88.7	87.4*
1	8.1	7.7
2	2.0	1.6
3+	1.2	3.3
Prior Violent Offenses		
0	76.6	76.0
1	13.9	13.7
2	5.6	4.4
3+	3.9	6.0
Highest Strike Count		
2	20.0	29.0***

P-values for significance test based on Fisher's Exact Test
Note: *=CA and GPS different, * = $p<0.1$; ** = $p<.05$; *** = $p<.01$

Comparing GPS Parolees and High Risk Sex Offenders (HRSO) in the Study Group

Detailed characteristics of the GPS group and HRSO control group are displayed in Table 2. For virtually all measures, HRSO control group and GPS parolees did not differ. Both groups were predominately male, with one female participant in the GPS group. The majority of participants in both the GPS and HRSO groups were white, non-Hispanic. Although most participants had been married, only a little over 20 percent were married during the study period and over half had children. Nearly two-thirds of participants had at least a high school degree or higher. A majority of participants were over 40 at the time of their most recent incarceration. More than half were living in a single room occupancy (SRO) or hotel, and more than 60% were employed. Participants were also rated on the Static-99. The average score of 3.7 indicates a medium risk level, although both the HRSO and GPS groups contained low and high Static-99 risk offenders.

The only statistically significant difference between the two groups was with respect to age at first arrest. Offenders in the HRSO group were statistically more likely to have been arrested at a younger age: while GPS participants on average were arrested at the age of 35, HRSO participants were first arrested at around the age of 31. However, there were no significant differences with respect to the number of times participants had been arrested. Consequently, despite the fact that study

participants were not randomized into groups, there were virtually no differences between the HRSO and GPS groups, as indicated by the background characteristics presented in Table 2. The relative comparability between the two groups lends further support to the generalizability of the study findings.

Table 2: Background Characteristics of GPS and HRSO Parolees

	Group	
	HRSO (N=91)	GPS (N=94)
Sex		
Male	100.0%	98.9%
Ethnicity		
African American	31.8	26.6*
Hispanic	17.0	11.8
White Non-Hispanic	50.0	52.7
Other/Unknown	1.1	8.6
Marital Status		
Never married	39.3	35.7
Divorced	34.5	42.9
Married	26.2	21.4
Have Children		
Yes	58.8	67.5
Education		
Less than High School	29.6	25.3
High School or GED	39.5	48.4
College	30.9	26.4
Drug Use		
No drug use	13.8	17.8*
Some/occasional drug use	17.2	30.0
Frequent drug use	26.4	15.6
Drug abuse/dependency	42.5	36.7
Mean age at first arrest	31.6	35.7**
Mean number of arrests	8.1	6.2
Age at Imprisonment		
20-29	9.3	7.8
30-39	26.7	18.9
40-49	31.4	35.6
50-59	24.4	27.8
60-69	8.1	7.8
70+	0.0	2.2
Mean age at imprisonment	43.4	45.4

(continued on next page)

Table 2 (cont'd): Background Characteristics of GPS and HRSO Parolees

	Group	
	HRSO (N=91)	GPS (N=94)
Living Arrangements†		
Rooming house/ SRO/Motel	54.5	64.6
Residential: Live alone	10.4	13.4
Residential: with family, friends or relatives	26.0	17.1
Treatment Facility	9.1	4.9
Current Employment†		
Employed	63.0	60.5
Static-99 Risk Category		
Low (0-1)	16.7	18.5
Medium Low (2-3)	38.1	33.7
Medium-High (4-5)	23.8	27.2
High (6+)	21.4	20.7
Mean Static-99	3.7	3.7

P-values for significance test based on Fisher's Exact Test
Note: *=HRSO and GPS different, * = p<0.1; ** = p<.05; *** = <.01
†Note: For living arrangements, there were a total of 77 HRSO and 82 GPS with non-missing data; for employment, there were 73 HRSO and 81 GPS with non-missing data.

Table 3 presents additional information on the prior criminal record for study participants, abstracted from offender criminal histories or "rap sheets." Prior record was defined as prior arrests and their dispositions prior to the arrest for the offense for which participants were incarcerated. Nearly three-quarters of both GPS and HRSO participants had been arrested prior to their current offense. There were no significant differences between the groups regarding the types of offenses for which they had committed previously, with the exception of property crimes and drug offenses. HRSO parolees were significantly more likely to have had a prior arrest for a property offense compared to GPS offenders; in addition, HRSO offenders were significantly more likely to have been convicted and sentenced to prison for a property offense than GPS parolees. HRSO parolees were also more likely to have been sentenced to prison for a drug offense (14.3% vs. 4.2%, for HRSO and GPS parolees respectively). The criminal history of both GPS and HRSO parolees demonstrate that many study participants were recidivists. While over half had been arrested for a prior sex offense, the prior records of participants reveal that their past crimes were not limited to sex offenses, but many parolees had also committed person, property and drug offenses. Nearly one third of participants had been arrested for a drug offense, and nearly two-fifths had been arrested for a person or property offense. Almost half of GPS and HRSO parolees had been arrested for "other" offenses, including weapons possession, resisting or obstructing a public officer, disorderly conduct, giving false identification, felony parole violations, DUI, obscene/threatening phone calls, disturbing the peace, and violating a restraining order. Study participants, then, were typically recidivists, who had a prior record that included arrests for criminal acts other than sex offenses.

Table 3: Detailed Prior Criminal Record of Participants' Prior Offenses

	Arrest Charges		Conviction Charges		Jail Sentence		Prison Sentence	
Offense Category	HRSO %	GPS %	HRSO %	GPS %	HRSO %	GPS %	HRSO %	GPS %
No priors	24.2	29.5	26.4	34.7	38.5	48.4	53.8	67.4*
Sex offense								
Any sex offense	57.1	51.6	46.2	46.3	24.2	22.1	27.5	25.3
Rape	18.7	12.6	6.6	5.3	1.1	2.1	4.4	2.1
Child	29.7	29.5	22.0	28.4	6.6	9.5	14.3	16.8
Oral	13.2	8.4	7.7	4.2	0.0	0.0	6.6	4.2
Sodomy	8.8	4.2	2.2	0.0	0.0	0.0	1.1	0.0
Penetrate	7.7	11.6	2.2	0.0	1.1	0.0	1.1	0.0
Other sex	27.5	22.1	19.8	18.9	15.4	12.6	7.7	7.4
Reg 290	16.5	8.4	11.0	4.2*	5.5	2.1	4.4	1.1
Persons	41.8	36.8	30.8	23.2	16.5	15.8	11.0	7.4
Property	54.9	33.7***	44.0	26.3**	34.1	21.1**	19.8	4.2***
Drug	34.1	29.5	22.0	17.9	6.6	11.6	14.3	4.2**
Other†	60.4	46.3	37.4	25.3	24.2	15.8	3.3	0.0

P-values for significance test based on Fisher's Exact Test
Note: *=HRSO and GPS different, * = p<0.1; ** = p<.05; *** = <.01

† Other offenses include weapons possession, resisting or obstructing a public officer, disorderly conduct, giving false identification, felony parole violations, DUI, obscene/threatening phone calls, disturbing the peace, and violating a restraining order. None of these individual charges were statistically significant between groups.

Implementation of the GPS Pilot

San Diego County was the first location in California to incorporate the use of GPS technology into their supervision of HRSO parolees, therefore the implementation experiences are informative for other counties and jurisdictions interested in utilizing GPS technology. As indicated above, interviews were conducted with various CDCR personnel and treatment staff which provide insight into the challenges and successes encountered during the initial implementation of the GPS pilot. We discuss here five major issues related to implementation: 1) Time intensity associated with monitoring GPS parolees; 2) Identifying which parolees are best for GPS supervision; 3) Agent and parolee perceptions associated with GPS supervision; 4) Contributions of GPS monitoring to the supervision of parolees; and 5) Challenges in utilizing the information provided by GPS monitoring.

Time Devoted to GPS Detracted from other Elements of Supervision

The implementation of GPS technology resulted in significant changes in agent workload, as time devoted to GPS resulted in less time devoted to other elements of supervision. Prior to the implementation of GPS monitoring, HRSO agents exceeded their supervision requirements; however, following implementation they were more likely to just meet these requirements. As one agent noted, "Just because we have GPS doesn't mean that the rest of our work has gone away." Agents supervising a GPS caseload indicated that they had less face-to-face contact with parolees, were performing less surveillance than they believed was optimum, and experienced delays in note-taking, community contacts, returning phone calls, and completing paperwork. According to one agent, the implementation of GPS "definitely increased the work load even though it's a piece of technology that a lot of folks think would make us more efficient and maybe lighten the case load. It hasn't. We haven't seen that."

A significant amount of agent time was dedicated to reviewing the "tracks" of each of the parolees on their caseload through the Tracks system. Checking tracks was a time consuming activity, and there was agreement among all of the agents that it was not possible to review the tracks of all 20 parolees every day; the inability of an agent to completely review the tracks for all 20 parolees was often due to the fact that an agent would uncover information from the tracks or daily alerts that required immediate action. Technological issues further complicated the ease of viewing parolee "tracks." At first, agents were only able to access Tracks from their offices. Viewing information was also difficult because the state servers the agents were using were slow and had a tendency to crash. Although agents were eventually provided with wireless internet capabilities, the initial monitoring of the daily activities of parolees was hindered by these technological difficulties.

Technological issues also impacted agent time and resources. The monitors first placed on parolees had faulty ankle straps, which resulted in constant strap tamper alarms. Consequently, agents devoted a significant amount of time contacting parolees to verify that they had not removed the unit, address charging problems, and replacing the faulty straps. One agent noted, "I'm monitoring the equipment, not the parolee." Not only did these false alarms detract from other supervision responsibilities, but they resulted in concerns about the reliability of the GPS information being transmitted. Agents expressed apprehension about being able to quickly distinguish between actual attempts to tamper with the equipment and the multitude of false alerts. Although these issues were largely addressed when the old straps were replaced by new straps, faulty equipment coupled with unfamiliarity with the GPS technology in general resulted in a sense of trepidation about the use of GPS among the agents.

Identifying which parolees are best for GPS supervision

Certain types of offenders are better suited for GPS monitoring compared to others. Most agents indicated that for parolees in general, GPS technology would be best utilized if used on high risk offenders, such as violent or sex offenders. Parolees likely to target a specific individual, such as those with a history of stalking or domestic violence, or those whose offenses were location-based, such as bank robbers or drug dealers associated with specific drug markets, were also identified as being appropriate for GPS supervision. Agents also noted that GPS monitoring might be beneficial for parolees subject to special conditions, such as a curfew, which GPS information would assist in enforcing.

With regard to sex offenders specifically, agents felt that GPS technology was particularly beneficial for supervising parolees who would attempt to groom new victims, re-contact past victims, had frequent parole violations, and unstable parolees who would engage in risky behaviors. It was also thought that the use of GPS would assist parolees who were participating in sex offender treatment. The use of GPS might increase program attendance, but would also assist in the detection of precursor behaviors leading to sex offending.

Agents, however, noted that there were some types of parolees for which GPS monitoring would not be appropriate. Due to extensive unit charging and care requirements, parolees must be compliant with their conditions of parole in order for the unit to continue to work. Homeless or transient parolees, who are unable to abide by the charging requirements, were not good candidates. Parolees who have mental health considerations were also deemed unsuitable candidates, as conditions such as paranoia might actually be amplified by the presence of the device. Finally, parolees with certain medical conditions might also be poor candidates. One agent indicated that one parolee, who had poor circulation, had to have the device removed because his leg severely swelled after the unit was applied.

Agent and Parolee Perceptions associated with GPS supervision

Agents and parolees had differing attitudes regarding the use of GPS monitoring. When enrolling an offender on GPS, agents would have to address parolee concerns and anxiety about wearing the unit, as well as the associated stigma. Some parolees felt that wearing the unit increased their risk of being attacked or confronted. As one parolee commented, "I fear the stigmatism….I have a target on my back, I am scared for my safety." Other parolees indicated that wearing the unit made them feel self-conscious, and did anything to avoid its detection: "I am embarrassed. I haven't been to a doctor since I got it." Most frequently, agents would emphasize the beneficial aspects of wearing the unit, such as being absolved from accusations of parolee non-compliance, parole violations, or committing a new offense. Some parolees acknowledged these benefits: "Someone can accuse you of something, out of spite you know. They can look at this thing and exonerate you from people that prey on that."

According to agents, parolee attitudes towards GPS were mixed. Parolees who had admitted to the crimes for which they were convicted were more receptive to receiving the device. Other parolees were unhappy about the increased surveillance, and sought to appeal their GPS supervision requirement. Agents also indicated that, during the first weeks of implementation, parolees were upset about constant equipment malfunctions and the inconvenience of having to report to the parole office to address these problems. However, agents and treatment providers are in agreement that parolee fear and anxiety declines over time, as they accept GPS monitoring as another condition of parole that is imposed upon them.

Contributions of GPS monitoring to the supervision of parolees

One of the goals of the GPS pilot was to increase the detection of parole violations. A perceived benefit of utilizing the GPS technology was that it would enhance the detection of parole violations and patterns of risky behavior. Agents indicated that supervising sex offenders was often difficult; while they typically complied with their conditions of parole, sex offenders have the ability to engage in new criminal activity or in risky behaviors that go largely undetected. The use of GPS provided an extra source of information regarding parolee activities and could be used to determine whether an individual was in compliance. Agents used the information to verify parolee actions, to corroborate parolee statements about their activities, and to determine when a parolee was lying to their agent. Agents were also able to detect and establish typical movement patterns for

parolees and used deviations from those patterns as an indication of problematic behavior. This resulted in the perception of greater accountability among parolees to their agents, and by extension, their conditions of parole.

The most widely cited benefit of GPS monitoring was that it provided more information about parolee routines and activities. Prior to the implementation of GPS, one agent stated: "99.9% of the time we have no idea where our parolees are that are under our supervision." However, following implementation, agents noted that they could more easily detect unknown personal relationships, enforce curfew restrictions, corroborate or refute accusations against parolees, locate parolees (and study previous movement patterns to locate parolees who have cut the unit off), and identify and intervene when behavior that may precede offending occurs. Finally, agents indicated that parolees were more forthcoming with information about their activities once they were placed on GPS.

Agents also found that overall parolee compliance could be evaluated based on an offender's observance of the special conditions associated with the GPS device itself. Parolees assigned to GPS were subject to additional conditions related to their GPS status. Agents reported that parolee compliance with these conditions, particularly charging requirements, was problematic particularly during the first few months of supervision. Most GPS parolees ultimately complied with these conditions, but according to agents, non-compliance with charging requirements was an indicator that a parolee was not complying with other conditions of their parole.

Challenges in Utilizing the Information Provided by GPS Monitoring

The hope that GPS technology would enhance the detection of criminal activity among sex offenders was complicated by the increased information available to supervising agents. The sheer volume of information made available to GPS agents was daunting, making it difficult to review all of the information provided and hindering agents' ability to quickly detect problematic behavior. Agents expressed concern for potential liability if a parolee committed an offense that may have been hinted at by information available by GPS monitoring. One agent noted: "Not knowing what we don't know about these folks in some respects limits our liability." These challenges were enhanced by the fact that neither CDCR, nor any other department or agency in the state had used GPS as a form of supervision; hence, there was no knowledge base for agents to refer to as they attempted to integrate GPS monitoring into their supervision routine. Despite these considerations, agents felt that the use of GPS enhanced their ability to supervise sex offenders and represented a more proactive approach to supervising a population under considerable public and political scrutiny. Agents indicated that GPS monitoring was a fundamentally new kind of parole practice, it enabled agents to be more proactive as opposed to reactive in their monitoring of parolee behavior, and required a technological approach in an agency in which computer use had been infrequent.

DAPO attempted to address the technological requirement of GPS monitoring by providing a series of training sessions for agents. However, a majority of agents indicated that the training they received with regard to using and implementing GPS technology was insufficient. The initial training that agents received was provided by the software vendor; although the vendor was able to provide information about the device itself, they lacked any community supervision or law enforcement experience, which compromised their ability to relate the training directly to agents' needs. Agents cited zone training as being particularly problematic; consequently, few exclusion zones were imposed on parolees at the time of the interviews. However, in follow-up interviews with agents, most agreed that the training had improved dramatically. Agents also indicated that training sessions were difficult because agents had very different levels of computer proficiency. Finally, many agents indicated that non-GPS agents received no training on how to use the units, which became an issue when GPS agents went on vacation or required another agent to cover their caseload.

Parolee Supervision

Parolees on both HRSO and GPS caseloads were required to meet with their parole agents during supervision. Parole agents also monitored parolee progress by conducting home visits, telephone and other collateral contacts. In addition, parolees were also monitored for drug use. Table 4 presents the type of contact between parolee and parole agent for different contact types during the first six months of the follow-up period. The table provides information on both the percent of each group who had each type of contact and the monthly rate of contacts for parolees in each group.[15] The percent of GPS and HRSO parolees with different contact types was similar, with the exception that GPS parolees were significantly more likely to have telephone, attempted, and other contacts. Interestingly, the average number of contacts is generally higher for the GPS group relative to the HRSO control group. For example, the average number of face-to-face contacts per month for GPS parolees was 3.8 compared to an average of 2.8 for HRSO parolees. The same disparity between GPS and HRSO parolee contacts existed with regard to residence and office visits.

Table 4: Intensity of Agent Contacts, Contact Type

	HRSO Parolees			GPS Parolees		
Contact Type	%	Mean	Median	%	Mean	Median
Residence	98.7	1.40	1.30	97.8	1.60**	1.70
Jail	2.5	0.00	0.00	10.0	0.00**	0.00
Employment	3.8	0.00	0.00	5.6	0.00	0.00
Office	97.5	1.40	1.30	98.9	2.10**	1.80
Telephone	51.9	0.60	0.20	75.6**	2.10**	0.60
Attempted	51.9	0.20	0.20	28.9**	0.10**	0.00
Collateral	98.7	2.70	2.70	97.8	4.60**	3.70
Drug Testing	93.7	1.10	1.10	91.1	1.00	1.00
Case Review	73.4	0.20	0.30	85.6	0.30**	0.30
Other	41.8	0.20	0.00	90.0**	2.50**	1.35
Residence or Office	98.7	2.80	2.80	98.9	3.80**	3.50
Face To Face	98.7	2.80	2.80	98.9	3.80**	3.70

P-values for significance test based on Fisher's Exact Test
Note: *=HRSO and GPS different, * = p<0.1; ** = p<.05; *** = <.01

The elevated number of contacts among the GPS group were often the result of additional visits required to address GPS unit issues, as indicated in Table 5. The increased number of contacts might also be the result of different caseload sizes: the average GPS caseload consisted of 20 individuals, while the typical HRSO caseload was comprised of 40 parolees. Table 5 presents the different types of contacts that occurred between agents and parolees, and the percent and average number of different contact types for both GPS and HRSO parolees during the first six-months of the follow-up period.[16] The results indicate that parole agents deal with a wide range of topics when contacting parolees. Not surprisingly, nearly all GPS parolees experienced some sort of GPS-related contact with their agent. A small percentage of HRSO parolees also had some GPS-related contacts, reflecting the small number of HRSO offenders who were subsequently placed on GPS from a non-GPS comparison group during the study period. The most common contact types for both groups were treatment and support,[17] as well as alcohol and narcotics testing (ANT). A large number of contacts were related to sex offender registration requirements (PC 290 requirements), violations, and surveillance (e.g. parolee whereabouts, travel). Few differences with regard to agent contact types existed between the two groups, with the exception of higher GPS contacts (as expected) and lower case work contacts among the GPS group. The latter may have been the result of fewer caseload transfers of GPS parolees compared to HRSO parolees.

Table 5 Intensity of Agent Contacts, Contact Topic

	HRSO Parolees			GPS Parolees		
Contact Type	%	Mean	Median	%	Mean	Median
General	92.40	1.70	1.60	95.60	2.10	1.75
GPS any	8.90	0.00	0.00	98.90**	5.50**	4.90
Support	88.60	1.30	0.90	84.40	1.20	0.95
Treatment	81.00	0.80	0.70	84.40	1.00	0.90
Violation	44.30	0.20	0.00	30.00	0.20	0.00
New Offense	1.30	0.00	0.00	5.60	0.00	0.00
290/Drug Registration	55.70	0.30	0.20	55.60	0.30	0.20
Legal	2.50	0.00	0.00	3.30	0.00	0.00
Case Work	58.20	0.30	0.20	25.60**	0.20**	0.00
ANT	82.30	0.80	0.90	87.80	0.80	0.80
Interpersonal	32.90	0.20	0.00	40.00	0.30	0.00
Surveillance	31.60	0.40	0.00	36.70	0.20	0.00

P-values for significance test based on Fisher's Exact Test
Note: *=HRSO and GPS different, * = p<0.1; ** = p<.05; *** = <.01

GPS Monitoring Data

As highlighted above in the implementation section, parole agents routinely replaced GPS units on parolees due to equipment problems. The extent to which these units were replaced, including the stop and start dates of each new unit assigned to a parolee, was captured by the vendor data. Table 6 provides a descriptive account of the number of units a parolee was assigned as well as the average number of days each unit was attached to the parolee. When examining the performance of the GPS device over the 18 month study window, parolees on average were assigned almost 7 units each, with an average period of time per unit of almost 2 months. When units failing after one day were dropped from the analysis, the average number of units per parolee dropped to less than 6, with an average period of time per unit of just over two months. Overall, parolees were subject to frequent equipment changes which may have detracted from the efficacy of GPS monitoring in general.

Table 6: GPS Tracking Bracelets, GPS Parolees Only

Performance of Units Over 18 Month Study Window							
	Mean	STD	Median	1st Quartile	3rd Quartile	Minimum	Maximum
Number of Units	6.8	3.7	6	5	8	1	24
Days on Line	54.5	60.7	36	11	77	0	399

Performance of Units Over 18 Month Study Window, Dropping One-Day Failures							
	Mean	STD	Median	1st Quartile	3rd Quartile	Minimum	Maximum
Number of Units	5.9	3.1	5	4	7	1	19
Days on Line	62.8	61.1	46	19	82	1	399

† Days on Line measure was truncated at the opening or closing date of the study window. Durations of 0 days were not included if generated by a coincidence of window dates with bracelet replacements (7 cases); in another 76 cases a unit was replaced on the same day.

The GPS unit also recorded a variety of violations as well as the frequency with which these violations occurred. Table 7 presents a summary of these events. All parolees experienced at least one alert. The most common type of alert was for bracelet strap tampering (97.9%); followed by inclusion alarms[18] (either silent or not silent) (83%). Silent inclusion alarms also represented the highest number of alerts overall (47.3). Data were not available to determine what proportion of these alarms resulted from parolee misconduct and what proportion were the result of unit malfunction, drift (accuracy over time), or other factors not related to parolee behavior. These findings indicate all parolees recorded at least one violation during GPS supervision, but whether this violation was the result of parolee non-compliance of equipment malfunction is unclear.

Table 7: Type of Violation Recorded in Vendor Data

		Number of Events		Duration of Events	
GPS Violation Event	Percent	Mean	Median	Mean	Median
Any Alert	100	95.1	54.5	-	-
Bracelet Strap	97.9	15.7	8	2.1	0.4
Exclusion Alarm	2.1	0.0	0	13.5	13.5
Inclusion Alarm	83.0	29.5	16	4.1	0.4
Silent Exclusion	5.3	2.3	0	3.3	1.7
Silent Inclusion	79.8	47.3	16.5	1.3	0.3
911 Alarm Inclusion	8.5	0.2	0	0.4	0.2

Parolee Outcomes

This section presents recidivism rates for both the GPS and HRSO groups. Multiple indicators of recidivism were used, including violations for technical conditions as well as for new criminal behaviors and reincarceration. Table 8 presents the percent of each group that was found guilty of violations, including technical conditions and new criminal behavior.[19] HRSO offenders

were three times more likely to be found guilty of absconding (12.1% vs. 4.3%) or committing an offense related to their 290 status (15.4% vs. 4.3%). Furthermore, as expected, GPS offenders were more likely to be found guilty of a GPS-related violation (8.5% vs. 1.1%, for GPS and HRSO parolees respectively). Although both groups were equally likely to be guilty of a violation (either a technical violation or new criminal behavior), HRSO offenders were significantly more likely to be found guilty of a new offense compared to GPS offenders (38.5% vs. 24.5% for HRSO and GPS parolees, respectively). No other significant differences between groups were detected. Overall, although there were few significant differences between the groups, for those differences that were significant, HRSO parolees were more likely to be found guilty of a parole violation or committing a new crime, while GPS parolees were more likely to be found guilty of GPS-related violations.

Table 8: Sex Offender Parolees Found Guilty on Charges

Sex Offender Parolee Violation Charges	Percent of Parolees Guilty of Violation and Group	
Violation Type	GPS	HRSO
AnyViolation	42.6	48.4
Any ParoleViolation	39.4	40.7
VSC† General	0.0	0.0
VSC Sex	9.6	9.9
VSC Inform Agent	8.5	12.1
VSC Contact	2.1	2.2
VSC Drugs Alcohol	14.9	11.0
VSC Abscond	4.3	12.1*
VSC Association	3.2	1.1
VSC Location	14.9	18.7
VSC GPS	8.5	1.1**
VSC Instructions	3.2	7.7
VSC Treatment	6.4	4.4
Reg 290 Crime	4.3	15.4**
Any Crime	24.5	38.5*
Drug Crime	17.0	23.1
Sex Crime	2.1	1.1
Assault Crime	2.1	1.1
Nuisance Crime	3.2	2.2
Other Crime	4.3	4.4

† VSC denotes a violate of a special condition of parole.

P-values for significance test based on Fisher's Exact Test
Note: *=HRSO and GPS different, * = p<0.1; ** = p<.05;
*** = <.01

The most severe punishment for parolee misconduct in the community is reincarceration. Information regarding the percent of HRSO and GPS parolees returned to prison is displayed in Table 9. During the 18-month follow-up period, there were no significant differences between the two groups in terms of the percent of parolees returned to custody. Parolees in both groups were most often reincarcerated for technical violations. Few offenders were returned to custody for a new offense**.** A logistic regression analyses predicting return to custody over the 18-month follow-up period also revealed no differences between the HRSO and GPS groups (Table 10). However, other factors, such as a parolee's Static-99 score and prior criminal history were significant predictors of parole failure. For example, an increase in Static-99 risk category increases the odds of being returned to custody by 78%. Similarly, for every additional prior criminal count, the odds of recidivating increased by 41%. Conversely, factors such as being employed, having a high school education, and residential living situation[20] decreased the odds of being returned to custody by 58%,62%, and 69% respectively.

Table 9: Parolees Returned to Prison Within 18 Month Follow-up

	Returned For (percent):		
Group	Technical Violation	New Offense	Any Return
HRSO	35.2	2.2	37.4
GPS	34.0	1.1	35.1

P-values for significance test based on Fisher's Exact Test
Note: *=HRSO and GPS different, * = p<0.1; ** = p<.05; *** = p<.01

Table 10 Logistic Regression Prediction of 18 Months Return to Custody

Factor	Odds Ratio	LCL	UCL
GPS Parolee	0.743	0.336	1.644
Static-99 Risk Category	1.787***	1.178	2.711
Prior Counts	1.411**	1.019	1.955
Currently Employed	0.413**	0.188	0.911
High School Education	0.379**	0.169	0.850
Residential Living	0.309***	0.133	0.716

Note: *=HRSO and GPS different, * = p<0.1; ** = p<.05; *** = p<.01

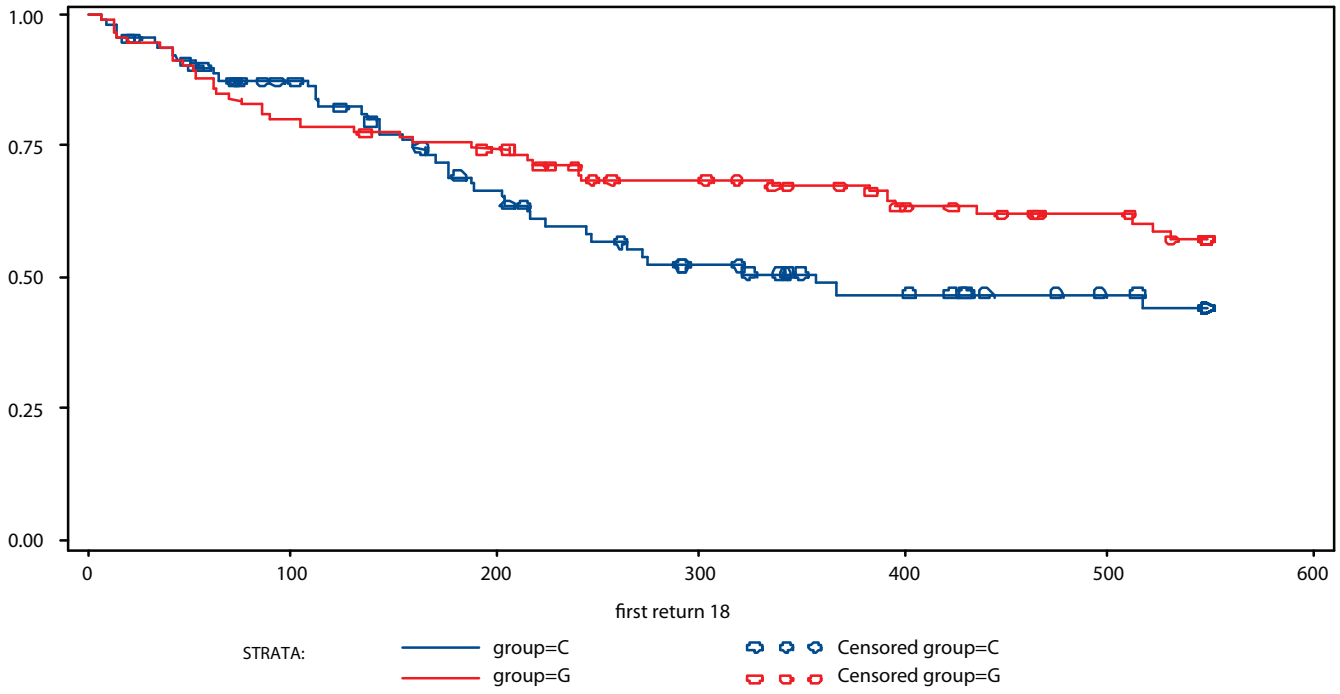
A majority of study participants recidivated during the first few months following release from prison. Table 11 presents the average time until first violation and the first violation for a sex offense related to an offender's special conditions of parole. There were no differences between HRSO and GPS offenders. The average time until the first violation was just over five months for both groups (158 days for GPS parolees, 169 days for HRSO parolees). With regard to a sex offense related to a special condition of parole, the average time until violation was just over six months for the HRSO group, and just over ten months for the GPS group, but this difference was not significant. Recidivism data was also analyzed using a survival function, and time to failure is presented graphically below in Figure 2 (censored for discharge).

Table 11: Time to First Violation

Sex Offender Parolee Violation Charges	Average Time to First Violation, by Violation Type and Group						
	GPS			HRSO			
Violation Type	N	Mean	Median	N	Mean	Median	Test of Difference
Any Violation	41	158	94	44	169	157	0.375
VSC Sex/Contact	12	301	333	12	194	187	0.227

P-values for significance test based on Fisher's Exact Test
Note: *=HRSO and GPS different, * = *p*<0.1; ** = *p*<.05; *** = *p*<.01

Figure 2: 18-Month Survival Plot: Time to Recidivism During the 18-Month Follow Up (Censored for Discharge)



Parolees begin recidivating almost immediately upon release. At six months, the majority of offenders who would fail had been reincarcerated. By eight months, the number of parolees who would be returned to CDCR custody leveled off for both HRSO and GPS parolees, although there is a slight dip around 16 months. Overall, parolees who recidivate fail within the first year of release. Table 12 presents the results of the proportional-hazards regression of a return to custody. These results are similar to those from the logistic regression presented in Table 10. The results show that, while GPS monitoring does not increase the risk of failure, the risk of revocation is increased by 35% for each increase in Static-99 risk score. Similarly, the risk of revocation increased by 22% for each additional prior criminal count. High school education, employment and residential living situation all significantly decreased the risk of failure (46%, 50%, and 52%, respectively).

Table 12 Proportional Hazards Model

Results for Likelihood of 18 Month Return to Custody		
Factor	Hazard Ratio	Parameter Estimate
GPS Parolee	0.780	-.2478
Static-99 Risk Category	1.350**	.3001
Prior Counts	1.221*	.1997
Currently Employed	0.536**	-.6241
High School Education	0.499**	-.6951
Residential Living	0.475**	-.7434

Note: *=HRSO and GPS different, * = $p<0.1$; ** = $p<.05$; *** = $p<.01$

A final analysis examined the relationship between parolee risk level, as determined by the Static-99, and recidivism. As indicated above, Static-99 scores are designed to predict sexual and violent recidivism among adult males who have already been convicted of at least one sexual offense against a child or non-consenting adult. The higher the Static-99 score, the greater the predicted risk. Table 13 presents the measures of recidivism analyzed in this report, by HRSO and GPS status, with the four Static-99 risk

categories. The results show that parolees with the lowest risk scores have the lowest return rates to prison. As risk level increases, the recidivism rate of parolees also increases. In terms of overall numbers, parolees classified as moderate risk had the greatest number of violations compared to the other groups, followed by parolees with elevated risk levels and parolees classified as high risk. However, there are no significant differences in recidivism rates between HRSO and GPS parolees at each respective risk level, with the exception of new crimes committed by parolees in the moderate risk category. HRSO parolees were significantly more likely to be found guilty of a new offense compared to GPS parolees (37.5% vs. 16.1%, respectively).

Table 13: Percent of Parolees with Violations by Static-99 Risk Level

Static-99 Category and Violation Type	Percentage of Parolees Guilty of Violations Type and Risk Level	
Risk Level	GPS	HRSO
Low Risk (0-1; n=31)	(n=17)	(n=14)
Any Violation	17.6	21.4
Any Parole Violation	17.6	21.4
Any Crime	17.6	14.3
Violation of Special Condition of Parole	5.9	14.3
Any Sex Crime	0.0	0.0
Moderate Risk (2-3; n=63)	(n=31)	(n=32)
Any Violation	41.9	46.9
Any Parole Violation	38.7	40.6
Any Crime	16.1	37.5*
Violation of Special Condition of Parole	9.7	9.4
Any Sex Crime	0.0	3.1
Elevated Risk (4-5; n=45)	(n=25)	(n=20)
Any Violation	44.0	65.0
Any Parole Violation	44.0	45.0
Any Crime	28.0	55.0
Violation of Special Condition of Parole	8.0	20.0
Any Sex Crime	0.0	0.0
High Risk (6-10; n=37)	(n=19)	(n=17)
Any Violation	68.4	64.7
Any Parole Violation	57.9	58.8
Any Crime	42.1	58.8
Violation of Special Condition of Parole	15.8	0.0
Any Sex Crime	10.5	0.0

P-values for significance test based on Fisher's Exact Test. Static-99 scores unavailable for ten parolees.
Note: *=HRSO and GPS different, * = $p<0.1$; ** = $p<.05$; *** = <.01

DISCUSSION AND CONCLUSIONS

This study represents the first test of GPS technology on supervision and outcomes for HRSO on parole in California. Most notably, there were no differences with regard to the overall recidivism rates of the two groups, after controlling for other key variables including prior criminal history and risk level. These findings coincide with previous research in which intermediate sanctions were found to have no effect on recidivism (Bonta et al., 1999; Genderau & Goggin, 1996; MacKenzie, 2006; Petersilia & Turner, 1992). Although some research has found that the use of EM might be beneficial for certain populations, such as sex offenders (Finn & Muirhead-Stevens, 2002), the fact that the odds of recidivating were not significantly different between the GPS group and non-GPS HRSO control group calls into question the utility of using this technology as a mechanism to improve public safety.

New programs face start-up challenges and the GPS project was not immune. Early technological issues hindered the ease with which agents were able to supervise GPS parolees. Equipment issues, such as faulty straps, created a great deal of confusion during the initial roll out of the program. Furthermore, agents dedicated a significant amount of time responding to and investigating false strap tamper alarms and charging problems with the unit. The ability of agents to effectively monitor GPS parolees was further hindered by slow and limited internet access, which made it difficult to integrate GPS data with more traditional aspects of agent supervision and monitoring of parolees.

The use of GPS data was expected to enhance the detection of parole violations and new crimes; however, the use of GPS as an investigative tool had not been fully developed during our study time period. The massive amount of information the device generates was burdensome for agents, and in the early stages of implementation reduced the ability of agents to quickly detect and investigate problematic behavior. The overwhelming amount of information generated by the unit was further complicated by the lack of guidelines as to how to properly integrate this information into the supervision of GPS parolees. The lack of official guidelines for supervising sex offenders under GPS surveillance muddied departmental expectations and heightened agent concerns about supervising a high profile population early in the study timeframe.

Success at Meeting CDCR Goals

CDCR identified several goals with regard to offender monitoring and behavior. With regard to the first goal, CDCR had hoped that the use of GPS on HRSO parolees would reduce sexual and violent offenses among this population. The study found that there were no significant differences between HRSO and GPS parolees with regard to sexual and violent recidivism, at least as measured by official records. Consequently, it is unclear whether the use of GPS had any deterrent effect on HRSO. We can, however, place our study findings in the context of what other researchers have found. Compared to previous studies in which recidivism rates for sexual offenses was approximately 5.3% after three years (Langan et al., 2003), this study found higher rates of sexual recidivism over a shorter period of time (18 months) with regard to offenses constituting a parole violation (9.6% and 9.9% for GPS and HRSO parolees, respectively), and lower rates of sexual recidivism for offenses classified as new crimes (2.1% and 1.1%. for GPS and HRSO parolees, respectively). However, the sexual recidivism rates found in this study are considerably less than those presented by Hanson (1998). The total recidivism rate for any crime in this study are consistent with previous research (Langan et al., 2003) with respect to parole violations (just under 50% for both groups), but considerably less when examining only new crimes (24.5% for GPS and 38.5% for HRSO parolees, respectively).

Second, CDCR had also hoped to determine whether GPS monitoring would increase the detection of parole violations and risky behaviors among HRSO parolees. With regard to enhancing the detection of parole violations, the results showed that there were few differences between GPS and HRSO parolees. HRSO parolees were significantly more likely to be charged with parole violations and found guilty of those charges with regard to absconding and violating the special condition of parole to register as a sex offender. These findings differ from those of previous studies (Petersilia & Turner, 1992), in which participants assigned to EM were more likely to commit technical violations. HRSO parolees were also more likely to be charged and convicted of committing a new crime. In addition, GPS offenders were more likely to be charged and found guilty of violating the special condition of GPS supervision, as expected. The study also found that GPS parolees generated a significant number of alerts, which may have signaled a parole violation. During the course of the study, the average number of alerts per offender was more than 95, and the majority of these were for inclusion violations. However, the vendor data did not allow us to disentangle which of these alerts resulted from parolee behavior as opposed to equipment malfunction or limitations. Furthermore, as Petersilia and Turner (1992) note, since data on the behavior of parolees was not available, it is difficult to determine the extent to which the GPS units changed the actual behavior of parolees, or whether behaviors that normally would not have been identified by agents were uncovered as a result of enhanced detection capabilities. With regard to overall recidivism rates between HRSO and GPS parolees, the study found that there were no significant differences between the two groups, a finding consistent with previous studies examining the effectiveness of EM on recidivism (Bonta et al., 1999; Genderau & Goggin, 1996; MacKenzie, 2006; Petersilia & Turner, 1992).

As indicated above, overall GPS parolees were less likely to abscond or fail to register as a sex offender compared to HRSO parolees. If the GPS units are affecting parolee behavior, then it is preventing parolees from committing these lower level offenses. Parolees absconding from supervision do, however, pose a significant problem in California. Of the more than 120,000 parolees released from prison in any given year, more than 38,000 will abscond from supervision (CDCR, 2009). Hence, GPS may be beneficial with regard to reducing the likelihood that a parolee will abscond from supervision, particularly sex offenders who tend to spark greater concern among the media and general public.

Third, CDCR had hoped that the introduction of GPS monitoring would increase overall compliance among parolees with conditions of their parole. According to the qualitative evidence, agents observed that parolee compliance could be gauged based on a parolee's observance of the special conditions associated with the GPS device itself. Furthermore, agents indicated that parolees were more forthcoming with their activities after being placed on GPS. This may indicate that parolees perceived that the enhanced supervision through GPS would reveal behaviors and activities that would otherwise go undetected by

agents. Lastly, GPS informed agents of parolee movement and behavior patterns, the derivations of which served as an indicator of problematic behavior.

The final two goals CDCR had hoped to accomplish involved the development of partnerships between parole and other law enforcement agencies and the development of data sharing agreements between agencies. The development of these partnerships could be potentially very beneficial in helping to solve crimes and eliminate parolees as suspects from crimes. These agreements were in their nascent stage during the course of this evaluation; consequently data sharing agreements and agency partnerships were not entered into between parole and any law enforcement agency in San Diego County.

Challenges to Implementation

The integration of GPS technology into the supervision of HRSO parolees was more difficult than expected. Initially, difficulties with the pilot were primarily due to problematic equipment, particularly faulty ankle straps. However, challenges with the pilot continued even after these technological issues were resolved, as agents were required to learn how to integrate a new technology with traditional supervision of HRSO parolees. Agents had to familiarize themselves with the massive quantities of information that the GPS units generated, determine the strengths and limitations of the information provided, and learn how to interpret the information they received given its strengths and limitations. Implementation issues such as these can have a significant impact on the success of new program initiatives (Wilson & Davis, 2006), and may explain why the implementation of GPS did not result in greater differences between groups. In fact, the integrity with which a program is implemented can explain a great deal of variability in the outcome (Andrews, 1995). As previous research has found, when a program is implemented without adhering to the principles upon which it is based, it is almost expected that it will result in no appreciable difference, or worse, a negative effect (Rhine, Mawhorr & Parks, 2006).

In addition to technological, training and logistical obstacles, results of the expert interviews indicated agents would have wanted clear guidelines and goals for the use and integration of GPS into their supervision of parolees. As Petersilia (1990) points out, certain conditions must be present in order for a program to be effective. Chief among these conditions is that the program or intervention must have clearly defined goals, and that these goals must coincide with the needs of the "customer." In the San Diego pilot, clear goals and objectives were not disseminated to agents, and in some cases, different goals and objectives were offered by administrators and agents within the same unit. The failure to unify goals and objectives between administrators and agents might well have impacted the manner in which GPS was used in the supervision process.

A year into the GPS pilot, additional hurdles were introduced that further complicated the monitoring of HRSO's on GPS. The passage of Jessica's Law in November 2006 permanently requires that all sex offenders be monitored by GPS during probation or parole. This requirement has enhanced the burden not only among agents charged with supervising GPS caseloads, but has increased the demands on DAPO to provide an infrastructure that would support the effective use of GPS. Furthermore, Prop 83 required that all registered felony sex offenders be monitored by GPS for life following discharge from community supervision. However, Prop 83 failed to stipulate which agency was responsible for monitoring sex offenders after they have completed community supervision; consequently, sex offenders not under some form of supervision are not monitored any more closely than they had been prior to the passage of Prop 83.

One unintended consequence of the passage of Prop 83 was that it resulted in an increase in homelessness in a population not typically known for being transient. The law further enhanced residency restrictions by prohibiting sex offenders from residing within 2,000 feet of any school, daycare, or other place where children congregate, and allowed local jurisdictions the ability to implement residency requirements for released sex offenders that are even more restrictive (California Sex Offender Management Board, 2008). Consequently, HRSO parolees were removed from areas where they had previously been able to live, and many were forced into situations where they were homeless (Dolan, 2010; Rothfeld, 2008). This had enormous consequences for offenders on GPS; charging the unit itself became more difficult, therefore it became easier to violate the special conditions of parole associated with GPS. Furthermore, agents had a difficult time establishing movement patterns for these offenders, complicating their ability to effectively utilize GPS information.

Study Limitations

We note several limitations to the study. First, although the characteristics of the individuals in both the GPS and HRSO groups were similar, group participation was not assigned randomly. Random assignment is a more effective way to assess whether recidivism is lowered by the use of GPS, as differences in outcomes between the treatment group and the control group are more strongly linked to the program itself. Another limitation of this study is the lack of data on actual recidivism behavior. Although GPS parolees had fewer parole violations, self-report behavior from both groups would provide more definitive results on how GPS impacted criminal and supervision behaviors. Finally, although the sample size has sufficient statistical power, a larger sample may have provided more robust results.

GPS as an Effective Supervision Component

This study, like many other intermediate sanction studies, did not find many differences between treatment and non-treatment groups. The findings of this study suggest that GPS has limited deterrent or rehabilitative effect on the behavior of parolees convicted of sex offenses, calling into question whether GPS provides value-added supervision, given both the monetary costs of the unit as well as the enhanced personnel time required to properly use the information GPS provides. DAPO gained significant experience and knowledge during the implementation of this pilot, from which several key lessons can be learned. The implementation of GPS is difficult: it requires intensive training, a supportive infrastructure backing the effective use of GPS, and clear guidelines and expectations for agents as to how to properly use the information. Furthermore, additional events, such as the passage of Jessica's law, might further complicate the implementation of GPS and the ability of agents to properly integrate the use of a new supervision strategy into monitoring parolees. Although there may be benefits to using GPS technology, these benefits may be more appropriate for other types of offenders. For example, GPS may be useful on offender populations who are more likely to abscond, or to monitor non-violent offenders as an alternative to incarceration (Kucharson, 2006).

REFERENCES

Andrews, Don A. (1995) The psychology of criminal conduct and effective treatment. IN J. McGuire (ed.), *What Works: Reducing Reoffending*. New York: Wiley.

Bales, W., Mann, K., Blomberg, T., Gaes, G., Barrick, K., Dhungaga, K., & McManus, B. (2010). *A Quantitative and Qualitative Assessment of Electronic Monitoring*, Final Report Submitted to the National Institute of Justice for Grant 2007-IJ-CX-0017, Talahassee, FL: The Florida State University.

Bonta, J., Rooney, J., & Wallace-Capretta, S. (1999). *Electronic Monitoring in Canada*. Ottawa: Solicitor General.

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

Boyd, J. (2008). How to stop a predator: The rush to enact mandatory sex offender residency restrictions and why states should abstain. *Oregon Law Review, 86*, 219-248.

Brown, M.P., and Roy, S. (1995). Manual and electronic house arrest: An evaluation of factors related to failure. In J.O. Smykla & W.L. Selke (eds.), *Intermediate sanctions: Sentencing in the 1990s*. Cincinnati, OH: Anderson.

Cadigan, T. (1991). Electronic monitoring in federal pretrial release. *Federal Probation,* 55, 26-30.

California Department of Corrections and Rehabilitation (2009). Adult Population Projections. Retrieved March 13, 2010 from, http://www.cdcr.ca.gov/Reports _Research/Offender_Information_Services_Branch/Projections/F09pub.pdf

California Sex Offender Management Board (2008). *An Assessment of Current Mangement Practices of Adult Sex Offenders in California*. Sacramento, Ca: California Sex Offender Management Board.

California Sex Offender Management Task Force. (2007). *Making California Communities Safer: Evidence-Based Strategies for Effective Sex Offender Management*. Sacramento, Ca: California Department of Corrections and Rehabilitation

Center for Sex Offender Management. (2001). *Recidivism of sex offenders.*

Cohen, M., & Jeglic, E. L. (2007). Sex offender legislation in the United States: What do we know? *International Journal of Offender Therapy and Comparative Criminology,* 51(4), 369-383.

Cooprider, K.W., and Kerby, J. (1990). A practical application of electronic monitoring at the pretrial stage. *Federal Probation,* 54(28): 28-35.

Crowe, A. H. (2002). *Offender Supervision with Electronic Monitoring.* Lexington, Ky: American Probation and Parole Association.

Dolan, M. (2010, February 1). California sex offender residency restrictions upheld. *Los Angeles Times.* Retrieved from http://articles.latimes.com/2010/feb/01/local/la-me-jessicas-law2-2010feb02

English, K., Pullen, S., and Jones, L. (1997). Managing adult sex offenders in the community—A containment approach. *National Institute of Justice, Research in Brief.* US Department of Justice, Office of Justice Programs. Washington, DC.

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

Florida Office of Program Policy Analysis and Government Accountability (2005), Electronic Monitoring Should Be Better Targeted to the Most Dangerous Offender (Report No. 05-19). Tallahassee, Florida: Office of Program Policy Analysis and Government Accountability.

Gable, R. K., and Gable, R. S. (2005). Electronic Monitoring: Positive Intervention Strategies. *Federal Probation, 69*(1), 21-25.

Gable, R.K. (2007). Electronic monitoring of offenders: Can a wayward technology be redeemed? In Yvonne de Kort, Wijnand Ijsselsteijn, Cees J.H. Midden, Berry Effen, and B.J. Fogg (eds) *Persuasive Technology*. Berlin: Springer Berlin/Heidelberg.

Gendreau, P., and Goggin, C. (1996). Principles of effective programming with offenders. *Forum on Corrections Research,* 8(3), 38-40.

Glaser, D. and Watts, R. (1992). Electronic monitoring of offenders on probation. *Judicature*, 73(3), 112-117.

Hanson, R.K. (1998). What do we know about sex offender risk assessment? *Psychology, Public Policy, and Law,* 4(1/2), 50-72.

Hanson, R.K. and Bussiere, M.T. (1998). Predicting relapse: A meta-analysis of sexual offender recidivism studies. *Journal of Consulting and Clinical*

Psychology, 66(2) 348-362.

Hanson, R.K. and Thornton, D. (1999). *Static-99: Improving Actuarial Risk Assessment for Sex Offenders. 1999-02.* Ottawa: Public Works and Government Services Canada.

Hanson, R.K. and Morton-Bourgon, K.E. (2005). The characteristics of persistent sexual offenders: A meta-analysis of recidivism studies. *Journal of Consulting and Clinical Psychology,* 73(6), 1154-1163.

Kucharson, M.J. (2006). GPS Monitoring: A viable alternative to the incarceration of nonviolent criminals in the state of Ohio. *Cleveland State Law Review.* 54: 637-670.

Langan, P., Schmitt, E. and Durose, M. (2003). *Recidivism of sex offenders released from prison in 1994.* (NCJ-198281) Washington, D.C.: U.S. Department of Justice, Office of Justice Programs

Levenson, J.S. and Cotter, L. (2005). The effect of megan's law on sex offender reintegration. *Journal of Contemporary Criminal Justice,* 21(1), 49-66.

Levenson, J.S. and D'Amora, D.A. (2007). Social policies designed to prevent sexual violence: The emperor's new clothes? *Criminal Justice Policy Review,* 18(2), 168-199.

Levenson, J.S. and Hern, A.L. (2007). Sex offender residence restrictions: Unintended consequences and community reentry. *Justice and Research Policy,* 9(1), 59-73.

Lurigio, J. and Petersilia, J. (1992). The emergence of intensive probation supervision programs in the united states. In James Byrne, Arthur Lurigio and Joan Petersilia (eds.) *Smart Sentencing: The Emergence of Intermediate Sanctions.* Sage Publications: Newbury Park, CA.

MacKenzie, D. L. (2006). What works in corrections? Reducing the criminal activities of offenders and delinquents. New York: Cambridge University Press.

National Conference of State Legislatures. (2007). *Jessica's Law.* Denver, Colorado.

National Research Council. (2008). *Parole, desistance from crime, and the community integration.* Committee on Community Supervision and Desistance from Crime. Committee on Community Supervision and Social Sciences and Education. Washington, DC: The National Academies Press.

New Jersey State Parole Board. (2008). New jersey gps monitoring of sex offenders: Implementation and assessment. *Corrections Forum,* 17(3), 55-59.

Padgett, K.G., Bales, W.D., and Blomberg, T.D. (2006). Under surveillance: An empirical test of the effectiveness and consequences of electronic monitoring: *Criminology and Public Policy,* 5(1), 91-92

Petersilia, J. (1990). Conditions that Permit Intensive Supervision Programs to Survive. *Crime & Delinquency, 36(1), 126-145.*Petersilia, J. and Turner, S. (1992). An evaluation of intensive probation in California. *The Journal of Criminal Law and Criminology,* 82(3), 610-658.

Renzema, M. (1992). Home confinement programs: Development, implementation, and impact. In James Byrne, Arthur Lurigio and Joan Petersilia (eds.) *Smart Sentencing: The Emergence of Intermediate Sanctions.* Sage Publications: Newbury Park, CA.

Renzema, M., & Mayo-Wilson, E. (2005). Can electronic monitoring reduce crime for moderate to high risk offenders? *Journal of Experimental Criminology, 1*, 215-237.

Rhine, E., Mawhorr, T.L., and Parks, E.C. (2006). Implementation: The bane of effective correctional programs. *Criminology,* 5(2): 347-368.

Rogers, R. and Jolin, A. (1989). Electronic monitoring: A review of the empirical literature. *Journal of contemporary criminal justice,* 5, 141-152.

Rohrbach, L.A., Grana, R., Sussman, S., & Valente, T.W. (2006). Type II translation: Transporting prevention interventions from research to real-world settings. *Evaluation Health Professions*. 29 (3): 302-333.

Rothfeld, M. (2008, December 19). Homeless Sex Offenders on Parole Jumps Sharply. *Los Angeles Times.* Retrieved from http://articles.latimes.com/2008/dec/19/local/me-briefs19.S1

Roy, S., and Brown, M.P. (1995). The juvenile electronic monitoring program in lake county, Indiana: An evaluation. In J.O. Smykla & W.L. Selke (eds.), *Intermediate sanctions: Sentencing in the 1990s.* Cincinnati, OH: Anderson

Tennessee Board of Probation and Parole and Middle Tennessee State University. (2007). *Monitoring tennessee's sex offenders using global positioning systems: A project evaluation.* State of Tennessee, Board of Probation and Parole: Nashville.

Tonry, M. and Lynch, M. (1996). Intermediate sanctions. *Crime and Justice,* 20, 99-144.

Wilson, James A., and Robert Davis. (2006). Good Intentions Meet Hard Realities: An Evaluation of the Project Greenlight Reentry Program. *Criminology and Public Policy, 5(2), 303-338.*

ENDNOTES

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[6] Study participants assigned the highest risk scores were young, had multiple prior sexual convictions and targeted boys for molestation.

[7] As we will discuss below, the assignment of parolees to GPS was based on the Static-99, a validated risk-assessment instrument. Although agent perceptions affected risk scoring, this did not result in statistically significant group differences.

[8] Figures provided to authors by the Division of Adult Parole Operations

[9] The containment model also includes polygraph examination to monitor offenders, however, parole agents in California do not have the option to administer polygraph examinations to parolees and substituted collaboration with law enforcement for this element.

[10] The Static-99 is a ten-item risk assessment instrument developed specifically to assess the risk level of sex offenders. See *Hansen and Thornton (1999; 2003)* for a description of the instrument and information regarding its validation.

[11] As we will show below in Table 2, there were virtually no differences between the GPS and HRSO groups. Procedures for determining group placement were not rigorously followed by Parole Agents; consequently, parolees classified as low-risk were monitored by GPS and some high-risk offenders were supervised on HRSO caseloads. As a result of this cross-over, there were virtually no differences between the GPS and HRSO groups.

[12] All HRSO and GPS parolees were followed for 18 months, even if a parolee was moved to another caseload.

[13] Over the course of the project, some parolees who were on HRSO at the time of the study were moved onto GPS. At 18-months follow-up, approximately 30 percent of parolees originally assigned to HRSO had been placed on GPS. Our analyses consider the assignment of the parolee at the study beginning. Thus, we follow the "analyze as assigned" strategy. Analyses conducted for a 12-month follow-up, in which approximately 15% of HRSO parolees had been moved to GPS show the same pattern of recidivism outcomes as the 18-months follow-up presented. Thus, we feel confident that study results are not biased by these crossover cases.

[14] *See* Jannetta, J. (2006). *GPS monitoring of high-risk sex offenders.* Working Paper. Center for Evidence-Based Corrections: University of California, Irvine, for preliminary findings from the pilot study. *Available at* http://ucicorrections.seweb.uci.edu/pdf/WorkingPaper5106_B.pdf

[15] The monthly rate of contacts was computed as the total number of contacts for each parolee divided by the number of days during the six-month follow-up when he/she was either on GPS or HRSO status.

[16] This information was obtained from parole agent notes documented in the Record of Supervision (ROS), and the topics reflected in Table 5 were those that appeared in the agent notes. If no specific topic was mentioned, the area was coded as "general."

[17] Treatment contacts consisted of sex offender treatment or drug and alcohol treatment. Support contacts comprised of issues such as housing, employment, medical/health, bus tokens, and food vouchers.

[18] Inclusion zones are areas in which the parolee must remain for a set period of time, or trigger a violation alert. An exclusion zone operates on the same principle - it is also an area that the offender is not allowed to enter, such as a school zone or a victim's residence.

[19] Analyses of charged violations, not reported here, showed the same pattern of between group differences as the analysis of violations for which parolees were found guilty

[20] Residential living situation refers to whether a parolee was living with family or friends or by themselves (including single room occupancy hotels), as opposed to being homeless or living in a halfway house or correctional facility.