

# **GPS Monitoring Technologies and Domestic Violence: An Evaluation Study**

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## Abstract

This study examines the implementation of Global Positioning System (GPS) monitoring technology in enforcing court mandated “no contact” orders in domestic violence (DV) cases, particularly those involving intimate partner violence (IPV). The research also addresses the effectiveness of GPS as a form of pretrial supervision, as compared to other conditions in which defendants are placed. The project has three components: First, a national web-based survey of agencies providing pretrial supervision reported on patterns of GPS usage, as well as the advantages, drawbacks, and costs associated with using GPS for DV cases. The results indicate a gradual increase in agencies’ use of GPS technology for DV cases since 1996, primarily to enhance victim safety and defendant supervision.

Second, a quasi-experimental design study of three sites from across the U.S. – referred to as “Midwest,” “West,” and “South” – examined the impact of GPS technology on DV defendants’ program violations and re-arrests during the pretrial period (referred to as the “short term”), and on re-arrests during a one-year follow-up period after case disposition (referred to as the “long term”). The results indicate that GPS has an impact on the behavior of program enrollees over both short and long terms. Examination of the short-term impact of GPS enrollment shows it is associated with practically no contact attempts. Furthermore, defendants enrolled in GPS monitoring have fewer program violations compared to those placed in traditional electronic monitoring (EM) that utilizes radio frequency (RF) technology (i.e., remotely monitored and under house arrest, but without tracking). GPS tracking seems to increase defendants’ compliance with program rules compared to those who are monitored but not tracked.

Defendants enrolled in the Midwest GPS program had a lower probability of being re-arrested for a DV offense during the one-year follow-up period, as compared to defendants who had been in a non-GPS condition (e.g., in jail, in an RF program, or released on bond without supervision). In the West site, those placed on GPS had a lower likelihood of arrest for any criminal violation within the one-year follow-up period. In the South site, no impact deriving from participation in GPS was observed. The heterogeneity of the defendants who are placed on GPS at this site, and the different method for generating the South sample of DV defendants, may account for the absence of GPS impact on arrest in the long term.

An examination of the relationship between GPS and legal outcomes across the three sites revealed similar conviction rates for defendants on GPS and those who remained in jail during the pretrial period. Further, a comparison of conviction rates for GPS and RF defendants at the Midwest site found a significant difference – with GPS defendants being likelier to be convicted as compared to RF defendants; conviction rates in the Midwest and South sites were also higher for GPS defendants compared to defendants released on bond without supervision, suggesting that defendants' participation in GPS increases the likelihood of conviction. These findings may be related to the fact that GPS provides victims with relief from contact attempts, empowering them to participate in the state's case against the defendant.

The third component of the study is a qualitative investigation conducted at six sites, entailing in-depth individual and group interviews with stakeholders in domestic violence cases – victims, defendants and criminal justice personnel. The interviews identified a variety of approaches to organizing GPS programs, with associated benefits and liabilities. Victims largely felt that having defendants on GPS during the pretrial period provided relief from the kind of abuse suffered prior to GPS, although they noted problems and concerns with how agencies and courts apply GPS technology. Interviews with defendants supported quantitative findings about

the impact of GPS on defendants' short- and long-term behavior, and found both burdens and occasional benefits associated with participation. Benefits of GPS enrollment for defendants included protecting them from false accusations, providing added structure to their lives, and enabling them to envision futures for themselves without the victim. Burdens pertained to living with restrictions and becoming transparent, managing issues related to stigma and disclosure of one's status as a DV defendant tethered to GPS, and handling the practical issues that emerge with the technology and equipment. Policy implications highlight the importance of having a logical connection between defendant attributes and program details, avoiding enrollment in cases where the GPS has minimal or no value and is imposed for reasons other than protecting victims or enforcing restraining orders, the need for justice professionals to cultivate relationships with victims whose abusers are on GPS, and the importance of maintaining an appropriate balance between victim safety and due process for the defendant.

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## Executive Summary

### The purpose of the study

This study examines the implementation of Global Positioning System (GPS)-based monitoring technology in enforcing court mandated “no contact” orders in domestic violence (DV) cases, particularly those involving intimate partner violence (IPV). The research also addresses the effectiveness of GPS-based monitoring as a form of pretrial supervision, as compared to other conditions in which defendants are placed. GPS for DV programs first emerged in the 1990s and their numbers have since been steadily increasing. GPS for DV programs are created in response to local demand, court initiative, or state legislation, often prompted by an incident in which an intimate partner was harmed or killed by an arrestee who had been released by a court on bond, and are usually directed at bolstering protection orders. Since 2000, twenty-one states and the District of Columbia have enacted legislation mandating or recommending that justice agencies employ GPS to protect victims of DV during the pretrial period; several other states are in the process of considering such legislation.

When used for DV offenses, GPS is typically assigned during the pretrial period, defined as the justice system phases beginning with arrest and concluding with case disposition. This period is known to be highly volatile, characterized by heightened danger to the victim and attempts by the accused to dissuade the victim from participating in the prosecution of the case.

The adoption of GPS tracking to enhance victim safety emerged as a preferred method of electronic monitoring (EM) over radio frequency (RF)-based approaches that operated primarily as house arrest programs. When assigned in the context of a DV-related charge, traditional RF programming was commonly enhanced through the use of a bilateral strategy that augmented house arrest by placement of a second receiver in the victim’s residence (hereafter “bilateral

RF”). The second receiver detected the presence of the defendant wearing a synchronized transmitter (typically on his ankle), within a range of approximately 500 feet. By synchronizing the second receiver to the defendant’s transmitter, authorities would be alerted if the defendant had entered the perimeter of the victim’s residence.

Although bilateral RF was an enhancement to simple house arrest (hereafter “RF”), GPS represents a further advance in its ability to track a defendant across time and space. Like bilateral RF, GPS for DV is intended to deter contact attempts by the defendant toward the victim, but GPS operates on the principle of “geo-fencing” – it can be programmed to establish *multiple* and potentially *unlimited* zones of exclusion (defined as areas where the alleged abuser may not enter) and inclusion (areas where the alleged abuser is required to remain as per program specifications). Contact attempts are measured by the defendants’ incursions into exclusion zones (i.e., areas where the victim is likely to be present), but it does not detect contacts attempted via other means, such as telephone, email, social media, SMS (i.e., text messages), chance encounters outside monitored areas, or contacts initiated by the victim (e.g., when the victim enters areas where the defendant is present). The advantages of GPS relative to bilateral RF include its versatility, broadened detection range, capacity for multiple zone coverage, and, in the version of GPS known as “active,” its unique ability to keep track in real time of the offender’s whereabouts beyond the immediate range of his and the victim’s residences (i.e., through logging of the offender’s “GPS points”). Possible drawbacks to using GPS include greater per diem costs to agencies, greater workload demands on staffs, elevated legal jeopardy and net-widening effects for defendants, cultivation of false feelings of safety in victims, and the problems of reliability and accuracy associated with a developing technology.

The purpose of the study was to evaluate the effectiveness of GPS in accomplishing the aims of victim protection via contact deterrence during the pretrial period. The second aim was

to assess whether GPS enrollment is associated with deterrence in the long term, as measured by lower likelihood of re-arrest during a one-year follow-up period. The study also attempted to provide an integrated picture of the benefits (direct and indirect), as well as risks and liabilities, resulting from the use of GPS in DV cases.

## **Research design and methods**

The study is comprised of three parts: First, a web-based survey of pretrial service agencies in the United States was conducted to learn how electronic monitoring technologies are used in their operations, with a specific emphasis on applications of GPS to address DV cases. Agencies known to use GPS were contacted using a national list provided by an EM expert consultant, Peggy Conway. In addition, two organizations for pretrial agencies, the Pretrial Justice Institute (PJI) and American Probation and Parole Association (APPA), sent an email with an embedded link inviting their members to participate in the web-based survey. The survey received responses from 616 individuals representing agencies in 43 states, the District of Columbia, and Puerto Rico.

Second, a quasi-experimental design was applied to the analysis of quantitative data derived from large and established programs, with the aim of assessing GPS systems' effectiveness in a) deterring defendants' program violations (including contact violations) while being monitored, and in b) reducing participants' re-arrest during both the monitoring period and a one-year follow-up period. The three sites offer geographic diversity as well as variations in how agencies approach the use of GPS to monitor defendants' compliance with "no contact" orders in DV cases during the pretrial period. In the Midwest site, a total of 2052 defendants referred to the GPS program over a two-year period (2006-8) comprised the sample; they spent the pretrial period either on GPS, on RF, in jail, or were bonded out without any form of

supervision. In the West site, a total of 1000 defendants who were referred to GPS over sixty-four months (Oct 2001 – Jan 2007) comprised the sample. These defendants were placed on GPS, kept in jail, or released on bond without any form of supervision. In the South site, a total of 604 defendants with DV charges were selected from jail booking and release data over two years (2008-2009). These defendants spent the pretrial period in one of four conditions: either GPS or RF-based supervision, on bond release, or in jail. To conduct an analysis of GPS vs. RF outcomes, data were supplemented with information found in the records of the pretrial agency that monitored GPS and RF defendants during the pretrial period.

The third prong of the study consisted of in-depth interviews with parties directly or indirectly involved with programs (victims, offenders, justice personnel, and social service providers; N = 210) at six agencies – the three included in the quantitative study and three additional sites, located in different parts of the country and practicing varying approaches to GPS for DV. The in-depth individual and group interviews investigated participants' experiences with GPS and the effects of justice-related practices on victims and defendants.

## **Findings**

### **A. Web-based survey**

The national survey provided a snapshot of current trends in the adoption of GPS and emerging standards and practices in the targeted implementation of GPS for DV cases. While most respondents agreed that the desire to keep victims safer was the most important impetus for their program's creation, few reported that their programs had objective features to actively engage victims in the process of increasing their own safety in partnership with the criminal justice system. The role of the victim is still being defined and aligned with technological efforts

to enhance supervision, ensure client accountability, more effectively protect the public, and deter additional crimes.

The concern with victims influences who is enrolled in GPS for DV programs. Practitioners stated their programs were targeting primarily serious offenses for GPS supervision and cases for which the court had issued an order of protection. A victim request that a defendant be placed on GPS was also an important consideration for enrollment, as was the defendant's prior history of alcohol or drug use. The majority of programs reported successfully enrolling all referred defendants, but a quarter of the programs reported being able to hook up only half of those referred to GPS, for a variety of reasons, including defendants not meeting program requirements, a lack of available GPS equipment, absence of victim cooperation (when the latter's consent was required), or the defendants inability to pay program fees. The results also suggest that the overwhelming majority of programs lack victim-centric features in spite of the expressed sentiment that GPS was most important as a tool for victims. Programs most often utilize abilities that allow them to map the defendant's movements in the community over time, determine their current location, send the defendant an alert, and establish inclusion and exclusion zones. Yet the least utilized function is one that allows victims to receive text message notification when the defendant violates zone restrictions. Such an alert would allow the victims to take their own precautions without having to rely on law enforcement, a vital option considering fewer than half of the programs report that law enforcement automatically responds to defendant violations or alerts.

GPS programs rely on the ability of their officers to effectively supervise defendants, and a reduced caseload allows GPS officers to scrutinize the information generated by advanced technologies – on average GPS officers monitor less than half as many clients as non-GPS officers. Yet, the majority of practitioners agreed with the statement that the GPS cannot prevent



a defendant from committing a crime, which could be evidence of the need to shift the object of practitioner focus onto the victim. Some practitioners also were of the opinion that GPS tracking empowers victims, or at least that GPS was more empowering to the victim than punitive to the defendant. However, the majority (70%) also agreed with the statement that victims misunderstand the capabilities of GPS tracking, and over half agreed that it gives victims a false sense of security – yet 80% thought it made the general public safer. Only 13% of programs had ever formally evaluated the effectiveness of GPS tracking for defendants, and only a third employ special procedures to assess the risk of violent behavior by the defendant during the pretrial period.

Among programs reporting multiple levels of monitoring (active and passive), the average cost of GPS to the agency per day is \$11.18 for active monitoring, and \$6.84 for passive monitoring. The cost to defendants per day is \$8.68 for active monitoring and \$6.79 for passive monitoring. The overall figures reported by a larger national sample of GPS-using agencies is a \$9.80 cost to the agency and \$8.80 charged to the defendant. These per diem amounts do not include the costs of personnel or program administration. On average, DV defendants spend 99.5 days on GPS, with wide variation between programs.

## **B. Varieties of GPS for DV programs: Perspectives of justice personnel in six sites**

The qualitative data gathered from interviews with criminal justice personnel identified a variety of approaches to organizing GPS for DV programs, each of which can be located on two continua: first, with respect to crime control vs. due process models of justice, and second, in relation to penalty vs. treatment approaches to defendants. Programs differed in their restrictions, the scope of investigating defendants' movements (via "GPS points"), willingness to violate defendants who did not conform to program rules, levels of fee for participation in the

program, and average stay on the program. The different approaches taken were also influenced by understandings about DV and the need to separate defendants from alleged victims, the characteristics (including criminal records) of DV defendants who were admitted into the program, the type of agency, and the depth of agency resources. The different approaches taken by the six agencies may be helpful in understanding the findings that emerged in the three quantitative impact study sites.

### **C. Quantitative impact study (Midwest, West, South)**

The quantitative impact study shows that GPS technologies have an impact in the short term (during the pretrial period): GPS is effective in preventing defendants from (physically) contacting victims, suggesting that GPS “puts teeth” into restraining orders. A more rigorous program (at the Midwest site) found a reduced likelihood of program violations (e.g., curfew) by GPS defendants as compared to RF defendants, while a less restrictive program (at the South site) found no differences in the likelihood of program violations by GPS defendants as compared to RF defendants. This finding is especially surprising since the Midwest GPS defendants, who had a higher mean number of prior arrests compared to their counterparts at the South site, had a lower likelihood of violating program rules.

In terms of court outcomes, GPS defendants had conviction (and dismissal) rates that were more similar to rates found among those who remained in jail, as contrasted to rates found among defendants placed on RF or released on bond without supervision. At the Midwest site, conviction rates were even higher for GPS defendants than for defendants remaining in jail. It may be that program-enforced prohibition against contacting the victim (e.g., to persuade her to renege or not appear in court) results in a higher conviction rate.

The impact of enrollment in GPS over the long term (or during a one-year follow-up period after disposition or completion of a jail sentence) is reflected in a lower likelihood of arrest for *any* offense in the West site, and a lower likelihood of arrest for *DV* offenses in the Midwest site. The South site did not show any long-term differences attributable to enrollment in GPS during the one-year follow-up period. The heterogeneity of the defendants who are placed on GPS at this site, and the different method for generating the South sample of DV defendants, may account for the absence of GPS impact on arrest in the long term.

#### **D. Victims and defendants: Views and experiences**

The qualitative data show that GPS programs can provide victims peace of mind and relief from harassment and abuse, such that the resumption of a normal life seems more tenable. Although many victims did not understand how the technology works, most expressed an awareness of the technology's limitations in terms of guaranteeing their safety. In some cases victims were anxious when they saw their alleged abuser moving freely about in settings outside the exclusion zone(s), and expressed concern that their estranged partners would be able to manipulate the technology or subvert its capacities and undermine program rules and restrictions. Victims also discussed problems pertaining to maintaining their privacy during court hearings related to the defendant's GPS enrollment (e.g., having to divulge the victim's new address or provide information about the children's babysitter). Concerns were also raised about inadvertent disclosure of victim locations marked in "unknown zones" due to alerts the monitoring agency sent to defendants. At the same time, some victims expressed satisfaction at being able to covertly visit estranged partners enrolled in the GPS program, in some cases even staying overnight, mentioning that they could come and go "on their own terms."

Defendants reported having both positive and negative experiences during their time on GPS, viewing it as “a mixed bag.” Most felt it was far preferable to “sitting in jail” and were grateful that participation enabled them to maintain their employment. They also appreciated the fact that GPS shielded them from false accusations that could be (and in some cases were) made by a vengeful estranged partner. Defendants at a more treatment-oriented site spoke of being thankful for the various kinds of assistance they received from supervising officers. Defendants also spoke about using their time in the program, and away from the alleged victim, as an opportunity to engage in various constructive pursuits, including rebuilding relations with family members, looking for work, returning to school, and reimagining their lives without the victim having a part in it.

On the other hand, defendants enrolled in the more rigorous programs found them to be quite demanding and the personnel extremely inflexible, especially around issues related to rescheduling “out hours” (i.e., the specific periods that defendants are given to conduct “personal business”) or accommodating their commuting situation, particularly when reliant on public transportation. The technology and equipment prompted a number of practical and logistical concerns, such as difficulty with maintaining an active signal while at work and inadvertently disclosing one’s status as a monitored subject. Concerns were also raised that GPS participation could damage or undermine their employment situation or chances of being hired.

### **Study limitations**

This study has several imitations that are common to social science research, particularly in the criminal justice context. The national web-based survey may suffer from problems of reliability and generalizability. Because the survey is respondent- rather than agency-based, it is

possible that some agencies are overrepresented as a result of more than one employee responding.

The limitations of the quantitative impact study stem from the research design and the data that were available to measure key attributes and outcomes. The ideal approach to examining treatment effects – experimental design with random assignment of individuals to comparison groups – could not be utilized because referral of DV defendants to GPS programs is a function of judicial discretion. Therefore, a quasi-experimental design with relevant controls was used to derive non-GPS and GPS groups that were as equivalent as possible on factors known to influence the outcomes. Equivalency was accomplished by statistically controlling for covariates that were observable in the three locations.

The comparability of the GPS and non-GPS groups may have been compromised by various factors, some related to the socioeconomic status of the defendants (e.g., inability to post bond or establish a new residence during the pretrial period), others related to program rules and technological issues (e.g., victim's consent could not be obtained, GPS signal could not be sustained at the defendant's or victim's residential location). Because SES data were not available for all groups, SES could not be controlled for in the analysis.

The measures used to create equivalent non-GPS and GPS DV defendant groups were limited by the data available in the three sites, and the disparate definitions and recording practices used by the agencies. Had more control variables been available for inclusion in the statistical models, results of the analyses may have varied. Also, the completeness of the measures that were used may have been compromised due to missing data. The use of administrative data to test hypotheses in criminal justice research is accepted practice, however, even though it may be problematic.

The outcome measure of recidivism as repeat domestic violence offenses (or crime in general) through re-arrest may also be problematic; it is likely to miss incidents in which offenders perpetrate abuse but the offending behavior is not reported or detected – a particularly common problem in domestic violence cases.

The qualitative component of the study was limited in that it primarily relied on interviews to document the perspectives and experiences of personnel, victims, and defendants, and was not complemented with extensive systematic observational fieldwork with each group of stakeholders. The latter method may provide insights into taken for granted understandings that may not emerge in the course of being interviewed.

## **Conclusions**

GPS for DV programs usually monitor DV arrestees referred as a condition of pretrial release, without having been convicted. Thus, defendants may experience these pretrial supervision programs as a form of punishment without benefit of trial; indeed, the present study found that, in the three sites, almost half of all GPS clients' cases were dismissed. This result has potentially far-reaching implications, both for defendants and for how society responds to domestic violence. Because GPS programs for DV defendants are increasing, and since they appear to be effective in accomplishing criminal justice goals, issues emerge for public policy discussion. First, are GPS for DV programs appropriate for all of those who can technically be brought under their purview? Second, what is the optimal or suitable approach to take with those to be subjected to court-imposed liberty restrictions? Third, how should the program incorporate the victim in the definition of its overall mission and everyday operations? Ideally, deliberations about how to design pretrial GPS for DV programs will be undertaken with an understanding of the needs and situations of DV victims, on the one hand, and the rights and interests of

defendants, on the other. A balanced approach would consider victims' welfare (including their safety) as well as defendants' rights (to due process).

Agencies that proceed to establish programs without careful consideration of the issues risk encountering the problem of mismatch (e.g., enrolling "non-hardened" abusers into GPS for DV programs that are organized to manage high-risk offenders). Conversely, programs designed to enroll low grade "abusers" (e.g., those facing a first arrest) or those whose charges stem from a family disturbance that is of a different nature (e.g., mother-daughter fights), may at times admit offenders who are considered a serious risk into a non-rigorous supervision regime. To the extent that programs seek to have a consistent set of rules and restrictions by which defendants must abide, and have a mix of clients across the spectrum of DV arrestees, a series of misfittings may manifest themselves in logistical terms for both staff and defendants. Defendants may also experience emotional and psychological effects in such circumstances. Common scenarios in which logistical problems emerge include the following: having rigorous supervision regimes that result in officers spending time with low-risk instead of concentrating on high-risk defendants, subverting defendants' employment by requiring in-person office visits during business hours, and having clients obtain employment verification that deters employers from hiring applicants. The emotional and psychological impact of the program may be found in the defendant who becomes demoralized when he can no longer work overtime because of program inflexibility regarding work hours or is repeatedly rejected on a job search due to restrictions on mobility.

Agencies considering establishing or improving a GPS for DV program implicitly or explicitly make decisions about the extent to which victims will be central or peripheral to their operations. How the victim's role in the program is defined has implications for whether victims are viewed and treated as an asset or liability. Irrespective of whether victims are central or

peripheral, viewed as assets or burdens, GPS for DV programs should be mindful of possible discordance between victims' expectations or understandings and the program's actual capabilities and practices. Absent such foresight into victims' expectations for program performance – including consideration of how justice system personnel create or influence such expectations – victims are likely to experience frustration, loss of confidence in the system, disappointment, fear, a false sense of security, and in the worst-case scenario, the victim's safety can be seriously compromised.

An individual client's risk level and the agency's program details, rules, and restrictions should be logically connected. However, because such an approach might ultimately preclude placement of arrestees who could benefit from the program – or deny victims the indirect but tangible benefit of defendants' being on GPS – the alternative is to design GPS for DV programs that are comprised of graduated degrees of restrictiveness, based on client's risk levels, whether these are understood to be fixed or changing. Programs should also strive to establish criteria for including DV defendants that are derived from an understanding of the dynamics of DV, rather than having eligibility as a default assignment made in an effort to reduce jail overcrowding, or as a means of solving indigent defendants' problems with raising bail. Ad hoc approaches may address various exigencies encountered by criminal justice agencies, but they ultimately are not a substitute for developing initiatives that thoughtfully and simultaneously address the problem of intimate partner violence, the interests of victims, and the rights of the accused.

GPS for DV programs are organized to either make victims central or peripheral to their focus and operations. The decision to organize a GPS program in either direction will likely affect the nature of the agency's relations with the victim, including the quality of the information that the victim and agency share, and the assistance that the victim receives during the period when the defendant is enrolled in the program. However, irrespective of whether the



approach is victim-centric, the program should be based on an understanding of the dynamics of DV, rather than utilizing the GPS program as a way of handling non-DV related problems (e.g., jail overcrowding). A DV-focused identity would recognize the importance of accrued expertise in properly managing DV cases, whether the programs are victim-centric or not.

Maintaining good communication between agency and victims is paramount for all GPS for DV programs. Personnel should be watchful for possible discrepancies between victims' expectations for program performance and the program's actual capabilities and practices. Programs that are not familiar with victims' expectations risk engendering a sense of frustration, fear, and loss of confidence in the system, or the victim can develop a false sense of security. Providing accurate information to victims about the capabilities and limitations of the GPS platform in use is critical for victim welfare and safety. Victims who are correctly informed about the absence of protection may not feel safe, but their actual safety will thereby be enhanced as they now take precautions that are congruent with how defendants are actually supervised. As it is not always possible to provide victims with the resources that they should optimally have, training victims on how to do safety planning is essential.

Solicitation of victim feedback about agency standards and practices is important to a program's effectiveness, especially during its learning phase. Incorporating victims' feedback empowers them to share individualized concerns, transforming victim input into a catalyst for agency innovation. In turn, the newfound program flexibility that is thereby encouraged enables otherwise reluctant victims to access the program, with defendants spending less time in jail as a byproduct.

Learning from mistakes, misunderstandings, blind spots, and limitations is critical to a program's continued improvement. Such improvement entails staying abreast of technological innovations, becoming familiar with the situations of defendants and victims, and developing

greater coordination among all relevant stakeholders (e.g., monitoring agency personnel, judges, victim advocates, attorneys, shelter workers, and police). Continuous training and program refinements can address a wide range of issues. Some reforms may entail financial resources, such as updating technology, but others will require no cost or even result in savings to the agency (e.g., partnerships with victim service organizations). Promoting greater understanding among all stakeholders within the local justice system of the purpose and value of GPS for DV programs may ultimately spearhead community efforts to develop a coordinated response to domestic violence, with GPS for DV programs being integrated into it.