Enhancing Supervision and Support for Released Prisoners: A Documentation and Evaluation of the Community Supervision Mapping System

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ACKNOWLEDGMENTS

ACRONYMS AND ABBREVIATIONS

CSMS   Community Supervision Mapping System

RIDOC   Rhode Island Department of Corrections

PPD   Providence Police Department

ProvPlan   The Providence Plan

MOU   Memorandum of Understanding

NIJ   National Institute of Justice

Rails   Ruby on Rails

RIDCYF   Rhode Island Department of Children, Youth, and Families

RMN   Reentry Mapping Network

UI   Urban Institute

EXECUTIVE SUMMARY

Mapping has become increasingly employed in the field of criminal justice. Compared to the more traditional types of justice mapping, such as crime prevention and detection, spatially viewing returning prisoners and the reentry services or resources in their communities is a more recent development. This final report introduces the Community Supervision Mapping System (CSMS), an online tool that enables users to map the formerly incarcerated and others on probation, along with related data such as service provider locations and police districts.

CSMS was developed and piloted in Rhode Island in 2008, and was intentionally designed to be a user-friendly, low-cost software package that is easy to replicate in other jurisdictions. This report documents the development process, implementation with a variety of users, and process and initial outcome evaluation of CSMS. Results from the evaluation indicate that the most popular search features on CSMS include a probationer's name, a specific city, the general radius around a landmark (including schools, addresses, or services), an individual's Department of Correction ID number, and probation officer caseload numbers. Probation officers use CSMS more often than reentry, law enforcement, or other users, and tend to use a wider variety of features for a more extensive range of purposes.

In pre- and post-implementation survey waves, evaluators found that respondents (representing probation officers across the state) generally believe CSMS's benefits far outweigh potential negative factors. In addition, those who use CSMS more frequently perceive more direct (and more advantageous) impacts than infrequent users, and also reported being more likely to recommend CSMS to their colleagues. Although perceptions of positive impacts are strong, other expected outcomes (such as increased officer-client contact or more

frequent home visits) were not statistically significantly different between frequent and infrequent users.

Focus group interviews with law enforcement and probation officers provided additional insight to the benefits of CSMS and offered a qualitative understanding of the challenges and concerns some users face. Overall, the evaluation findings are positive and suggest that while CSMS may not yet have affected work routines and client relations, users perceive numerous early benefits to using CSMS in a variety of criminal justice professions.

Finally, this report synthesized lessons learned through the development, implementation, and evaluation strategies. The results of this synthesis offer guidance to jurisdictions seeking to adopt a geographically informed approach to prisoner reentry.

INTRODUCTION

This report explores the development, implementation, and effectiveness of the Community Supervision Mapping System (CSMS), an online tool that enables users to map location of the formerly incarcerated and others on probation.[1] CSMS also captures related data, such as service providers, school locations, and police districts. It can incorporate reentry data from multiple sources. Authorized users can search and organize the data in various ways, and produce maps, tables, and reports based on user specifications.

CSMS is designed to improve the ability of community supervision officers, law enforcement agents, and social service providers to supervise and support returning prisoners. In addition to the increased accuracy of basic information (such as clients' addresses), CSMS has readily accessible service information, contact information for an individual's probation officer, and other planning information (such as directions or auto-filled home visit forms). By replacing printed service manuals and paper maps, CSMS can facilitate a dynamic geographic approach to community supervision and prisoner reentry.

CSMS was developed, implemented, and evaluated in the state of Rhode Island between 2007 and 2010. The Providence Plan (ProvPlan), a local community-based nonprofit organization, designed and implemented the application with support from the Rhode Island Department of Corrections (RIDOC) and other local agencies. The project was evaluated by the Urban Institute (UI), a national policy research organization based in Washington, D.C. All funding was provided by the National Institute of Justice under its Geospatial Technology grant program.

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[1] In Rhode Island, the study site for this project, probation is the most common form of supervision. For the purposes of this report, both probation and parole will be generally referred to as "probation."

While CSMS was designed around the data and context of Rhode Island, the goal of the project was to develop an application that could be easily replicated in other jurisdictions. As such, CSMS was built using open-source software, which greatly reduces the cost of implementing this type of system. CSMS was also designed to be user-friendly to appeal to a wide variety of practitioners. The development and implementation processes were extensively documented by the evaluation team. This report and detailed technical materials, including development instructions and software code,[2] are intended to provide necessary information to jurisdictions interested in adapting a similar resource.

The current report documents a two-year process, from the initial design and development of CSMS to the state-wide implementation of this application in Rhode Island. First, we provide an overview of the theoretical framework and project background. Next, we discuss the development of CSMS, including the relevant data sources and data sharing processes, initial design, and changes to CSMS over time. We follow that section with a description of the implementation experiences, with a specific focus on the foundation for implementation, collaboration among partnering agencies, and the continuous process of engaging stakeholders, agencies and users. Then we examine a variety of evaluation findings, including who uses CSMS and why; trends of use over time; frequency of use; the most commonly used features; and user perceptions of CSMS. Finally, we assess the challenges and potential for expansion and replication of CSMS in other localities.

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[2] The development instructions and software code will be available in a separate document to be released later in 2010.

CONCEPT AND THEORETICAL FRAMEWORK

The central goal of CSMS is to create a geospatial tool that maps people on probation for use by community supervision officers, law enforcement agents, social service providers, and others who supervise and support criminal justice populations. This section reviews the concept behind the application and the theoretical framework that informs the project. The section begins with a description of previous efforts to map prisoner reentry and other justice topics and how they influenced the current project. This is followed by an overview of the tool itself and how it operates, as well as a discussion of its potential applications and theoretical impact on the agencies that use it.

History of Reentry and Justice Mapping

CSMS builds on previous efforts to use geospatial technology and approaches to understand prisoner reentry at the local level. Over a decade ago, Eric Cadora and his Justice Mapping Center began mapping patterns of incarceration and related issues such as poverty, crime, and public service use across neighborhoods and cities.[3] Expanding on this approach and other efforts to map justice topics, the Urban Institute (UI) launched the Reentry Mapping Network (RMN) in 2002. The Network eventually comprised community-based organizations in fourteen jurisdictions, including ProvPlan, which analyzed and mapped reentry data to inform local policy and practice.[4] The work of the RMN sites, the Justice Mapping Center, and other reentry mapping projects influenced policy in jurisdictions across the country, from the repeal of offender voter disenfranchisement laws to the reallocation of resources from corrections to

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[3] Information and materials on the Justice Mapping Center are available online at http://www.justicemapping.org.

[4] Information and materials on the RMN are available online at http://www.reentrymapping.org.

reentry support services.[5] The map in **Figure 1** was created by ProvPlan in 2002 to highlight the disproportionate neighborhood impact of RI laws that prevented

people on probation from voting (the laws have since been overturned). It was extremely valuable in helping politicians, activists, and the public understand the issue, and represents some of ProvPlan's earliest justice mapping work. The current CSMS project is an effort to move beyond static, macro-level maps like this one to create a new generation of mapping applications that are useful in the day-to-day work of practitioners.

Despite these successes, prior reentry mapping efforts have typically been limited to static analyses conducted at the neighborhood or city level. Though efforts are often made to

Figure 1. Percentage of Residents Age 18 and Over Who Are Unable to Vote Due to a Prior Felony Conviction, by Neighborhood in Providence, RI, 2002

incorporate the needs and perspectives of the community, ultimately the maps and analyses are produced by professional mapmakers and then handed off as fixed products to policymakers and other stakeholders. While such an approach is valuable for examining trends and macro-level data to inform decision-making, it is not as helpful for understanding individual cases or guiding the daily work of practitioners. These prior reentry mapping efforts have therefore generated an

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[5] See http://www.opendoorsri.org/righttovote for information on a successful campaign to repeal voter disenfranchisement in Rhode Island. The campaign relied heavily on reentry maps created by ProvPlan as part of the RMN that highlighted the disproportionate impact of the existing laws (see Figure 1). For an example of the use of reentry mapping to inform resource allocation, see The Council of State Government's Justice Reinvestment Initiative online at http://www.justicereinvestment.org/.

increased interest in expanding the technological applications and making them accessible to a broader user base, particularly practitioners.

Community supervision agencies, reentry service providers, and other practitioners who work closely with returning prisoners have been somewhat slow to adopt geospatial technology and incorporate it into their work, in part due to the lack of user-friendly software applications tailored to their needs. Some multi-agency criminal justice data systems with mapping components have incorporated community supervision data, but most are complex, proprietary systems focused primarily on law enforcement.[6] Indeed, law enforcement is the area of the criminal justice world that has embraced mapping to the greatest degree. Law enforcement agencies use mapping to identify crime hotspots, examine crime patterns and trends, distribute police resources effectively, and aid investigation.[7] For many law enforcement agencies, real-time, user-driven mapping is now the centerpiece of a strategic, data-guided approach to crime prevention and response.

The degree to which mapping has permeated the daily work of law enforcement officers and supervisors demonstrates that mapping serves as a powerful tool for law enforcement practitioners. CSMS seeks to extend utilization of mapping to community supervision officers, reentry case managers, and others who support and/or supervise returning prisoners. The purpose of CSMS is to facilitate a geographic approach to community supervision and reentry by enabling practitioners to examine reentry data spatially and dynamically. These geographic advances have the potential to increase efficiency, improve communication among law enforcement and probation officers, and strengthen the connection between probationers and their probation officers—whether

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[6] Examples include San Diego's Automated Regional Justice Information System (ARJIS) and the Community Mapping, Planning and Analysis for Safety Strategies program (COMPASS) in Seattle, Milwaukee, and East River Valley, California (La Vigne and Wartell 2001; *Crime Mapping News* 2002).

[7] Weisburd and Lum 2005; Chainey and Ratcliffe 2005.

through more accurate or available information (i.e., a referral to a service agency) or more contact (such as more frequent home visits). To date, no published work exists describing other reentry mapping applications that provide real-time data in a format tailored for practitioners.

Overview of CSMS

CSMS offers a new way of organizing, managing, and analyzing prisoner reentry and related data through user-friendly search functions and user-driven maps and tables. The primary function is to map a probationer or set of probationers, along with data on each individual. The data come from the RIDOC and are updated automatically each night. The data points available for each probationer include current address, personal characteristics (name, gender, race, date of birth), criminal history (DOC identification number, offense history, prison release date), and probation case information (supervision status,

Figure 2. Probationer Search Function

This screenshot shows CSMS's tool for filtering the probationer data based on probationer characteristics.

People Services Address Layers Advanced

Last Name	
First Name	
Gender	(any)
Race	(any)
City	
Street	
Caseload	
DOC ID	
Offense	
Offense Type	(all)
PO Last Name	
Supervision Status	(any or none)
Released in Last	(anytime)

Filter   Reset

caseload number, probation officer, probation officer contact information, probation start and end dates). In addition, photos are available for more than half of the probationers.[8] The data can be searched or filtered based on location (distance from a specified address) and/or certain probationer characteristics

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[8] Photos are only available for individuals who were formerly incarcerated in any of Rhode Island's Adult Correctional Institutions (ACI). In addition to those in ACI, CSMS also contains basic information for those with minor infractions or who received bail from a local jail.

available in the dataset (**Figure 2**). For example, users can narrow their search to female probationers with robbery convictions released in the last month and living within one mile of a particular address.

Mapping Landmarks

Users can map the location of service providers, police districts, and schools (the latter are available mainly for ensuring compliance with sex offender residency restrictions). To display police districts or schools, users check a box next to the desired map layer. The service provider data, on the other hand, is queried based on the type of services provided and/or the location of the provider (distance from a specified address). The service provider dataset includes not only each agency's name and address, but its phone number, web address (when available), and a description of the organization and services it offers.

Figure 3. Service Provider Search
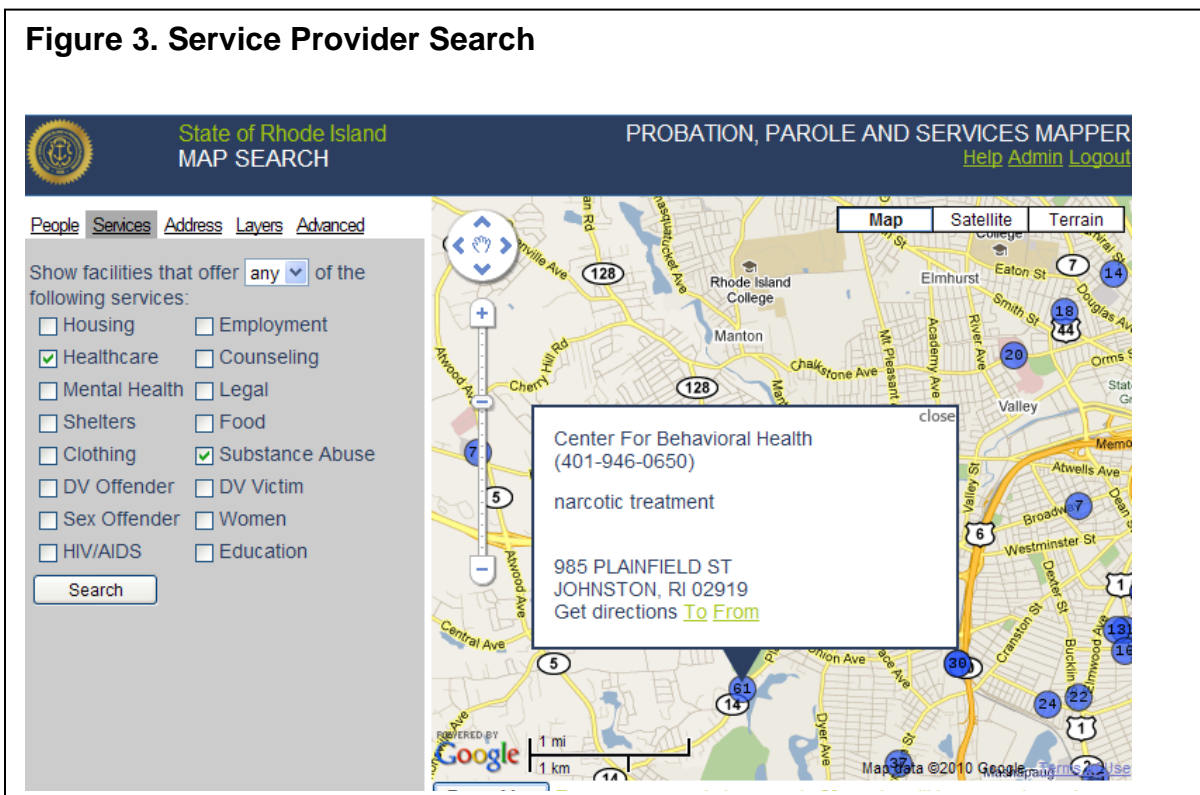
Mapping Probationers

After a user queries the probationer and/or service provider data, the application displays a map with points representing the probationers (as green squares) and/or service providers (as blue circles) selected by the search (**Figure 4** below).

Figure 4. Map Results

This screenshot shows the map produced by a search, with probationers as green squares and service providers as blue circles. The Google Maps format and functions can be seen in the map.
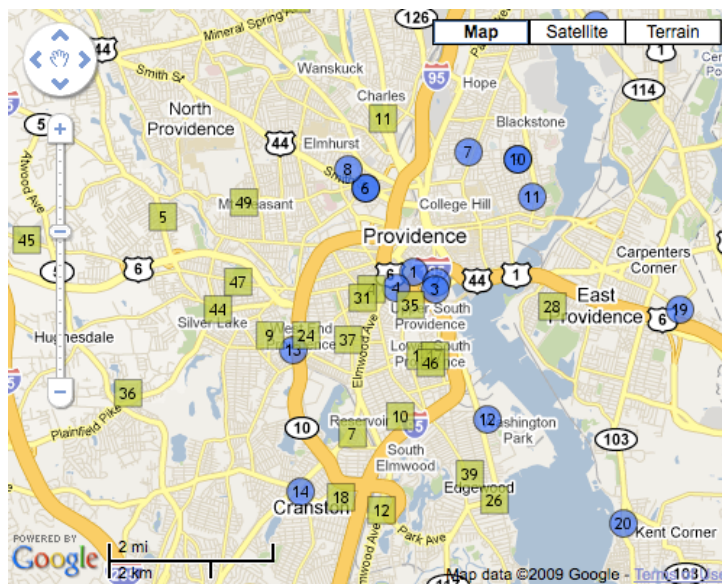
While all selected service providers are shown, only fifty probationers are displayed at a time in order to keep the map from becoming cluttered. Users can roll over any point on the map to see a pop-up box with more information about the probationer or service provider the point represents. With one click, users can get directions to or from a probationer's address or a service provider location. The map also displays any police district or school layers that have been selected. The application uses Google Maps as its geographic base, thus allowing users to zoom in and out, pan across the area, and display satellite

imagery just as in the Google Maps application.[9] Below the map is a table with key data points on the probationers or service providers included in the search, with each entity identified by a number identical to the corresponding point marking its location on the map (**Figure 5**).[10]

Figure 5. Map Results

Below is a full screenshot from the demo version of CSMS, with results from a search for male probationers in Providence convicted of drug possession offenses. There are three main sections of the screen: the search tool on the left, the map showing probationer locations on the right, and the table of probationer data at bottom.

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[9] Google has made its mapping program and the related spatial data available for integration into external (non-Google) web sites free of charge. Readers unfamiliar with Google Maps can explore the program's capabilities online at http://maps.google.com.
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[10] To protect probationers' privacy, the names and other data shown here are fictitious, and are not related to real RI probationer data. Instead, all of the names in the demonstration version of CSMS are generated to be phonetically recognizable as names, while the addresses are completely randomized within the state of RI.

If a user has searched for both probationers and service providers, he or she can toggle back and forth between the tables for each set of data by clicking on different tabs. Additionally, the information displayed in the user-generated list easily connects to information on the map. For example, **Figure 6** below displays the map on the top and the list of service facilities on the bottom. By clicking on the "1" next to Vocational Rehabilitation (which then becomes highlighted in yellow), the map zooms to the specified location and the pop-up box of information appears.

Figure 6. Service Provider Results
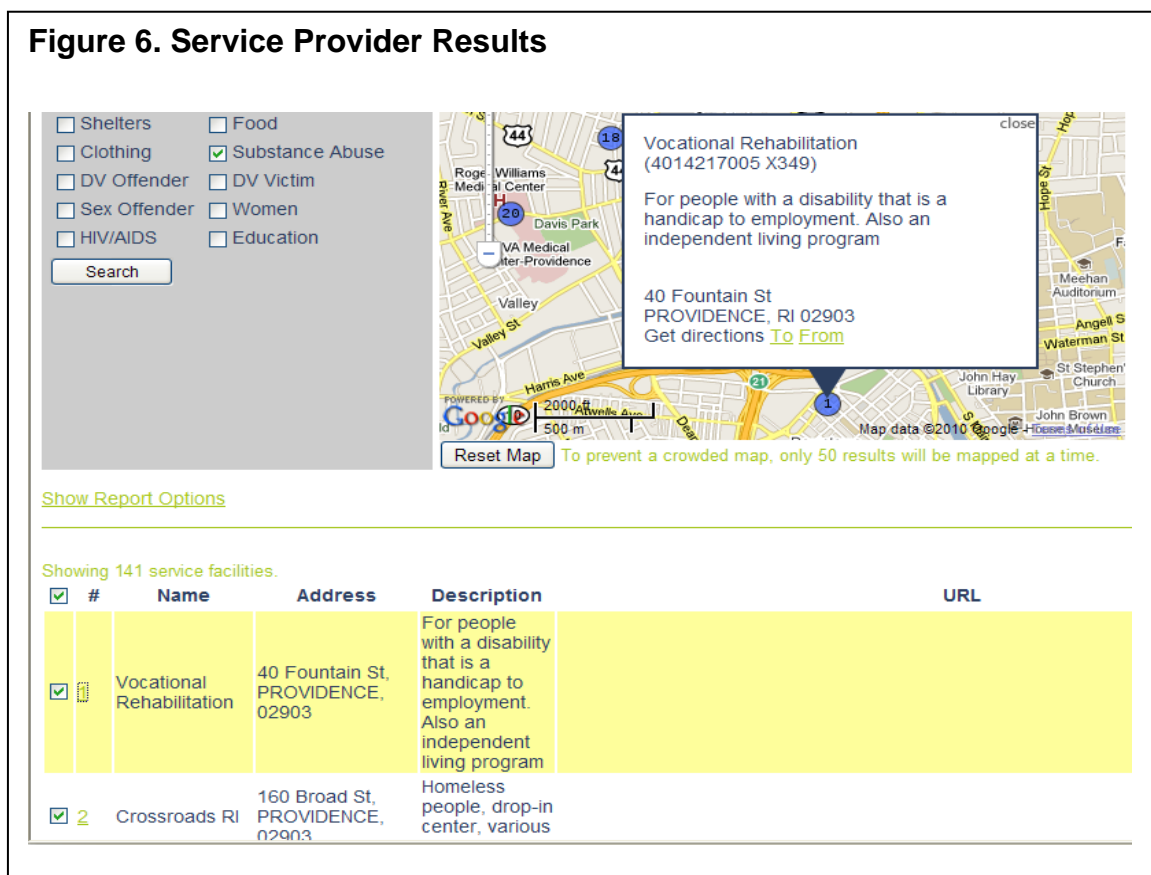
Probationers without a matching address are highlighted in red in the table, but because they lack an address, are not included in the map. Users can sort the table along any of the included data points or export results into another application, such as a spreadsheet or PDF file.

With the probationer data, users can click on a point on the map or an entry in the table and a page with more detailed information on the selected individual will open. In addition to a number of personal characteristics (including marital status, number of children, education level, religion, and employment status) and information on the individual's probation case, the page lists a full RI offense/indictment history for the individual. There is also an address history section that lists previous addresses and when they were in use and provides the option for users to flag the current address as inaccurate or add a new address. At the bottom of the page is a section with user comments on the individual, which can be added and viewed by all users.

General Trends and Aggregate Information

While CSMS is designed primarily for case management, it can also be used to explore overall trends in the probation data. A hotspot mapping function allows users to visualize concentrations of large groups of probationers. Users can also generate crosstab tables that show the total number of probationers (or those recently released) with a given type of offense, by municipality or by caseload number/probation officer. In addition, because CSMS allows data tables to be exported into other programs, users can conduct analyses that are not available within the application itself. For example, a probation officer could export data on the people in his caseload into a spreadsheet and analyze the breakdown of offenses among his client population.

Security and Privacy

Security mechanisms are in place to protect the confidentiality of personal probationer data and prevent abuse of the application. CSMS is available over the Internet from any computer but is password-protected, with each user assigned a unique log-in name and password. All users must review and consent to a user agreement governing access to and use of CSMS before logging into the system. While individuals' use of CSMS is not monitored in real time, ProvPlan maintains a complete log of every action taken by users, which can be reviewed if improper use is suspected, or access history is needed.

Potential Applications

CSMS has a variety of potential applications for a range of users (see **Table 1** below).

Table 1. Potential Applications of CSMS

Probationer support and supervision

Understand clients' neighborhood/community environments and local resources and risks.

Identify and provide referrals to service providers located in clients' neighborhoods.

Provide clients with maps and directions to probation offices, service providers, etc.

Determine compliance with geographic restrictions on where clients can live or work.

Case management

Understand caseloads geographically and plan home visits and other community activities based on where clients live.

Prepare for home visits with maps, directions, and home visit forms.

Discover service providers, police stations, and other organizations located near clients with which to cultivate closer relationships.

Identify and communicate with clients' probation officers.

Law enforcement applications

Exploring who is in the system to remain updated on returning individuals in the community.

To coordinate with other jurisdictions or an individual's probation officer.

Agency management

Create district and caseload boundaries that more evenly distribute workloads.

Assign cases geographically, allowing officers to focus on specific neighborhoods/communities.

Policymaking

Allocate resources (supervision offices, service providers, funds) based on neighborhood need.

Understand personal characteristics and offense histories of the returning prisoner population.

Probationer Support and Supervision

With its versatility and user-friendly design, CSMS has a number of potential uses for community supervision officers, reentry case managers, and their supervisors, as well as agency leaders and policymakers. CSMS can help supervision officers and case managers better support and supervise their clients, potentially improving client outcomes. CSMS provides a geographic overview of a client's neighborhood/community environment, with its risks (crime hotspots, gang territories, etc.) and resources (service providers, transportation lines, etc.). A probation officer can identify the services available in a client's immediate area and make connections and referrals to agencies close to where

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the client lives. He or she can provide the client with walking, driving, or public transportation directions to reach a service provider or probation office. Probation and police officers can also determine whether a probationer is in compliance with residency restrictions such as restraining orders against domestic violence offenders or restrictions on sex offenders living near schools (CSMS includes school locations as well as 300- and 533-foot buffers around each school; see **Figure 7** below).

Case Management

Probation officers and case managers can use CSMS to better organize and manage their workload, improving efficiency and reducing stress. CSMS provides a spatial overview of an officer's caseload, allowing him or her to conceptualize the cases geographically. The officer may take advantage of geographic clustering of clients to plan home visits or other community activities more efficiently, seeing multiple clients in one area on the same day. The application offers maps and directions to be used in planning visits. CSMS can also generate home visit forms for a user-defined set of probationers, with key information such as name, address, offense history, and photo auto-filled on each form. In addition to using CSMS to plan home visits, an officer can examine where clients live in relation to social service providers and police districts to identify providers and law enforcement with whom he or she may want to cultivate closer relationships.

Figure 7. School Buffer Zones and Police Districts
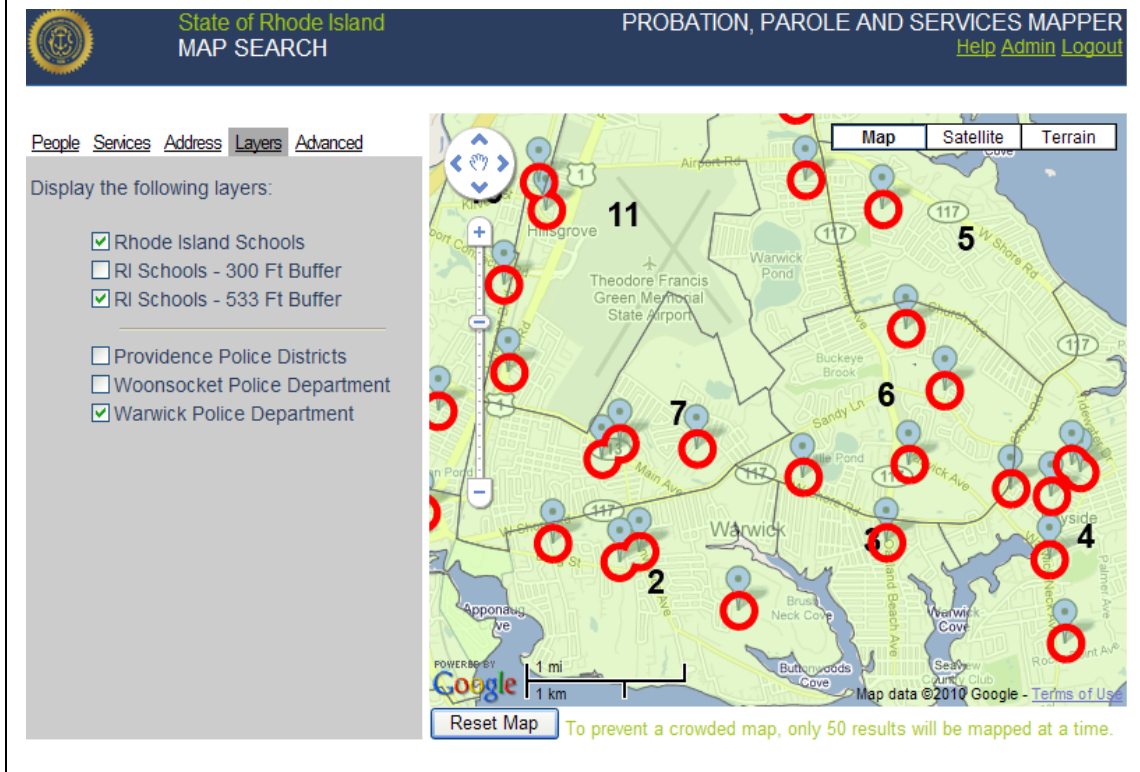
Law Enforcement Applications

Law enforcement can also remain updated by exploring who is new in the system or using information from CSMS (such as names and photos) to coordinate with other jurisdictions and track down clients who are violating probation restrictions (by crossing state lines, for example). CSMS can facilitate communication between supervision officer, case manager, and law enforcement users by including contact information (name, phone, and e-mail address) for each individual's probation officer. If a police officer is concerned about a probationer, for example, she can locate the person in the application and click a link to e-mail his probation officer.

Agency Management

CSMS can help inform decision-making by agency management, improving overall agency efficiency and functioning. The boundaries for community

supervision and reentry case management districts can be revised to mirror the geographic distribution of released prisoners and allocate workloads more evenly across districts. Cases can be assigned based on geographic proximity, allowing officers to focus their efforts on specific neighborhoods and communities rather than spreading their work across entire cities or regions.

Policymaking

The application also provides valuable data for decision makers and policymakers at community supervision agencies, other criminal justice agencies, local government, and the nonprofit sector. The distribution of returning prisoners can help inform the allocation of reentry resources. Funds and special programs can be targeted to the areas that need them most, and reentry service providers and probation offices can be located close to the largest concentrations of returning prisoners. Data on returning prisoners can help organizations understand more about their clients' characteristics, offense histories, residential mobility patterns, and other aspects of their needs and experiences.

Summary

CSMS was designed to offer a variety of applications for a range of users, from line staff to management to policymakers. While the reported actual uses of CSMS in Rhode Island are described later in the evaluation section, most of the applications described above are possible within the current version of the tool. Some of the suggested uses above might require additional data (such as probationers' work addresses) or functionality (e.g., to redistribute officers' caseloads geographically within the system) which could be incorporated based on a given jurisdiction's objectives. The basic concept behind CSMS—to organize prisoner reentry information geographically—can be adapted to yield a number of promising applications, all of which are rooted in a spatial understanding of reentry data.

CSMS PROJECT BACKGROUND

This section presents an overview of the local context from which CSMS developed and outlines the project's design and structure. The intent is to provide important background information on the project before discussing implementation and evaluation results in detail in the three sections that follow.

Local Context

ProvPlan has been collecting, analyzing, and mapping important community data from across the state of Rhode Island for a number of years, on topics from poverty and public health to crime and other justice issues. They aim to take raw data and make it useful and accessible to policymakers and the public in the form of presentations, reports, and interactive online applications. ProvPlan became involved in analyzing and mapping prisoner reentry in 2002 as part of UI's Reentry Mapping Network (RMN). ProvPlan's work grew to be part of a larger community conversation about prisoner reentry that raised awareness on the topic and increased efforts to address the challenges of reentry. In 2004, Governor Donald Carcieri established a Steering Committee on Prisoner Reentry to coordinate the state's efforts on the issue.

Among the many positive developments that came out of the RMN work was the strengthening of relationships between ProvPlan and local agencies working with returning prisoners, particularly the RI Department of Corrections (RIDOC). In 2005, the RIDOC contracted with ProvPlan under the Prison Rape Elimination Act (PREA). ProvPlan created a series of static maps for all urban communities in Rhode Island that displayed released prisoners by offense type (either violent or drug) and local services appropriate for these populations. ProvPlan produced multiple large format maps and PowerPoint screen shots (available as online resources) that interested parties could easily add to presentations.[11]

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[11] http://local.provplan.org/reentry/Providence.html

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Rhode Island has a uniquely centralized correctional system, in part due to the state's small size and population. The RIDOC is responsible for all individuals under correctional supervision in the state, from pretrial detainees (who in most other jurisdictions would be housed in county jails) to individuals sentenced to incarceration to those on probation. This means that the RIDOC manages the state's correctional facilities as well as its community supervision agencies. Since ninety percent of people exiting incarceration in RI are on probation, the RIDOC is supervising the vast majority of the state's returning prisoners. As of early 2010, there were approximately 24,000 people recorded in CSMS.[12] Given the broad scope of the RIDOC's activities, managing individuals from the pre-trial phase through post-release, and its singular nature as the only corrections and community supervision agency in the state, the partnership between ProvPlan and RIDOC presents a unique opportunity for enhanced evidence-based decision making.

Another important player in the local reentry landscape is OpenDoors (formerly the Rhode Island Family Life Center), a Providence-based organization that is one of the state's major providers of reentry services. OpenDoors is contracted by the RIDOC to provide discharge planning in prison and case management for individuals in the period immediately after release. In addition to case management, they offer employment and housing services, life skills programs, service referrals, and a walk-in resource center. OpenDoors also conducts policy research and advocacy on issues that affect returning prisoners, and was a close collaborator with ProvPlan on its reentry mapping work for the RMN. Although their involvement in the early phases of the current project was

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[12] The data uploaded into CSMS excludes three categories of probationers: those with open probation/parole cases but who are currently incarcerated, those without any address information, and individuals who have been deported. Therefore, although official RIDOC statistics estimated there are approximately 27,000 persons on probation or parole as of January 1st, 2010 (RIDOC 2010) and BJS statistics reported a similar figure (Glaze and Bonzcar 2008), three thousand offenders are not included in CSMS.
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limited, the organization's staff members received training and began using the tool in mid-2009.

Local law enforcement agencies, particularly the Providence Police Department (PPD), West Warwick Police Department, and Warwick Police Department, served as another important group of partners for the project. All three departments provided initial suggestions for features[13] on CSMS, and then were fairly hands-off for the rest of the process. ProvPlan already had a strong relationship with the PPD, having worked with them for a number of years on crime mapping and other research projects. In addition, the PPD has been engaged in local efforts to address prisoner reentry for some time, with the strong support of Colonel Dean Esserman. One aspect of this engagement is that the PPD and the RIDOC have been working to build relationships between police and probation officers. Another is the involvement of the PPD and other RI police departments in this project.

CSMS Project Development and Design

The idea for CSMS grew out of ProvPlan's previous reentry mapping efforts, the conversations and exchange of ideas that took place as part of the RMN, and ProvPlan's many existing relationships with organizations working on reentry issues in the state, all of which were discussed above. ProvPlan sought UI as a natural partner to advise on the project and evaluate the effectiveness of CSMS, given its nationally recognized expertise on the topic of prisoner reentry and experience with spatial analysis and local-level data-sharing projects. ProvPlan and UI previously worked together through the RMN and the UI-led National Neighborhood Indicators Partnership, a network of thirty-two organizations from across the country developing neighborhood information systems to inform local policymaking and community development.[14] While UI had no involvement in the

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[13] As an example, police departments pushed for the inclusion of release by date for probationers in the system; as a result, the development team added that feature.

[14] http://www2.urban.org/nnip/

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development of CSMS, UI research staff played an active role as an evaluation partner to guide refinements of the system based on early feedback from users; to document its implementation; and to evaluate its ease of use, effectiveness, and impact.

In 2006, ProvPlan and UI developed and submitted a proposal for "Using Open-Source Software to Enhance Post-Release Supervision Systems" to the National Institute of Justice, and received funding under the agency's Geospatial Technology grant program. Specifically, ProvPlan and UI proposed to create a user-friendly online application for various practitioners. The objectives were to enhance knowledge and information and to improve service delivery for probationers by improving efficiency, effectiveness, and collaboration in the short-term (including improved case management, more efficient planning and scheduling, and better communication) and improving support and supervision in the long-term (e.g., restructuring officer assignments for a more strategic approach or fully implementing a community-based model).[15] The project began in the fall of 2007, with ProvPlan managing CSMS's development and implementation in close partnership with the RIDOC and other local agencies. UI provided project support and conducted an evaluation documenting the development and implementation processes and analyzing immediate outcomes. In addition to developing and piloting a tool, a main purpose of this project was also to garner lessons for other jurisdictions interested in developing similar applications.

CSMS was designed and developed by ProvPlan staff and a software programmer hired specifically for the project. Development began in November 2007, a pilot version of the application was launched in May 2008, and the full version was launched in July 2008. Throughout the development process, feedback and guidance were provided by a local advisory group composed of probation officers, probation supervisors, police officers, and reentry service

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[15] See Appendix A for a logic model.

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providers. Feedback was also provided by a national advisory group of individuals with interest and expertise in justice mapping, representing nonprofits and criminal justice agencies from across the country. After CSMS was launched, the development team continued to make revisions and expand the application's functionality in response to user feedback. Overall, the development of the tool was an ongoing, iterative process that incorporated extensive input from users.

RIDOC probation officers, supervisors, and administrative staff were the first group of users to receive access to CSMS. ProvPlan and RIDOC worked closely to develop training materials and conduct training sessions with the officers prior to launching CSMS. In addition, "Superusers" from each probation office were identified[16] to serve as a resource for their colleagues with questions about CSMS and to encourage use of CSMS in their offices. Over time, CSMS was opened to new sets of users, including police officers across the state and reentry case managers at OpenDoors. Though many of these users did not receive the formal training that the probation officers did, ProvPlan conducted demonstrations for each agency or office explaining CSMS and its key features. Just as development of CSMS was an iterative process that extended over a long period of time, implementation of CSMS was ongoing, with new sets of users added throughout the life of the project. ProvPlan continually conducted outreach, presentations, and refresher trainings to engage potential new users and encourage utilization among existing users.

While ProvPlan and its partners managed the development and implementation of CSMS, UI documented the process and evaluated the immediate impacts of the project. UI researchers were in ongoing communication with ProvPlan staff throughout the project in order to track development and implementation activities. At different points in time, the evaluation team

conducted interviews with members of the project team from ProvPlan and RIDOC and with leaders from agencies using the tool to obtain their perspectives on the implementation process and project outcomes. UI conducted focus groups with probation officers and police officers regarding their opinions on the tool, how they use it, and its impact on their work, as well as their perspectives on the training they received and other implementation issues. For a more quantitative understanding of these topics, UI surveyed RIDOC probation officers before and after implementation of the tool. In addition, data detailing user activity was extracted and analyzed to understand who is using the tool and how they are using it. Although UI's evaluation does not address long-term impacts of CSMS on recidivism or crime rates, the array of qualitative and quantitative evaluation activities provides a valuable picture of the implementation process and CSMS's immediate impact on the work of probation officers and other users.

DEVELOPMENT

The development team for this project consisted of three primary people who spent a significant amount of time programming in the beginning, and took a larger role in outreach and troubleshooting during the implementation phase of the project. This section reflects the documented development process for CSMS, including the timeline, data sources and software used, data management, and other relevant aspects of software development and implementation.

Development Timeline

Primary technical development of the application took place over approximately eighteen months. The initial goal was to launch a preliminary site as quickly as possible so the local development workgroup could preview the application.

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[16] The selection process for all Superusers was a combination of those willing to take on this role, those who were enthusiastic about promoting the tool, and those who had the technical knowledge and ability to assist others.

Within two months of the project start date, a web site using static data was presented to the workgroup. Based on feedback and suggestions, the development team added new features and fixed bugs in the system. The next six months were spent improving the process of automatic data feeds and fleshing out needed functionality in preparation for initial site launch in July 2008. This included designing additional page types and reporting options, implementing the services database, creating a demonstration site, and developing help and tutorial materials.

Software

Since there was a commitment to using open source software, the web framework Ruby on Rails (Rails) was paired with MySQL for the back-end database (where all of the data is maintained). Google Maps was also incorporated for the map display. Although Rails is a relatively new program (established in 2004), Rails has a very robust, highly modular and flexible framework that greatly reduces the amount of redundant code the programmer has to write. This promotes "agile development," a process where initial applications can be built very rapidly and changed easily over time in response to user feedback.

As the most widely used open source database, MySQL was initially chosen because it is a popular and compatible program to use with Rails. For example, one anticipated advantage of MySQL was that a set of tools (or spatial extensions) was designed for Rails and MySQL to aid in the implementation of mapping functionality. Unfortunately, the spatial query ability was very limited, and the configuration was unable to perform a spatial selection on the true shape of a polygon (i.e. a police district), instead only allowing for rectangular query boundaries.

The development team decided that MySQL was inadequate for the project and migrated the database back-end to PostgreSQL, a less commonly

used but extremely robust open source database. PostgreSQL, along with a spatial database layer PostGIS, proved to be a better alternative for this project. In addition to other technical advantages (see CSMS Online Technical Documentation, forthcoming), this led to an increase in accuracy and reliability. The transfer of data to the new system took less than two weeks.

Data Sources

CSMS uses two data sources: the RI Department of Corrections INFACTS database and a services database developed by ProvPlan.[17] The INFACTS database is part of the larger RIDOC database system and contains data for every individual on probation. This includes personal identifiers (such as height, weight, and demographics), photographs, address history, and the most recent criminal offense. The ProvPlan services database contains basic information on service providers. This is categorized by service type and only includes organizations that cater to the reentry and probation population.

The development team worked closely with RIDOC's Planning & Research staff and a contracted RIDOC programmer to develop the initial structure of CSMS's database based on a subset of INFACTS data. ProvPlan then developed a series of queries that continually produced six update tables on a nightly basis. Through an automated process, these tables were transferred from RIDOC to a secure area where they were processed and updated by CSMS.

The services database is maintained in CSMS through an edit screen. This screen, which ProvPlan updates continuously, contains the organization name, address, phone number, web site, brief description, and service

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[17] As briefly mentioned in a prior section, ProvPlan developed the service database for a mapping project with RIDOC in 2005, where returning prisoners were mapped by offense type to target services related to their needs. See http://local.provplan.org/reentry/Providence.html for more information about this project.

categories. When ProvPlan updates or adds an address to the system, latitude and longitude coordinates are automatically geo-coded.

Data Management and Quality Control

With the exception of address history, data are managed entirely by RIDOC within the INFACTS database. CSMS simply reflects what is in that database, with any corrections or updates maintained by RIDOC. A client's address history is recorded for user convenience. If an address does not correctly geocode, the application allows a user to make minor edits to the address record. However, any subsequent address updates in the INFACTS database will override the edited record.

Regarding data quality, address records are the biggest issue. Challenges with addresses fall into two categories: poor data entry and "noise" in the address that causes geocoding failure. Data entry problems are typical and include misspelled streets, missing address numbers, and use of common place names instead of valid addresses. Address noise consists mostly of unit numbers and place names within the primary address fields that Google and other web-based geocoders are not always able to handle. CSMS also includes a "Bad Address" report in the administrative section of the site, which provides RIDOC with a list of all addresses that did not successfully geocode. In response to these problems, the development team has worked with RIDOC to create data entry guidelines. In addition to standardizing data entry, these guidelines encourage clerical staff to place unit numbers and other nonstandard address data into the secondary address field (instead of the first address field). The development team reported that these efforts have been successful, with a large reduction in the number of unmappable records.

Look and Feel

The appearance of CSMS was another main consideration during the development stage of the project since having a user-friendly tool was a primary goal. The approach to site look and feel followed two main guidelines:

1. The site must have as much query and display functionality as possible built into the main screen, dictating minimal use of additional pages.

2. Site layout must be very simple and easily modified through changes in style sheet and graphics files.

Initial design of site layout and database schema was done through in-house brainstorming sessions with the development workgroup. The resulting simple pencil & paper sketches along with INFACTS database extracts were then transferred to our programmer. A series of refinements resulted in the final product (as displayed with screenshots throughout the report).

One key compromise the development team made was limiting the number of individuals displayed on the map to fifty at one time. This was due primarily to icon size - while it was necessary to number each query match so users could compare the mapped results to the data reported in tabular form, the icon size restricts the amount of individuals or services that can be clearly displayed on the map. When a query produces over fifty results, the user is able to scroll through all of the results by using links located to the top left of the list.

After running a query, a user is able to export results through the Show Report Options link just below the filter. A dropdown screen allows for a variety of options within a manageable display, as illustrated in **Figure 8** below. After a user finalizes which data fields to export, a standard PDF formats the results.

Figure 8. Reporting Option Screen

Large Map   Tabular List   Crosstabs   Forms
This report allows you to cross-tab using various criteria.
Format: ⊙ HTML ○ CSV (Generate Crosstab)

Crosstab Type: [Municipality by Offense Type   ⇕]

States to Include (comma separated) [RI]

Query Types

As discussed earlier in the overview section, CSMS contains a variety of query
filter fields and spatial applications. The query filters are all cumulative, which
was intended to narrow search results for the user. For example, a user could
limit the search by an offense type (such as Breaking & Entering) AND release
date (within the last month) AND within a half-mile of a particular address (the
center of a pattern of burglaries).

FIGURE 9. Query Examples

The address radius search also carries over to the services database.
Therefore, a user can enter a probationer's home or work address and search for

appropriate services within a selected radius. Basic service information is accessed through the list report below the map or on the map itself through a popup bubble as shown in **Figure 10**. The user can also use the standard Google directions function to create map and verbal directions for car, transit, and walking.

Figure 10. Address Radius Search for Individuals
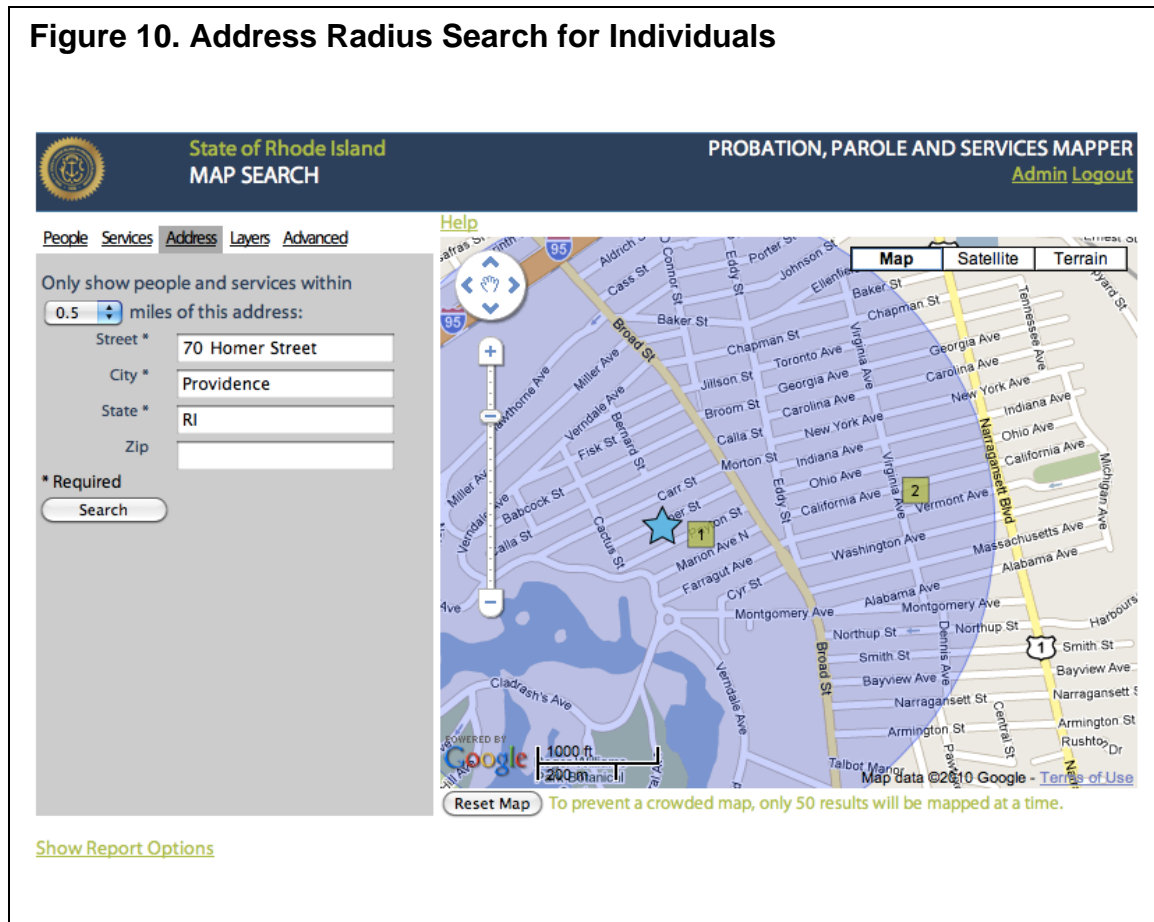
In addition, the radius search can be used to locate specific services in the area. For example, **Figure 11** below shows services related to substance abuse within a half mile radius. The reported information directly under the map provides the name address of the center, a brief description of the services offered there, and a web site link to the center's home page, when available.

FIGURE 11. Address Radius Search for Services

Iterative Development

Since it was important for the development team to launch CSMS as quickly as possible to allow users to begin testing the system, most of the recommended changes were made in the early stages of the project. After the site was launched, users continued to provide useful feedback on bugs and suggestions on additional functionality. Users provided feedback at demonstration sessions, through follow-up phone calls, and via e-mail. The development team kept a running list of bugs and suggestions in a ticket-tracking system. This system for

organizing feedback, called Unfuddle (unfuddle.com), proved invaluable during the development process and increased efficiency.

Information on bug fixes and new or improved features was shared through "E-news Blasts" generated through the administrative interface. E-news Blasts are sent to all users in CSMS's system. In addition to updates and news items these also contain links to the main application, help section, and contact information for the development team. These newsletters served as a reminder for inactive users and were an effective tool for stimulating use.

Data Sharing, Privacy, and Access Control

Although ProvPlan had a history of sharing data with RIDOC, a new data sharing agreement was executed for this project. It was based on a standard template specifying distribution restrictions and specifications of shared datasets. CSMS itself facilitates raw data sharing through spreadsheet export. While there is some vulnerability with this, it is governed through Terms of Use (See **Appendix B**).

Access to CSMS is controlled through individual password-protected accounts and a highly secure server environment. Each user account also contains an e-mail address to facilitate communication through E-news Blasts, which also allows the development team to identify the user agency. Users are reminded on the login page that the application is to be used only for law enforcement purposes and that by logging in they agree to the Terms of Use set forth in the user agreement (a separate PDF document linked from that page). The agreement is based on the one used for agencies accessing WINFACTS, a web version of the INFACTS database.

Summary

In general, the development process was highly iterative. Although the development team had a working application up and running very quickly and

received critical feedback early on, the most valuable input came after the live data feeds went online and users had confidence that they were accessing up-to-date data. One important technical lesson learned was that MySQL is an inappropriate database backend for applications requiring true spatial query ability. PostgreSQL with PostGIS is a much better solution. And although Ruby on Rails is a very robust web application framework, we would have been better served to develop in Django/GeoDjango because of its superior geographic function support. For more specific information related to the technical aspects of the development process, refer to CSMS Online Technical Documentation (2010).

IMPLEMENTATION

After several months of development and testing, ProvPlan launched CSMS with RIDOC probation officers in the summer of 2008. Over the ensuing year and a half, CSMS users expanded to include additional RIDOC staff, law enforcement agencies, reentry service providers, and a handful of other organizations. As of February 2010, 616 individuals had access to CSMS, including 141 RIDOC probation officers, discharge planners, and other staff, and 401 users from local, state, and federal law enforcement agencies.

The section below documents the CSMS implementation process, from the piloting phase involving ten users to all RIDOC probation staff, police departments across the state, and the inclusion of reentry planners from the RIDOC and OpenDoors. This section covers the development and strengthening of relationships between partner agencies early in the project, the process of training and launching CSMS with each group of users, and ongoing activities to support and engage users throughout the life of the project. The information in this section was gathered primarily through interviews and focus groups with those involved in the project.

Building a Foundation for Implementation

Well-established relationships existed between ProvPlan, RIDOC, PPD, and other partner agencies before the project began, and RIDOC and PPD leadership expressed support for the endeavor from its earliest stages. Prior to launching CSMS, the ProvPlan project team worked to solidify its partnerships and engage other individuals at the partner agencies, from top leaders to the line staff who would eventually be users of the application. The history of these partner relationships before and during the project is discussed below.

History of Collaboration among Partner Agencies

ProvPlan had strong relationships with both RIDOC and PPD prior to this project. Beginning in the early 2000s, ProvPlan established informal partnerships through reentry and crime mapping projects. Trust and rapport among partners increased as formal data-sharing agreements were established in 2003 (PPD) and 2008 (RIDOC), granting ProvPlan access to these data. The RIDOC Director, the PPD Chief, and a key RIDOC staff member in the Planning and Research Division (who would eventually serve as the liaison for part of the CSMS project) had all been involved in these earlier projects, providing points of continuity between past efforts and the current project. The idea for the CSMS project developed in part out of conversations among these individuals as a natural extension of the static reentry mapping ProvPlan was already conducting.

Another important asset for the project was the well-established relationship between the RIDOC and the PPD. The RIDOC Director and PPD Chief have both been actively engaged since the early 2000s in local efforts to address prisoner reentry and, according to interviews, view themselves as partners on the issue. Line staff members at the respective agencies have a history of working together to supervise and support people on probation, and although probation staff attends every PPD staff meeting, these collaborations have generally not been formalized. The state of Rhode Island has a criminal justice system that is small in scope and unusually unified, with a single correctional and community supervision agency (the RIDOC) and one major city

with a large police force (the PPD). Due to the relatively unique structure of the state's criminal justice system and the partnerships already in place before the project, building relationships among key partner agencies was an easier task than it might be in other jurisdictions.

Engagement of Partner Agencies in Early Phases of the Project

As ProvPlan developed the idea for the CSMS project in collaboration with UI, RIDOC, and others, it became clear that the RIDOC Director and PPD Chief were strong supporters of the concept. The individual who eventually became the RIDOC's liaison for the project was actively involved in developing the vision for CSMS that was laid out in the initial proposal and contributed valuable information on RIDOC operations and data systems. Before the proposal was submitted to NIJ, a Memorandum of Understanding (MOU) was signed by ProvPlan, RIDOC, PPD, the RI Family Life Center (now known as OpenDoors), and the RI Department of Children, Youth, and Families (RIDCYF).[18] The MOU solidified the commitment of these agencies to the project and outlined principles of the partnership, decision-making structures, and the responsibilities of each partner. A copy of the MOU is included as **Appendix C**.

The project formally began upon receipt of NIJ funding in October 2007, and one of ProvPlan's first tasks was to hold a kickoff meeting with key project partners to develop concrete plans for moving the project forward. Planning and development of CSMS took place for nearly ten months before the application's launch in July 2008. During this time, the RIDOC project liaison, a probation officer, and other staff from RIDOC's Planning and Research Division worked closely with the ProvPlan development team, providing ideas and feedback on the application and information about RIDOC operations and data systems. In the early phases of the project, the RIDOC liaison met with the ProvPlan team

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[18] Although RIDCYF was originally envisioned as a partnering agency for this project, the development team realized that confidentiality issues and culture around data sharing—especially since their population is juveniles—were difficult obstacles to overcome, and RIDCYF never became actively involved.

weekly. Although this became less frequent over time (biweekly and eventually monthly), e-mails and phone calls were a main source of communication throughout the entire process.

The RIDOC project liaison, who worked in the agency's Planning and Research Division, had official support from agency leadership to devote time to the project and had the authority to make official decisions on the CSMS project. In interviews conducted as part of UI's project evaluation, members of the ProvPlan development team stated that having a designated project liaison at the RIDOC, particularly one with knowledge of computer programming and data systems, was critical to keep the project moving forward quickly. The original liaison left the RIDOC (and therefore the project) in October 2008, which the ProvPlan team viewed as a significant loss. A probation supervisor who had been a champion of the CSMS from the beginning took over as the new RIDOC liaison in October 2009 and eventually became an integral part of the project team, much as the old liaison had been. Specifically, the development team reported that this new liaison had the authority and the influence to promote CSMS to probation staff. Importantly, this probation supervisor became an active part of the project team as the focus was shifting from the development phase to the implementation phase, which the development team described as extremely advantageous. In other words, the first liaison was excellent for the role because he knew the data well; the second liaison was well suited for the position because she knew how to use (and promote the use of) CSMS.

ProvPlan also involved the RIDOC and other partner agencies in CSMS's development by convening a small workgroup representing target user populations to provide feedback on the development process. The group, composed of the original RIDOC liaison, a probation officer, a reentry services director, and a lieutenant from a police department, met three times to review mockups and early versions of the application and provide feedback on design,

functionality, usability, and data management.[19] The purpose of engaging this workgroup in the development process was to include eventual users in the creation of a quality, user-friendly product while also making users feel invested in the project in the early stages.

Implementation with RIDOC Probation Officers

The primary target audience for CSMS was probation officers, although discharge planners, police, reentry case managers, and others also used the application. RIDOC probation officers were the first to be given access to CSMS; the application was opened to a small pilot group in May 2008 and then rolled out to all probation officers in the state at the end of July.[20] As of February 2010, 109 RIDOC probation staff members were registered CSMS users, and all but 14 logged into the system at some point between the piloting of CSMS until the end of December 2009. The process of implementing the application with probation staff is discussed in detail below, from the systems in place prior to CSMS to the piloting and launch of the application, and, finally, ongoing user support activities.

Background on RIDOC's Probation Division

The RIDOC handles the state's institutional and community corrections systems, including probation, parole, and home confinement. According to official RIDOC statistics, by the beginning of 2010 there were ten probation offices in the state,[21] seventy-five probation officers, nine supervisors (two of which were Acting Supervisors) and over a dozen administrative staff in the probation division. RI probation officers with generic caseloads typically have around 200 clients; those with domestic violence caseloads have an average of 86 clients; and those with

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[19] The development team did not conduct formal usability testing of the CSMS.

[20] CSMS was made available to RIDOC discharge planners in July 2009; their involvement in the project is discussed later in the report.

[21] Providence District, Providence Superior, Providence County at Urban League, Kent County, Parole-Pinel Building in Cranston, Cranston Regional in Bernadette Building in Cranston, Pawtucket Regional, Washington/South County Regional, Woonsocket/Northern RI, and Newport County.

sex offender caseloads have an average of 53 clients (RIDOC, 2010). Prior to
CSMS, officers used other RIDOC databases, such as INFACTS (for DOC
personnel) and WINFACTS (for law enforcement) to access and manage data on
probation clients. While these two systems contain similar information as CSMS
(since the mapping application extracts some of its data from these systems),
INFACTS and WINFACTS have an individual-level focus. These systems also do
not have an emphasis on mapping or spatial capabilities, and were not
specifically designed with a user-friendly emphasis.

Changes and updates to the probationer data must be made in
WINFACTS before they become visible in the CSMS. Probation officers can now
use both the CSMS and WINFACTS systems, depending on their needs and
preferences. Although some officers used free internet mapping programs in the
past (such as Google Maps or MapQuest) to organize home visits, find the
location of service providers, or conduct other tasks, the RIDOC did not
previously offer any mapping applications to its probation officers.

Piloting CSMS

ProvPlan first implemented CSMS in May 2008 with a group of ten probation
officers from Providence Superior Court.[22] This pilot phase lasted three months
and provided ProvPlan with a chance to test out the application with actual users
while continuing to work out problems, add functions, and otherwise tweak the
program. Officers were selected to participate in the pilot group based on location
and willingness. The RIDOC liaison led a hands-on, informal training session for
these officers in a computer lab. ProvPlan also created written training materials:
a one-page tip sheet and a step-by-step tutorial that included screen-shots and
sample searches.

The pilot group provided much of their feedback on CSMS during the
initial training session, although they continued to ask questions and offer

comments informally over the rest of the pilot period. In general, the RIDOC liaison served as their point of contact and channeled their feedback to the ProvPlan development team. Unfortunately, the project team later realized that these officers may not have been the ideal group to test the application, as they are some of the busiest officers in the system with the largest caseloads. During interviews conducted as part of UI's evaluation, project team members emphasized the importance for other jurisdictions who pilot the application with a small group to select users who have the time and interest to use it extensively.

Full Launch with Probation Staff

Roll-out of CSMS to RIDOC probation staff occurred at the end of July 2008, when the application was introduced to probation officers, supervisors, clerical staff, and planning and research staff (a total of approximately 75 individuals who were initially trained). Before the launch, the RIDOC's project liaison worked to lay important groundwork within the agency, such as ensuring that all probation officers had internet access and identifying "Superusers" in each office to provide peer support (the role of the Superuser is discussed in greater detail below).

All RIDOC probation staff participated in a formal training session in the week before the launch. Six training sessions were conducted by the RIDOC project liaison and ProvPlan project staff in the main RIDOC campus computer lab in Cranston. Approximately ten to fifteen people attended each session and the sessions typically lasted one and half hours. The RIDOC liaison developed the introductory presentation and a walkthrough of the web site and the ProvPlan project leader created the tutorials for the training sessions. Each session began with a presentation describing the project, the concept behind CSMS, and its potential applications. The RIDOC liaison then did a live demonstration of the application showcasing a series of sample searches and activities. After approximately forty-five minutes of presentation and demonstration, the participants were provided with their login information and given thirty to forty-five

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[22] This location was selected because it was a busy office where CSMS could arguably provide

minutes to play with the application while the RIDOC liaison and a ProvPlan staff member were on hand to answer questions and provide guidance.[23] The training session closed with an opportunity for the participants to offer feedback on CSMS and ask any remaining questions.

During focus groups UI conducted with probation officers as part of the project evaluation, participants reported that the training was valuable. Some mentioned that having a chance to use the application immediately after the training was important, and that simply playing around with it was the best way to learn how to use it. Many participants would have liked to have short refresher trainings in the months following the initial training. These events, participants suggested, would provide the opportunity to remind people how to use the application, demonstrate new features, reengage infrequent users, and answer questions. Although ProvPlan staff did refresher demonstrations for several probation offices in 2009, there were no formal trainings or demonstrations in the months immediately following the initial launch in summer 2008.

Limitations in the RIDOC's technical infrastructure hindered the project at certain points. In the fall of 2008, only a few months after the launch of the application, one of the busiest probation offices in Providence was without internet services for three months, making CSMS mostly inaccessible to the location's thirteen probation officers. More generally, probation officers across the state often have very old computers, which can slow down performance and thereby discourage people from using CSMS. Over the course of the project, ProvPlan worked to streamline data processes and make other adaptations so that the application could function well even on systems with old hardware and/or software.

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utility.
[23] In an interview conducted as part of UI's evaluation, the RIDOC liaison recommended not providing participants with their user logins until after the training presentation and demonstration

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Another technology issue raised by probation officers during the focus groups is that they do not have RIDOC-issued laptops or electronic devices (such as Blackberries), so they can use CSMS in the office but not generally in the field or during home visits.[24] On the other hand, as an internet-based program, CSMS is the only data system that probation officers have access to outside the office.

Supporting and Engaging Users after the Launch

Members of the project team did a number of things in the months after the launch to provide support and encouragement to users. A multi-tiered user support system consisted of in-office support from peer "Superusers," guidance from the RIDOC project liaison, and the option of contacting ProvPlan staff directly with questions or concerns. Detailed written documentation was also available, and in 2009, ProvPlan began sending out an e-newsletter to users. ProvPlan also conducted refresher trainings at the request of some probation offices to remind users of the application, review how it works, and highlight new functions.

The frontline of the user support system consists of "Superusers" drawn from the probation staff, including probation officers, supervisors, and clerical staff. Each probation office and every police department has one Superuser. These Superusers received special training on resolving common issues and how to trouble shoot application-related questions in September 2008. Therefore, although all types of users have direct contact with ProvPlan staff when needed, individuals can approach their Superuser with general questions about how to use CSMS or technical issues, such as forgetting their password. Probation officers report that colleagues who are not Superusers also help one another with

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were completed, because once participants received their logins they were eager to begin using the application and paid less attention to the presenters.
[24] The exception is a handful of users who accessed CSMS from their personal BlackBerry or iPhone devices for home visit sweeps. This type of use is further discussed in the Evaluation section.

CSMS through an informal system of peer support, and create interest in CSMS by showing off functionality to colleagues who may not be using the application.

The second level of user support comes from the RIDOC project liaison. The liaison established his position as a key contact for users by being the primary presenter at the initial training sessions and sending new users an e-mail immediately after the trainings. The liaison fields a large number of questions and feedback from the probation users and he (later she) channels user opinions and information about problems with CSMS to the ProvPlan team. Users were also encouraged to contact ProvPlan directly if they had technical issues or could not get an answer from their office Superuser. A number of the probation officer and police users who participated in UI's focus groups reported contacting ProvPlan with questions or problems. Almost all who did found the ProvPlan project team to be very responsive to their issues (sometimes fixing problems within a day of being notified). ProvPlan continued to tweak and further develop CSMS after the initial launch and some of the new features it added, such as photos of the probationers, were a direct response to user suggestions.

Early in the project, ProvPlan created a detailed written tutorial outlining CSMS's functions and providing step-by-step examples of how to use the program, complete with screenshots and sample maps. This was supplemented with a one-page tips sheet describing six key functions of the application and a later tutorial on exporting data from CSMS. These were all available through links in E-news Blasts and through the Help section on CSMS's main page. The project team found it useful to have written materials they could distribute to people who had not received formal training but wanted to use the application. However, many of the probation and police officers who participated in UI's focus groups were not aware of these resources or had never used them.

In January 2009, ProvPlan began sending out e-mail newsletters to users providing updates on CSMS, notifying them of new features, and soliciting

recommendations for improvement. These E-news Blasts also served to remind infrequent users about the application and provided links to the site and tutorial as well as instructions for obtaining a new password. Seven E-news Blasts were sent out in 2009 and ProvPlan project staff reported that they often receive questions or suggestions in response to the e-mails, including responses from individuals who had not previously been using the application and those requesting a new password. In focus groups, probation and police officers generally reported finding the E-news Blasts useful. Some participants said that these reminder messages had prodded them to use CSMS more and recall some of its features; some expressed that more E-news Blasts would encourage them to use the system more in the future.

In early 2009, approximately six months after CSMS launched, ProvPlan began conducting refresher presentations at select probation offices to remind users about CSMS, provide a review of how to use it, and highlight new features that were added since the initial training. These presentations were initiated by the requests of probation administrators and scheduled by RIDOC as part of staff meetings. These informal sessions were conducted by the ProvPlan project leader in half hour, live demonstration overviews. In total, five probation offices received refresher trainings, covering about sixty probation officers. In early 2010, an administrator in the probation department indicated that incorporating mapping training into the new employee orientation would be beneficial (although with no recent hires, this had not been implemented yet).

Implementation with Law Enforcement

Law enforcement was always envisioned as a main user of CSMS, but their enthusiasm for the project and widespread use of the application was much greater than the project team initially expected. CSMS was rolled out to local, state, and federal law enforcement agencies one at a time on an ongoing basis.

As of February 2010, 27 of the state's 42 police departments[25] were using the application, along with two university police departments, two federal law enforcement agencies,[26] and the RI State Police. The process for rolling out CSMS to law enforcement agencies, their use of the application, and mechanisms for user support are all discussed below.

Gradual Launch with Law Enforcement Agencies

In late September 2008, after CSMS had been up and running with probation staff for two months, the ProvPlan project leader and the RIDOC Director made a presentation on the project at a RI Police Chiefs Association Meeting. According to the ProvPlan project leader, the response from the police chiefs was overwhelmingly positive. Over the next three months and at the request of the departments, ProvPlan demonstrated the application to staff at eight police departments, including the PPD and the RI State Police. These presentations took the form of informal demonstrations, rather than the formal training sessions that were provided to probation officers. As with probation officers, police in the UI focus groups reported that one of the best ways to learn the program was to simply play around with the features.

In 2009 and 2010, ProvPlan continued to conduct presentations at police departments around the state. While Police Chiefs were often the ones who would reach out to ProvPlan, word of mouth led to line staff also contacting ProvPlan about CSMS. In some cases, ProvPlan partnered with RIDOC probation staff to roll out CSMS to police, sending out probation Superusers to do the demonstrations. In addition, the new RIDOC project liaison worked closely with police and set up some of the sessions. The development team reported that having Superusers train these new users provided a valuable perspective

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[25] 37 are municipal; the remaining departments include university, environmental and airport departments.

[26] The two federal agencies with access to CSMS as of February 2010 are the U.S. Marshals Service and the U.S. Bureau of Alcohol, Tobacco, Firearms, and Explosives. Only one user in each agency has access to the application; while it is unclear how much they use it, it is more likely a reference source than anything else.

during the demonstrations and increased collaborations among agencies. By June 2009, nineteen law enforcement agencies had received demonstrations, and by February 2010, 32 agencies were on board. ProvPlan's eventual goal is to provide these informal demonstrations to every police department in the state.

Law Enforcement Use of CSMS

Each law enforcement agency determines how its employees use CSMS and who among its staff members has access to the application. Some agencies have opened up the application to rank-and-file patrol officers while others have restricted it to detectives. Typically, five or six officers in a department are granted access and most are detectives. Among the 27 municipal police departments using CSMS, 17 (63 percent) have less than 10 registered users, 7 (26 percent) have between 10 and 19 users, and 3 (11 percent) have over 20 users.

Like all CSMS users, participating law enforcement users have access to the online tutorials, receive the project's e-newsletters, and are encouraged to contact ProvPlan with any questions or suggestions they may have. Users may receive access before they receive training. While the police agencies do have "Superusers" to provide peer support, this process is not as organized or established as the probation officers' Superusers. However, many police departments have project champions or experts who encourage and facilitate their colleagues' use of the application.

Implementation with Reentry Planners and Other Users

The use of CSMS extends beyond probation and law enforcement to other groups involved in prisoner reentry, most notably the discharge planners from the RIDOC and reentry case managers from the Providence-based nonprofit OpenDoors. The RIDOC discharge planners and OpenDoors staff became involved later in the project, and as of this writing, their use of the application was still developing. Nonetheless, a brief review of CSMS implementation with these and other users is provided below.

Implementation with RIDOC Discharge Planners

The RIDOC has a staff of discharge planners who work with people in prison to plan for their release. These discharge planners began using CSMS in July 2009 and, as of Spring 2010, 29 users had access to the application. Their training consisted of a demonstration at their regular meeting. Most use it primarily as a quick source of information while some use the services database component.

Implementation with OpenDoors Staff

In addition to its own discharge planners, the RIDOC contracts with local nonprofit OpenDoors to provide discharge planning in its men's minimum security prison facility. RIDOC also contracts with OpenDoors to provide case management for people exiting prison. This process differs based on the agency; individuals are selectively given an appointment with OpenDoors shortly after their release, based on their level of need and types of services needed. The agency's outreach workers are required to track these individuals for at least 60 days.[27] In addition to case management, OpenDoors also offers employment and housing services, life skills programs, service referrals, and a walk-in resource center for returning prisoners, and this organization conducts police research and advocacy on issues that affect this population.

OpenDoors staff did not begin using the application until mid/late-2009, and is the only agency without a Superuser. This may be explained by the fact that prior to CSMS, the agency's staff did not use any mapping applications. They had some access to the RIDOC's inmate database, but according to management staff at OpenDoors, they found it difficult to use. Staff received an informal presentation on the application in December 2009 and all new users received the introductory e-mails and access to tutorials.

Usage at the agency has been slow to pick up. As of fall 2009, the agency's staff was primarily using CSMS to obtain data on their clients,

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[27] Although OpenDoors provides case management for former prisoners, they do not conduct home visits.

particularly contact information so their outreach workers could track clients after release. According to interviews conducted with OpenDoors managers as part of UI's evaluation, CSMS data is more accurate than the information they relied on in the past, which came from the clients themselves. The application could also help staff make contact with probation officers when they cannot locate a client, although interviewees noted that the e-mail link on CSMS has not yet been utilized much. In general, although one of CSMS's main components is the ability to quickly access service information, this feature does not appear to be especially useful to the reentry organization. Instead, they described the most exciting component of CSMS as providing access to certain information that was not readily accessible before (such as updated client addresses).

Implementation with Other Users

Other users that have access to CSMS include legal agencies, such as the State Attorney General's Office and public defenders' offices, and nonprofit organizations, such as health and mental health organizations that frequently serve returning prisoners. Because these agencies are not the primary intended users of CSMS, the project has not attempted to evaluate how the application was implemented with these agencies or how they use it.

EVALUATION FINDINGS

Two primary objectives of CSMS are to enhance knowledge and information and to improve service delivery for probationers. Thus, UI and ProvPlan hypothesized improved efficiency, greater effectiveness, and more collaboration in the short-term (including improved case management, more efficient planning and scheduling, and better communication) and improved support and supervision in the long-term (e.g., restructuring officer assignments for a more strategic approach; fully implementing a community-based model; etc.). To assess the effectiveness of CSMS, UI researchers made use of a variety of data sources in analyzing the development process, implementation process, and initial

outcomes of CSMS. CSMS automatically stores usage data from all logins, which provided a basic understanding of how the analytic tool was utilized. Evaluators analyzed data produced in Google Analytics,[28] which automatically calculates certain elements, such as the amount of time spent on the site; the type of device used to access CSMS; and trends over time. Evaluators also obtained data through a survey of probation officers, the primary users of CSMS. Finally, the evaluation team held focus groups with users of CSMS to attain a qualitative perspective on how probation officers and detectives used CSMS, the challenges they perceived, and their suggestions for improvement. This section reports on and interprets these findings.

CSMS Users

Throughout the course of this project, CSMS was constantly undergoing changes. Along with the development of new features and program abilities, the number of users increased on an ongoing basis. The first users introduced to CSMS consisted of a pilot group of 10 probation officers, which eventually grew to 111 probation officers, supervisors, and aids. CSMS was introduced to the Rhode Island Police Chief's Association and the first wave of police departments in September 2008, and rapidly spread to police departments around the state. By the end of 2009, 399 police officers, detectives, and supervisors were registered users.

In addition, 51 people were categorized as "legal" users, or employees at the Rhode Island Office of the Attorney General.[29] The final group to join CSMS represented reentry organizations and discharge planners for RIDOC), with 44 reentry users registered by the end of 2009. There was also one user from the Department of Children, Youth and Families who did not fall into any of the above categories; this user did not log into CSMS during the study period. By the end of

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[28] Google Analytics automatically retrieves and calculates information for a designated web site, allowing for a variety of analyses. See http://www.google.com/analytics/ for more information.

2009, a total of 606 CSMS users were in the system, although 222 of these users were inactive (never logged in) between June 1, 2008 and December 31, 2009.

CSMS Visits and Patterns of Use

Between May 1, 2008 and December 31, 2009, users made 6,769 visits[30] (log-ins) to the Providence Plan mapping tool web site. Users spent an average of 7 minutes on the site per visit and viewed 11.1 pages on average per day (with almost 51,700 pages viewed over the 19-month evaluation period). Although most users had work schedules during typical business hours, some also logged in occasionally on weekends and major holidays.

Out of 40 cities using CSMS in Rhode Island, the majority of visits (79 percent, n=5,335) came from users in three cities: Cranston, Providence, and Warwick. Twenty-five visits to the CSMS web site were made on mobile devices during the evaluation period. BlackBerries were the most common mobile device employed, although iPhones and other electronic devices were sometimes used. Comparing interview notes (with a supervisor in West Warwick) with the dates these devices were used, roughly half of these mobile visits corresponded with the same dates that team "sweeps" occurred (when a team of 3-4 probation officers coordinated to visit hundreds of probationers' homes within a few hours).

The data provided through Google Analytics also helped to construct a timeline to explain fluctuations in CSMS usage. The first probation officers (10 people) were trained on May 9, 2008, and three days later, CSMS was introduced to Superior Court probation officers in Providence. However, users did not begin logging into the site until the last few days in May. Use was relatively low in June 2008, with May and June usage combined consisting of 137 logins. The first spike in mapping use was July 23, when training for a large group

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[29] Although included in the analyses below, legal users were late adopters and infrequent users. The evaluation team never held interviews or focus groups with these users, and with the exception of quantitative data generated from the system, it is unclear how or why they used it.

(around 75 probation officers and clerical staff) began. The trend in use remained fairly steady throughout the training week, then slowly declined to about half the frequency of use throughout September. With the exception of an increase during the last week of October, users maintained a fairly steady use of CSMS for the remainder of the year. Use declined around Thanksgiving, Christmas, and New Year's, and was consistently lower on weekend days.

User logs reveal a second peak in use on January 27, 2009, with 57 visits that day alone (the same number as the July spike). This was the day after ProvPlan launched the first E-news Blast to users. The E-news Blast was designed to remind users of CSMS, provide new information and updates to users, and offer to reset or resend passwords. Although there were "refresher" meetings for probation officers in February and March to provide demonstrations of CSMS, this did not appear to affect the usage rate, which remained relatively stable until early June. On June 2nd the rate rose to 53 visits. This remained steady for several days, with 51 visits on the 3rd, 47 visits on the 4th, and 70 visits on June 5th. One possible explanation for increased use in early June is that a third refresher training took place on May 22nd. This session was dedicated to "Superusers," specific individuals who were identified (and agreed) to advocate for the new technology and troubleshoot problems for users in their department. Although the frequency rate decreased slightly from mid-June until early December, the average monthly rate of use was higher than earlier in the year. The highest peak throughout the entire timeframe analyzed occurred on December 7, 2009, with 81 visits to the site on that date, which corresponds with the introduction and demonstration of CSMS to a police department. December 16th also had a high rate of use (71 visits), and the rest of the year returned to the high average rate that existed before the December spikes.

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[30] A little over 500 of these visits were from outside of the state of Rhode Island. This is likely due to CSMS users who live in a neighboring state or accessed the system on travel or leave.

Viewing usage on a daily basis over the 20 month period revealed a fluctuation based mostly on weekends, but an overview of usage on a monthly basis showed a fairly stable pattern of use through May 2009, and then a shift in use and general increase throughout the rest of the year. In general, training or demonstrations for new users, reminding users of CSMS through E-news Blasts, and times of the week or year when users are at work are all related to increased use of CSMS. See **Figure 12** below for a visual of this timeline.

Figure 12. Logins per Month, All Users
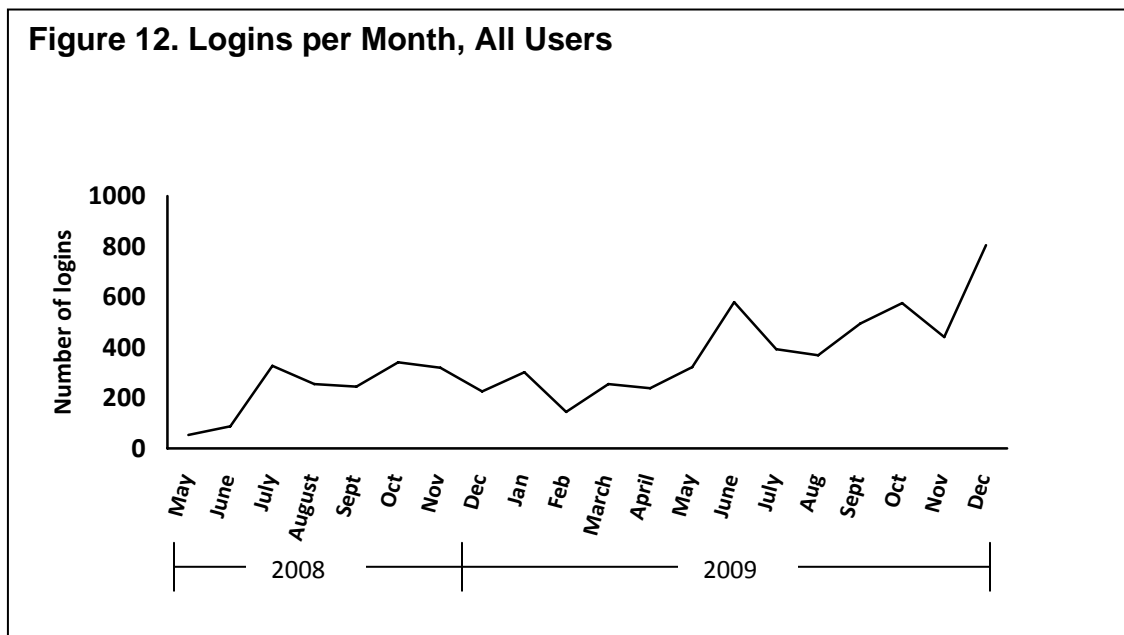
While the overall trend shows a general increase, as described throughout this section, different types of users were introduced to CSMS and trained at different points. **Figure 13** displays the number of log-ins over time per user type. As demonstrated below, probation officer and legal users appear to have leveled off in use, while law enforcement and reentry users are increasingly using the system.

Figure 13. Logins per Month, by User Type
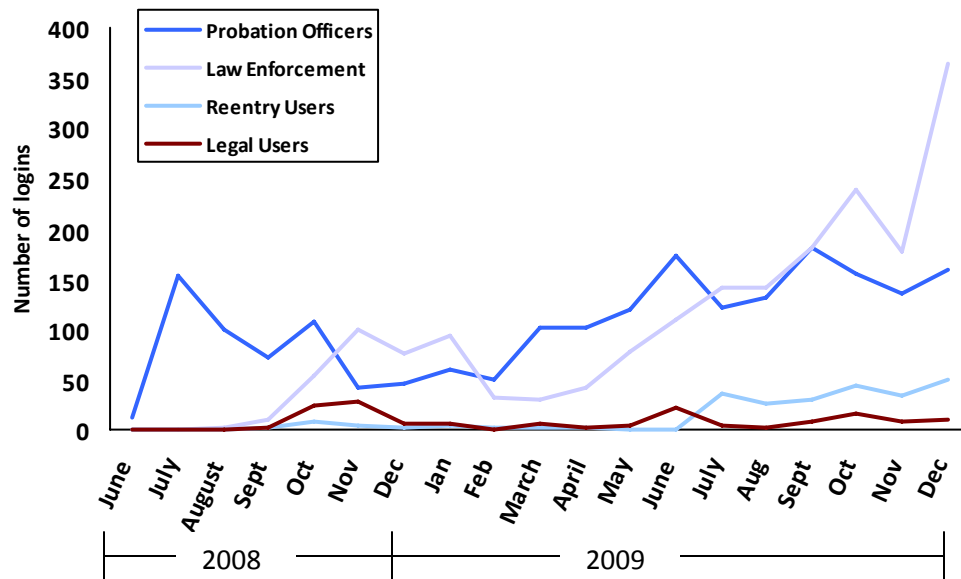
Frequency of Use

As a supplement to general usage patterns, one of the main areas of inquiry for the evaluation team was determining how frequently CSMS users logged into the system and used features. In addition to mapping and other analytic features, CSMS continually compiles administrative data from users. Frequency of use was measured in two ways, and each method was analyzed during the timeframe of June 2008 to December 2009.[31] The first method calculates the total number of days each type of user was on average actively utilizing the system, as shown in **Figure 14** below. Probation officers have a substantially larger number of days on average when compared to the other user groups, and reentry and legal users have very similar averages.[32]

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[31] Although a few users logged into CSMS in May 2008, usage data was not recorded in the CSMS system until June 2008.

[32] Since t-tests are used in a later analysis, the mean (and not the median) is consistently reported throughout the Evaluation section, unless otherwise noted.

Figure 14. Number of Average Log-In Days per Month - Method 1
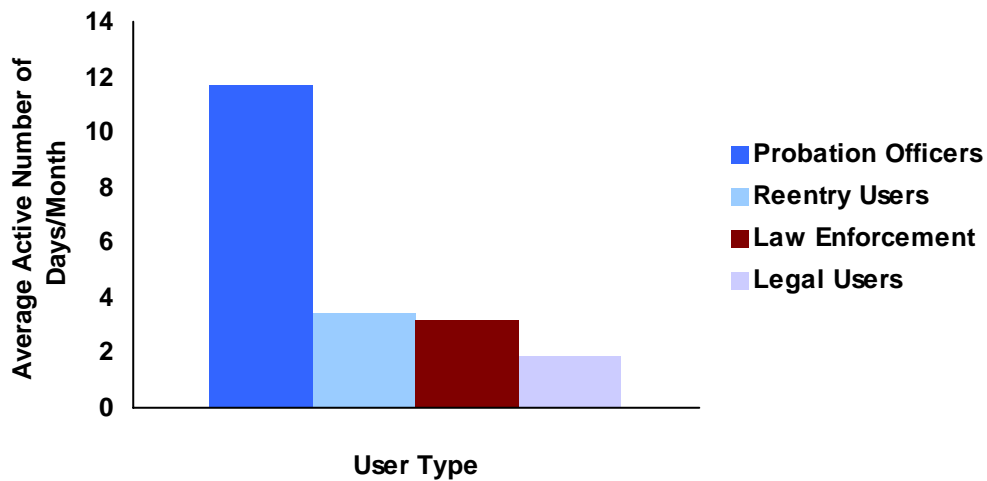
The second method (see **Figure 15** below) considers the total number of actions on CSMS. This includes filters, reports, downloading home visit forms, logins, logouts, and other user initiated actions. Although the measurement is different in the graph below, the pattern looks very similar to that displayed in Figure 14.

Figure 15. Volume of Average CSMS Activity per Month - Method 2
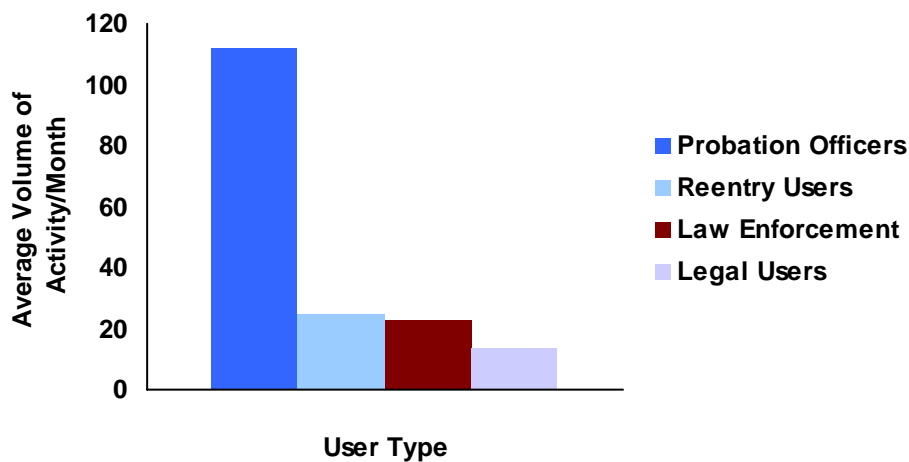
Probationers were the primary intended users of CSMS, which is clearly reflected in these usage data. Across both methods, probation officers are approximately four times more likely to use CSMS than law enforcement users or reentry users and over 6.5 times more likely to use the system than legal users. Although law enforcement users typically appear to have more enthusiasm about CSMS and are able to quickly brainstorm a variety of potential applications, reentry users actually have a slightly higher frequency of use. As expected, legal users are the least active group. These overall patterns of average use are fairly similar across the types of users regardless of the measurement unit employed.

The Top 10 Users

With a sizable amount of CSMS users who rarely or never used the system (which heavily affected the median and mean for analytic purposes), the evaluation team also analyzed the top ten users across all organizations and departments to better understand which type of user utilizes CSMS the most. Evaluators employed the two methods previously described to analyze the frequency of use among the top CSMS users throughout the entire study period: the total number of days the user was actively using the system and the total volume of activity on CSMS.

Active Days

The three highest users were probation officers with 175, 99, and 96 active days respectively. The remaining top ten users in this category include four probation officers, two police detectives, and the program director for a reentry organization. Of these top ten, five were Superusers, or specific users designated within a department or organization to promote the use of CSMS.

Overall Activity

Second, we measured the number of actions initiated (downloading, searching, logging in). The highest user—with 2,522 actions—was the same probation supervisor who had the highest number of log-in days. The second was also a

probation supervisor (941 actions). The third was a police detective with 710. The other top ten users were five probation officers, one police detective, and the program director for a reentry organization. Of these 10 users, four were designated Superusers.

Summary

When comparing the top users for the two methods above, probation departments had the highest number of top users, although law enforcement and reentry users were also represented in the top user category. In general, the number of days a user entered the system and the overall activity on the site produced fairly similar results. In summary, those who use the system tend to use it frequently, with the top users accounting for a large amount of the activity on CSMS. As determined through Google Analytics data, 20 percent of CSMS users only logged in one time throughout the study period (presumably during a training session). About 50 percent of users fell into a middle category, where they logged in between 2 to 14 times. Twenty-three percent of users fell into a wide range – between 15 and 100 log-ins. Finally, the remaining 7 percent of users logged into the system over 100 times.

Most Commonly Used CSMS Features

Three default features in CSMS are always available for searches: a field to order the tabular result list, a radius to map the surrounding area (set at .1 miles by default, which can be altered up to 5 miles), and the state of Rhode Island in the address field. Excluding these default categories, the data automatically generated in CSMS allow for an analysis of which features are the most frequently used. Users report that searching by an individual's last name is the most commonly used feature, with 6,431 uses of this search term during the reporting period. The second most commonly used feature is searching by city (a feature available on the main tab of the application; n= 6,049), followed by a radius search by a particular street and city (both of which are required fields for

an address radius search if users want to use the "address" tab in the application; n= 5,988).

When evaluating user data by the type of user, variations exist in what users view as the most popular features. The top feature used by probation officers is a radius search by a particular street and city (both of which are required fields for an address radius search in the "address" tab; n= 4,027). The second most popular feature among probation officers is a search by city (which does not require a street location) available on the main "people" tab (n= 2,752), and the third most commonly used feature for probation officers is narrowing the search to clients on the user's RIDOC caseload (n= 2,027).

For law enforcement users, the search by city on the main "people" tab is the most commonly used function (n= 2,993). This is followed closely by filtering by a person's last name (n= 2,931) and a radius address and city search terms on the "address tab" (n= 1,806). Reentry discharge planners primarily use the last name feature (n= 406), the assigned RIDOC ID number (n= 341), and services in a

Table 2. Top Mapping Features
Name is the top feature for: - All users combined - Reentry users - Legal users *Radius search* is the top feature for: - Probation Officers *City* is the top feature for: - Law Enforcement
In addition to the above search terms, top features also include a client's *RIDOC Number* (reentry users) and a Probation Officer's *Caseload Number* (probation officers)*.*

certain radius as a search term (n= 207). Finally, legal users tend to search by a person's last name (n= 163), followed by services in a certain radius (n= 134) and a search by city on the main "people" tab (n= 127).

Figure 16 below displays which percentage of each user type utilizes the top mapping features.[33] The lowest number represented in this display is the third most popular feature for legal users (n= 127), while the highest number is the last name search option for all users (n= 6,431).

Figure 16. Top Mapping Features by User Type
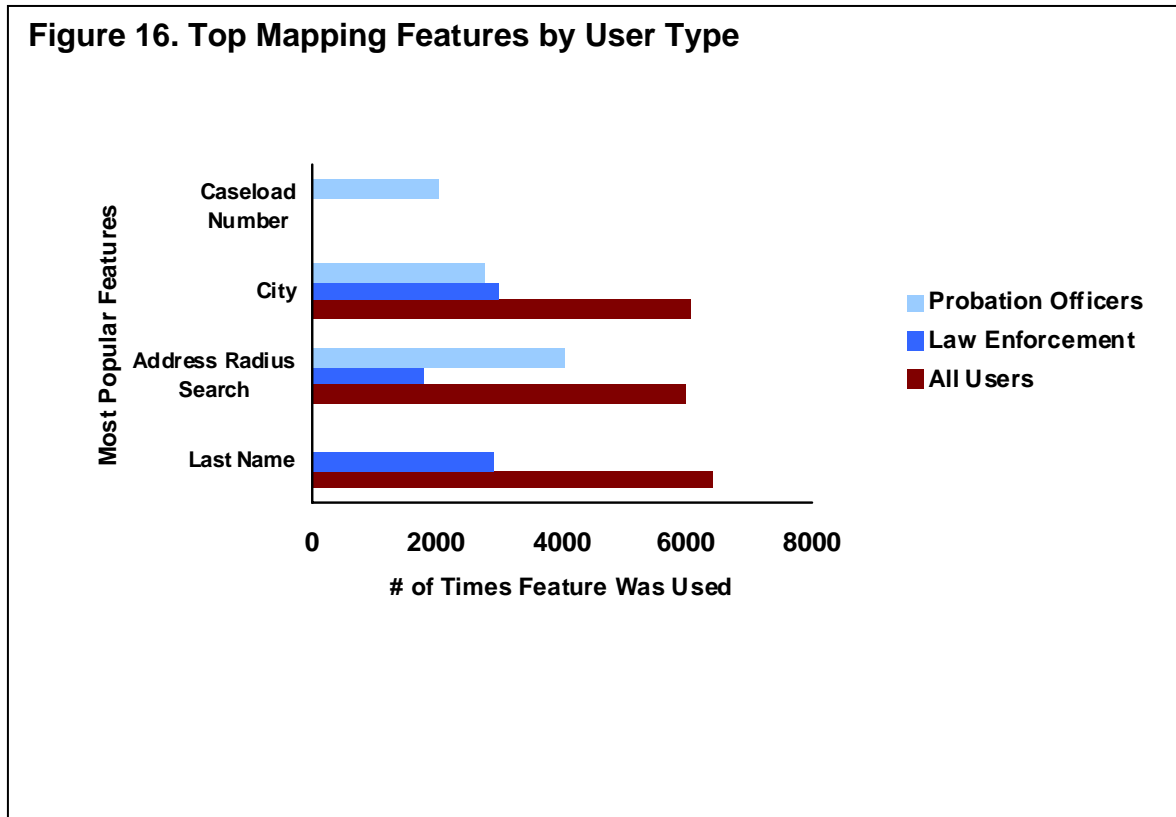
Note: Due to the low numbers reported for reentry and legal users, only three categories of users (all users, probation officers, and law enforcement) are displayed above.

Two final features—report downloads and adding new users[34]—are also analyzed. Out of the 80 users who have produced reports (which could include generating crosstabs; creating tabular reports or lists of people; creating large maps or exporting a list of people with a corresponding map; or downloading

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[33] The combined top features list is determined by pulling the top three features for each user type. Many of the top three features overlap among user types, resulting in six top features overall.

[34] Only Superusers and administrative users (such as the development team) have the ability to add new users in their department.

Home Visit Forms), 41 are law enforcement users, 36 are probation users,[35] and three are reentry users. Together, these users have created 966 reports. Although there are more law enforcement *users* producing reports than other user types, the vast *number* of reports are generated from probation users (n= 847). In other words, while basic search functions are the most popular way to use CSMS, the use of reports demonstrates that CSMS can also be employed as a replacement for previous methods (such as compiling an Excel chart of all clients in a caseload or manually writing in the necessary information for a home visit form). Creating and exporting files from CSMS may also lead to increased use of the system, making it a more useful part of a CSMS user's daily work routine.

In addition, 221 new users were created by 23 existing users in various departments, with more law enforcement users added (n= 133) than probation officers (n= 81), legal users (n= 7), or reentry (n= 0). While the development team can also add new users quickly, having Superusers take on this role might encourage internal discussions about CSMS and establish the Superuser as a go-to person for CSMS.

User Perceptions of CSMS

The evaluation team obtained measures of users' perceptions of CSMS through two methods: survey data from probation officers throughout Rhode Island and focus groups with probation officers and detectives.

User Surveys

To understand how probation officers use and could potentially benefit from CSMS, the evaluation team surveyed probation officers a few weeks before and eighteen months after the implementation of CSMS. The baseline survey was designed to collect information on officers' daily work, their caseloads and interactions with clients, contacts with service providers and law enforcement,

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[35] All except two were officers; these two were in the planning/research department of the

and their experiences with technology. The second survey asked the same set of baseline questions along with additional questions about their experiences with CSMS, which features they used, how it impacted their work, and their expected use of CSMS in the future. In this section, the two samples are compared to understand how the pre-implementation respondents differ from the post-implementation respondents. Perceptions of CSMS (from the post-implementation group) are then analyzed and discussed. Finally, evaluators compare frequent and infrequent users to understand who is impacted by CSMS, and how.

Survey Administration

The survey was first administered to a pilot group of ten probation officers in the Rhode Island Department of Probation; of those ten officers, nine returned the survey. Based on the results of the pilot survey, a slightly modified online version of the survey was created using CheckBox. From mid-June to late-July 2008, the evaluation team e-mailed invitations to 64 Rhode Island probation officers requesting that they complete the survey. Of those 64 respondents, seven were later excluded due to changes in their job duties. Two additional respondents were excluded because they had completed a training session for the mapping application prior to participating in the survey. Overall, 47 individuals successfully completed the online survey, generating a sample size of 56 probation officers who completed either the pilot survey or online version for the first wave of the survey.

For the second wave of surveys, the evaluation team e-mailed invitations to 67 probation officers using Checkbox (version 4.5). There was initially a low response rate within the period immediately following the e-mail invitation that UI staff sent, which briefly explained the study and assured prospective respondents that the survey was voluntary and confidential. The evaluation team asked the

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probation office.

RIDOC champion[36] for suggestions, and the probation administrators agreed to send out an encouraging e-mail to all officers to explain that UI is a legitimate institution and to reiterate why the survey would be beneficial. UI sent weekly reminder messages over a three-month period (ending January 2010), and potential respondents were also offered the option of faxing or e-mailing their completed surveys to UI. Two probation officers preferred to have the survey e-mailed and one officer refused and asked to be removed from the e-mail list. The final sample size for the second survey is 52 probation officers.

Background Characteristics

Respondents in the two survey waves are fairly similar in basic background characteristics. The average respondent had worked a little over five years in their current position with RIDOC in the baseline survey, compared to slightly more than six years in the second survey, which was conducted over a year later. The three current positions reported were supervisor (or acting supervisor), Probation Officer I, and Probation Officer II.[37]

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[36] At this point, the RIDOC Champion was a probation supervisor. See the Implementation section for a discussion of this transition.

[37] Staff begin in RIDOC in the Probation Officer I position and move up to Level II upon eighteen months of experience and by demonstrating successful performance. As displayed in Figure 14, fewer probation officers are represented in the Probation Officer II level in the post-implementation survey. In addition, while approximately the same number of officers reporting Level I status completed each survey wave, more supervisors participated in the second survey.

Figure 17. Respondents' Staff Positions

Pre-Implementation Wave

4%
41%
55%

Post-Implementation Wave

Supervisor/Acting Supervisor
Probation Officer I
Probation Officer II

12%
42%
46%
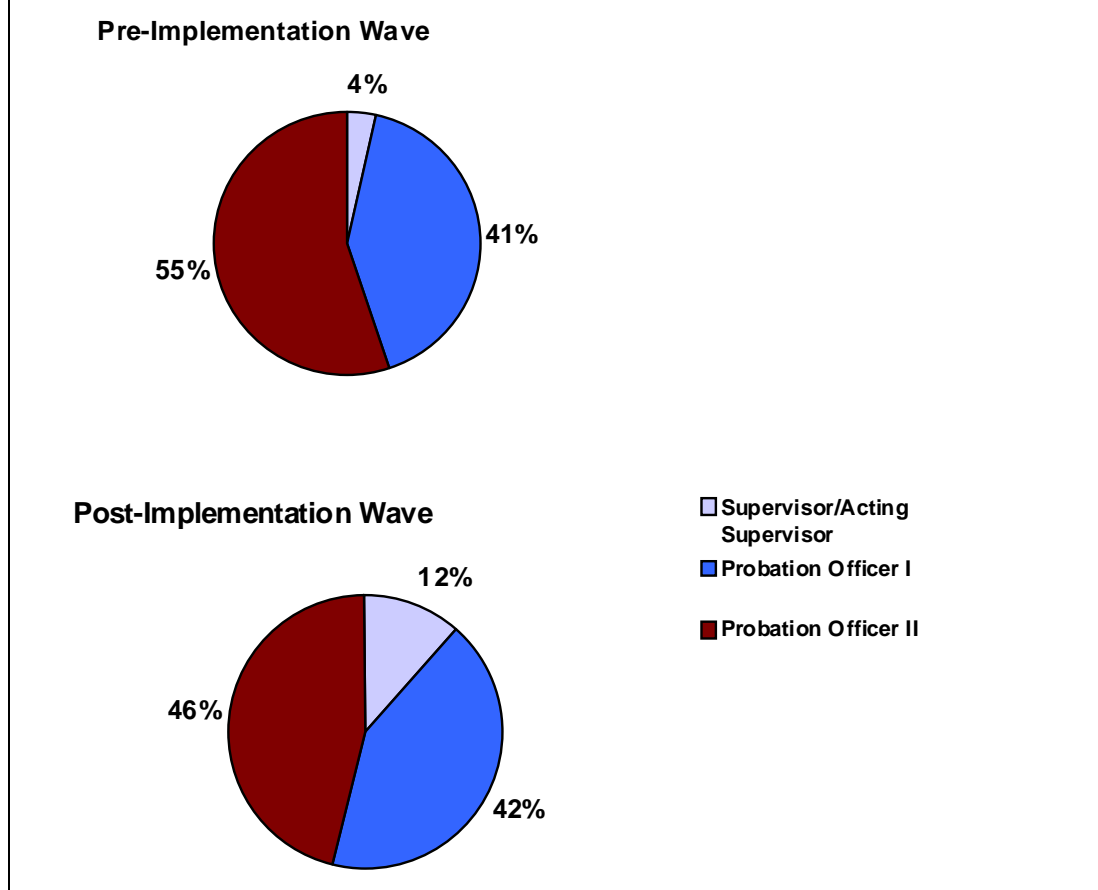
Caseloads ranged from 38 to 500, with an average of 187 clients per officer[38] in 2008, compared to a range of 50 to 380, with an average caseload of 131 clients, in the 2009 survey.[39] Average caseload sizes for the first and second survey waves are significantly different, with higher caseload numbers in the 2008 sample. In both survey waves, specialized caseloads (such as those focused exclusively on sex-offenders) tend to be smaller than generic caseloads. On average, respondents in the two survey waves estimated that 82 percent (first

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[38] Although both supervisors reported having caseloads, one respondent primarily conducted presentence investigations and wrote reports. Only those with caseloads are reported here.

[39] The seven supervisors in the post implementation survey did not report caseloads, and are excluded from the results reported here.

wave) and 83 percent (second wave) of their clients have a reliable, legitimate address. Some basic descriptive statistics are displayed in **Appendix D**.

Job Duties and Responsibilities

Next, respondents were asked about job duties and responsibilities. Respondents in both survey waves reported that they typically have contact with clients once a month, although the frequency of contact varies considerably among probation officers (within both survey waves). In a typical week, on average respondents in the first survey wave spoke with about 20 percent of their clients by phone, saw about 23 percent in the probation office, and visited eight percent in the community.[40] While the amount of client contact by phone or in the office slightly increased in the post survey responses, the average percentage of client visits in the community was smaller by one percent. These variations are not statistically significant.

Figure 18. Type of Client Contact

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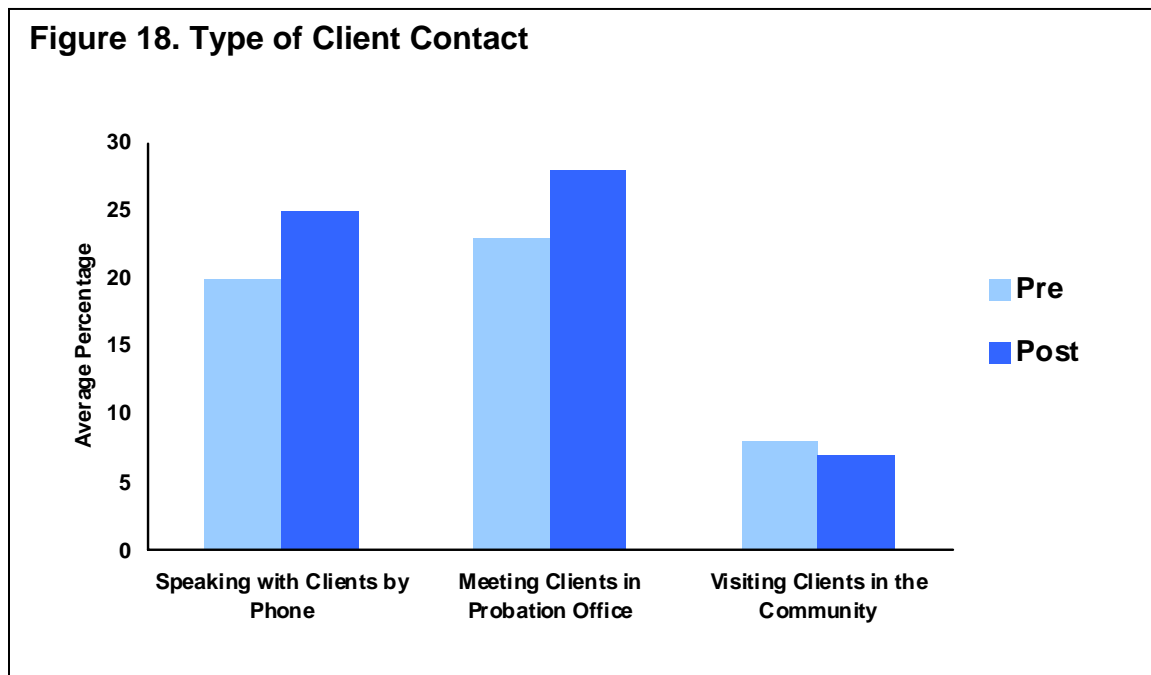
[40] As determined by the number of reported contacts with clients divided by the caseload size of each respondent.

When considering the amount of time dedicated to client communication relative to other tasks, the pre- and post-samples are fairly similar. Overall, the post-implementation group reported meeting with supervisors slightly more often; providing less court coverage; having less paperwork; contacting service providers, locating clients, and planning and scheduling less often; and having slightly more client contact. However, only the number of hours spent contacting service providers is statistically significantly different between the pre- and post-implementation samples as determined through t-tests. Although results demonstrate that the number of hours spent contacting service providers is significantly higher in the pre-implementation sample, in general, respondents in both samples report very similar duties and responsibilities.

Figure 19. Job Duties
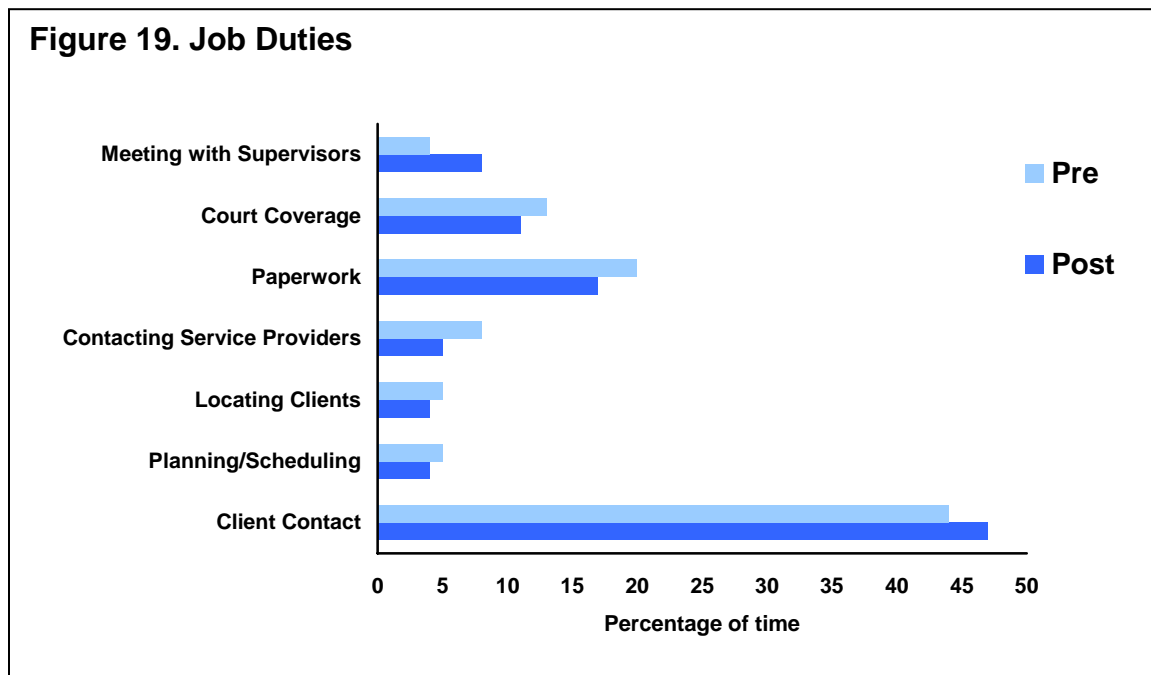
Note: The average (mean) percentage of time for each task, when accounting for total hours, is reported. These figures do not include "other" tasks, and therefore do not total 100 percent.

Finally, in a separate question, respondents in both survey waves reported spending approximately two hours each week traveling to and from meetings with clients on average.

Service Coordination and Referrals

In the 30 days prior to the baseline survey, respondents contacted an average of approximately ten different services providers, nine police officers (specifically about a client), and made 24 referrals on average to connect clients with service providers. In the second survey wave, probation officers reported very similar levels of contact with other agencies. On average, respondents had contact with ten service providers, had contact with police about a client eight times in the previous month, and provided 24 service referrals (see graph below). In other words, the amount of agency contacts and referrals remained at the same levels after CSMS was implemented in Rhode Island. Since CSMS was designed to connect users with resources and promote partnerships with service providers, evaluators expected a slight increase after the implementation.

Figure 20. Agency Contact/Referrals
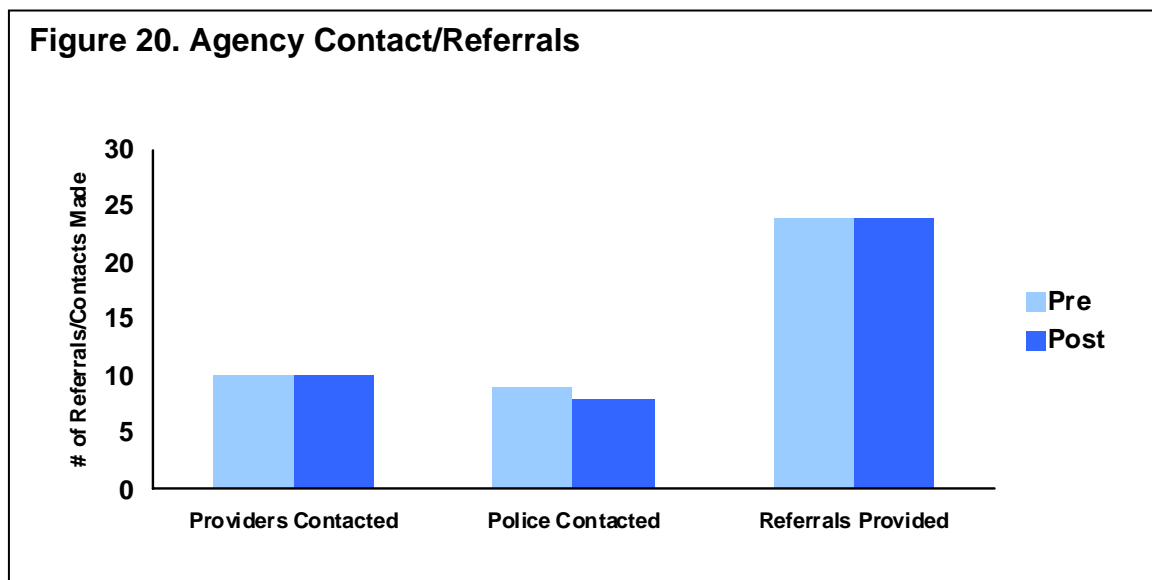
Technology Use

The final set of questions included in both the pre- and post-implementation surveys focuses on past experiences with technology (before CSMS was introduced). All of the respondents in both survey waves reported using a computer multiple times a day as part of their jobs and most (83.9 percent in the 2008 sample and 86.5 percent in the 2009 survey) describe themselves as

comfortable with its use. There is a large range of experience with computer mapping software before CSMS was launched (such as Google Maps) for both samples, and the results differ slightly between the two samples. While similar percentages of respondents report daily, weekly, less than weekly, and no use of mapping software in the first survey wave, almost a third of respondents in the second survey wave reported weekly use, and 29 percent reported having never used mapping software. The differences reported below are not significantly different.

Figure 21. Use of Mapping Software
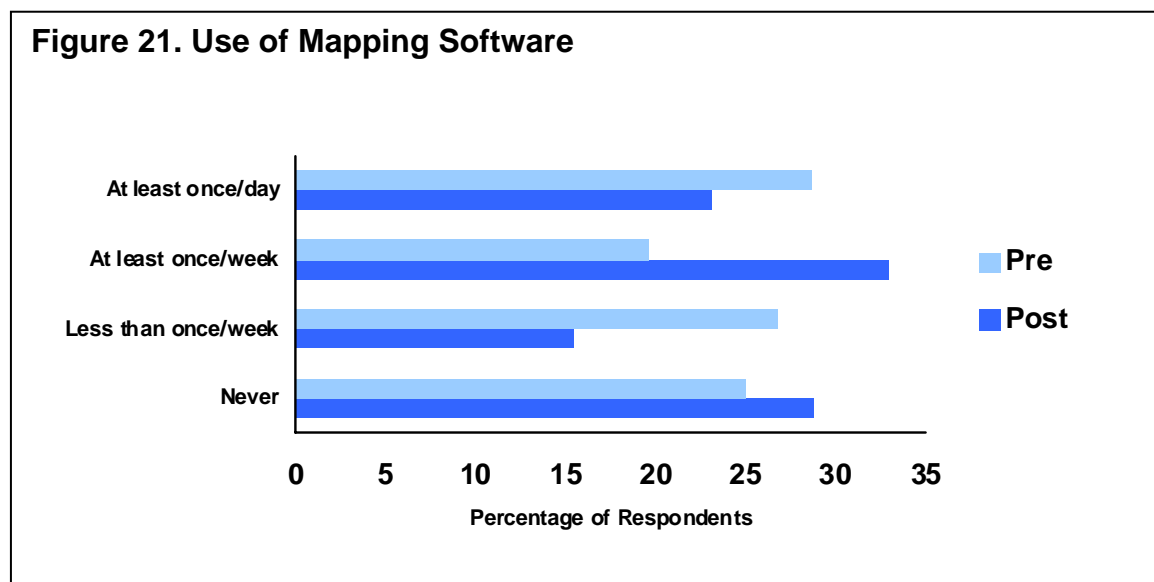
Summary of Survey Wave Comparisons

When comparing the pre- and post-implementation groups,[41] only two factors are significantly different between the samples in bivariate analyses: caseload size and number of hours spent contacting service providers. The pre-implementation group had a significantly higher mean for both caseloads and hours spent contacting service providers than the post-implementation group. Otherwise, the two samples are fairly similar in the level of experience in the probation

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[41] Unpaired independent sample t-tests were used for the interval/ratio variables and chi square tests were used for the ordinal/nominal variables. Caseload size was significant at the .01 level and hours contacting service providers was significant at the .05 level. See the table results in the appendix for values.

department, work duties, and previous experience with mapping applications for work purposes. The evaluation team expected stronger differences between the pre- and post-samples for a variety of job-related experiences and tasks, since CSMS was designed to increase efficiency and allow probation officers to spend more time in the community. Although tangible results are not yet apparent between probation officers before and after CSMS was implemented, the next section describes the perceived utility, challenges, and impacts of CSMS to those who were exposed to CSMS.

Experiences with CSMS

The post-implementation survey contained various questions specifically related to CSMS. First, the evaluation team asked about general use of CSMS to gauge the amount of experience respondents had with the system. Then respondents were asked which features they use, how CSMS impacts their job, challenges they have encountered, whether they have reported problems to the developer of CSMS (and if so, how well the development team responded), what would encourage more use, and whether they would recommend CSMS to other probation officers.

Twenty-five respondents reported being frequent users of CSMS (which the evaluation team defines as using the system at least once a week), and the remaining 27 respondents use CSMS less than once per week. Most respondents feel they are very (17 percent) or somewhat (58 percent) familiar with CSMS's features and capabilities; the remaining respondents reported feeling unfamiliar (12 percent) or not at all familiar (14 percent) with CSMS (see below).

Figure 22. Familiarity with CSMS
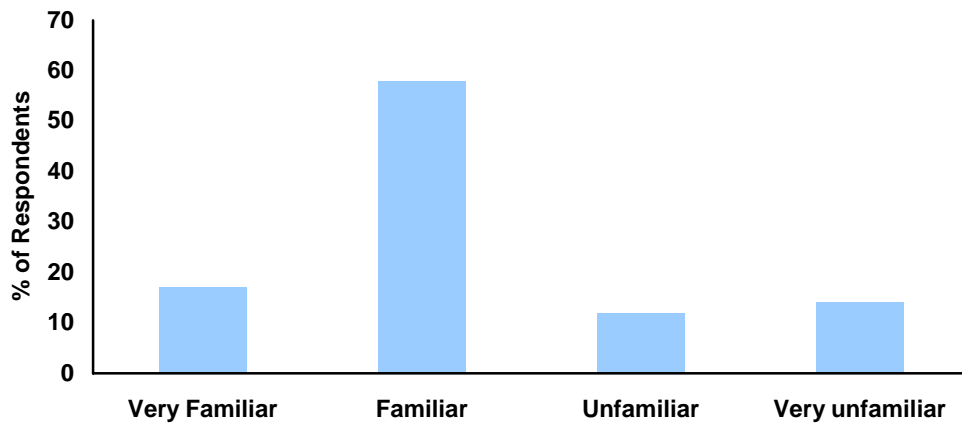
A quarter of respondents (n= 13) were designated Superusers for their probation offices. None of the respondents reported that CSMS was difficult to use, and fairly even numbers of respondents reported it was somewhat (35 percent), mostly (37 percent), and very user-friendly (29 percent).

Figure 23. User Friendliness of CSMS
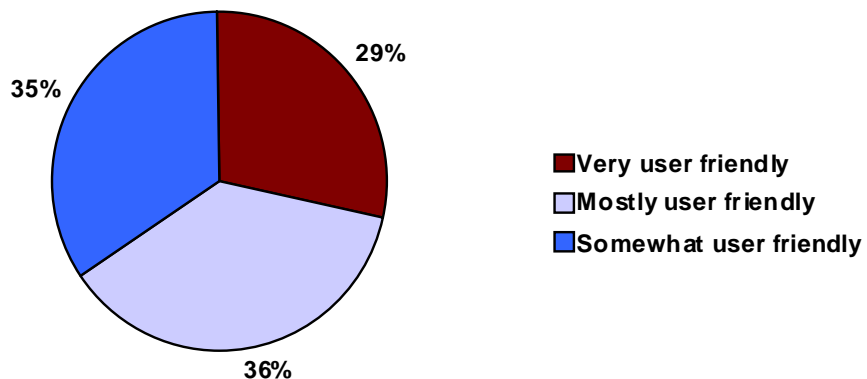
Reported CSMS Features

Next, respondents were asked how they use CSMS for their jobs. Drawing from responses given during focus groups with probation officers and police detectives, fourteen options were provided in the survey, with the three most popular features including conducting residential/work address searches (69 percent; n= 36), using CSMS to spatially view clusters of people (65 percent, n= 34), and planning visits for multiple clients on the same day (60 percent, n= 31).

The graph below displays reported use for various features categorized into three main purposes: viewing spatial features (radius for sex offenders, police district lines, and viewing clusters of people), retrieving other information from CSMS (checking or updating client addresses, obtaining directions, determining whether clients live together, retrieving information on services, looking up criminal offense information, and viewing client photos), and for planning or coordination purposes (conducting multiple home visits and coordinating with police, reentry, probation, or other agencies). Those who report never using CSMS outside of training sessions are also included in the chart below.

Figure 24. Reported Use of Functions

- Spatial Features — 28%
- Retrieve Other Information — 44%
- Planning/Coordination — 25%
- Never Used Outside of Training — 3%
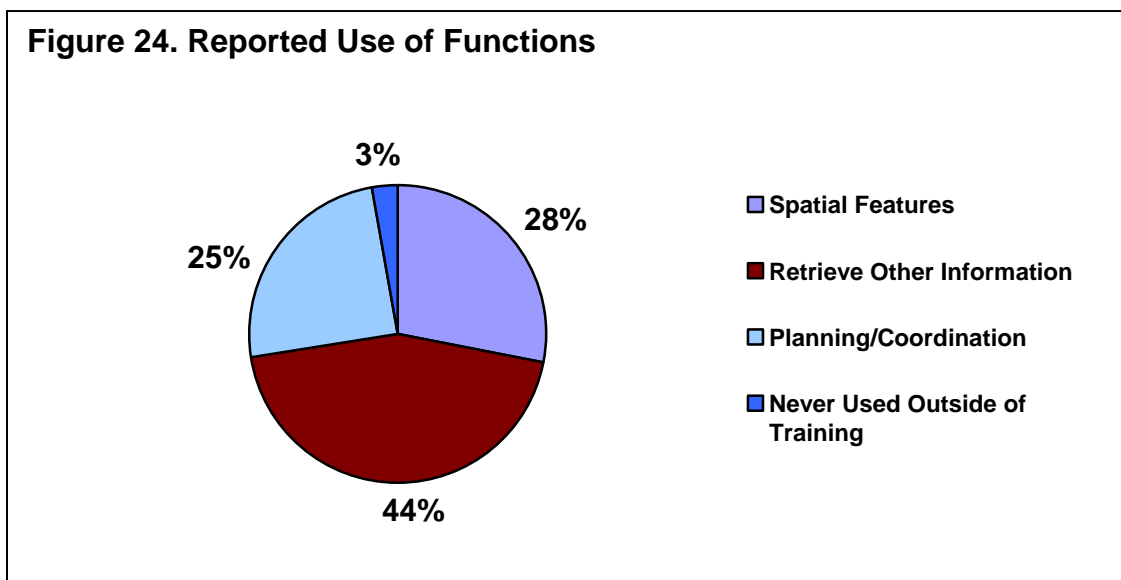
In addition to the functions highlighted in Figure 24, one respondent reported a use not previously identified by the evaluation team in an open-ended probe for additional uses. This respondent noted that she used CSMS while she was out on maternity leave to stay updated, since "it's the only program we can access from an outside computer."

Among the features listed, respondents also indicated which one they use most often. Twenty-one percent of respondents (n= 11) reported coordinating multiple client visits in the same day, 19 percent (n= 10) used the spatial viewing of clusters of clients the most, and 15 percent (n= 8) used CSMS the most to check clients' addresses. The remaining features only had a few respondents indicate that it was their most frequently used function.

Figure 25. Most Frequently Used Functions

Bar chart showing # of Respondents by function:
- Update a client's address: 2
- Never used outside of training: 3
- To coordinate with probation officers: 1
- To locate police district lines: 1
- To view information on criminal offenses: 3
- To obtain directions to/from a visit: 4
- To determine the radius for sex offenders: 3
- To visit multiple clients on the same day: 11
- To see where clients are clustered: 5
- To check residential/work addresses: 8

X-axis: # of Respondents (0 to 12)

Perceived Impacts of CSMS

Next, these probation officers were asked how CSMS affects their work. The following tables display respondents' perceptions of both positive and negative impacts. The full results are available in **Appendix C**.

Figure 26. CSMS's Impact: Positive Features
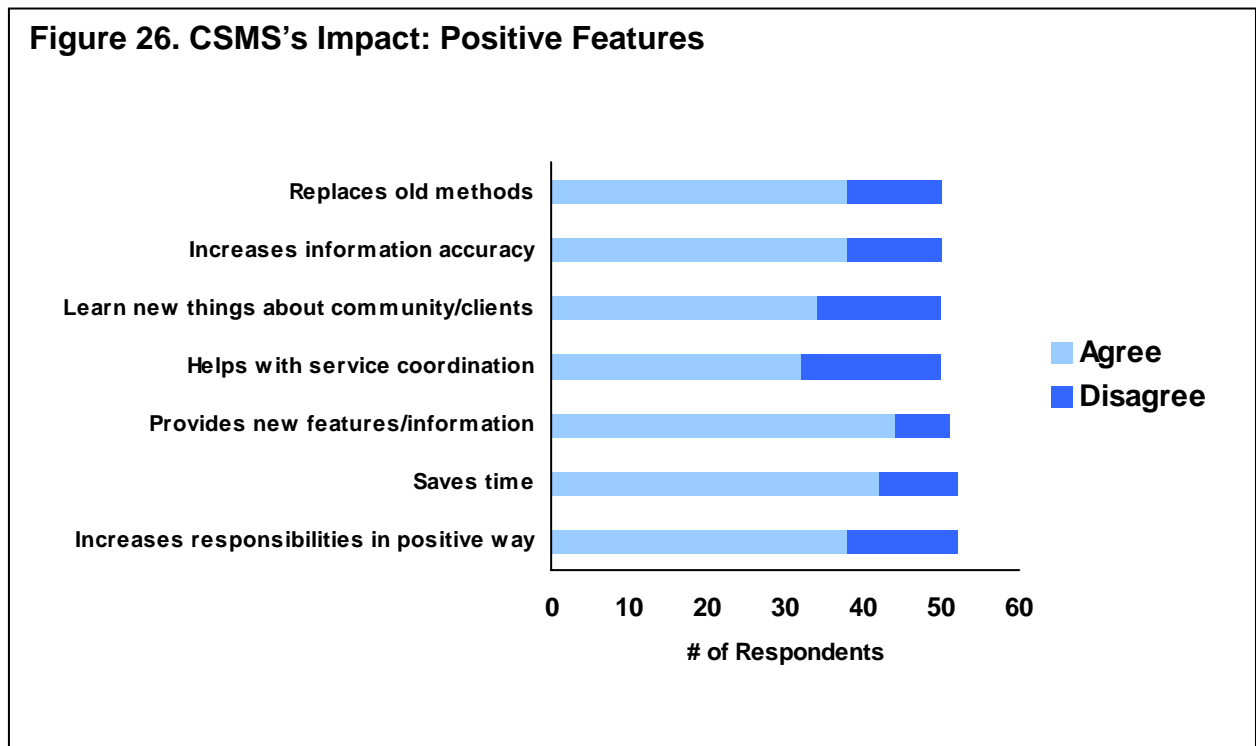
As displayed above, respondents typically feel CSMS has positive impacts on their work. Respondents generally reported that CSMS provides new and accurate information that saves time, and when it increased job responsibilities, this increase is perceived to be a positive change. In addition to the positive effects of CSMS, the evaluation team was also interested in learning about any perceived negative impacts (see below).

Figure 27. CSMS's Impact: Neutral and Negative Features
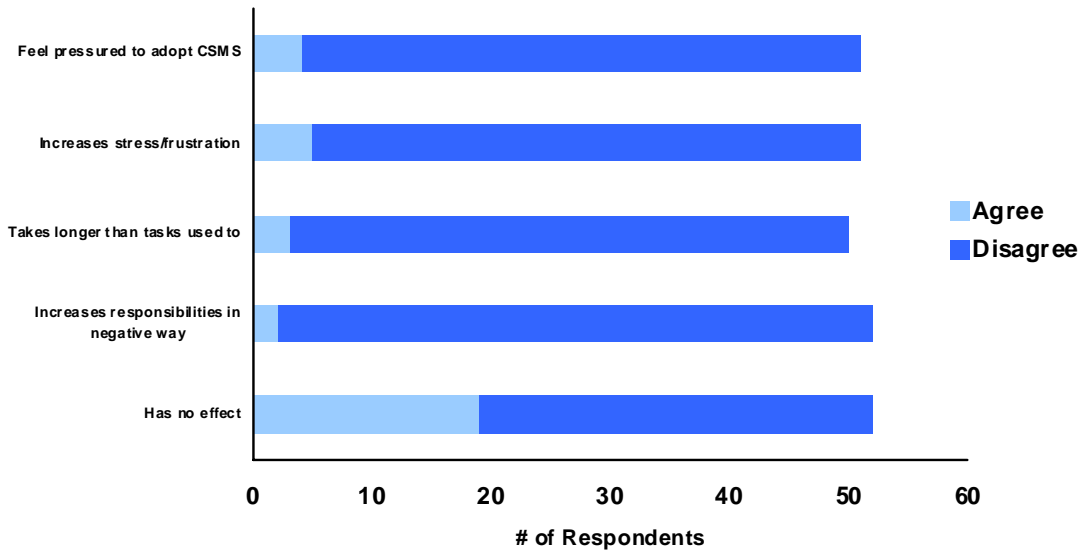
When asked about CSMS's negative impacts, few respondents reported increased levels of stress and frustration or pressure to adopt the new technology. In addition, very few respondents believed that CSMS increased their job responsibilities in a negative way or took more time to use than previous methods. Finally, 19 respondents (37 percent) indicated neutral opinions on CSMS; they report that CSMS has neither a positive nor negative impact.

Importantly, CSMS's impacts are strongly guided by how frequently respondents use CSMS for their jobs. Through crosstab analyses, those who reported rarely or never using CSMS reported it had no effect on their work. Those who reported using CSMS more frequently disproportionately expressed that it increases job responsibilities in a positive way, saves them time, provides information not otherwise available to them, helps them coordinate services for clients, helps them learn new things about clients or the community, increases

the accuracy of information, and replaces previous methods used.[42] In other words, those who used CSMS more frequently perceived more direct (and more advantageous) impacts than infrequent users, and also reported being more likely to recommend CSMS to other probation officers.[43] The two figures below display these differences. While **Figure 28**, which displays all of the "agree" responses, does not appear to have notably different responses based on the respondent type, in **Figure 29** the infrequent users clearly have differing opinions on a variety of impact measures.

Figure 28. CSMS's Impact Based on Usage—"Agree" Responses
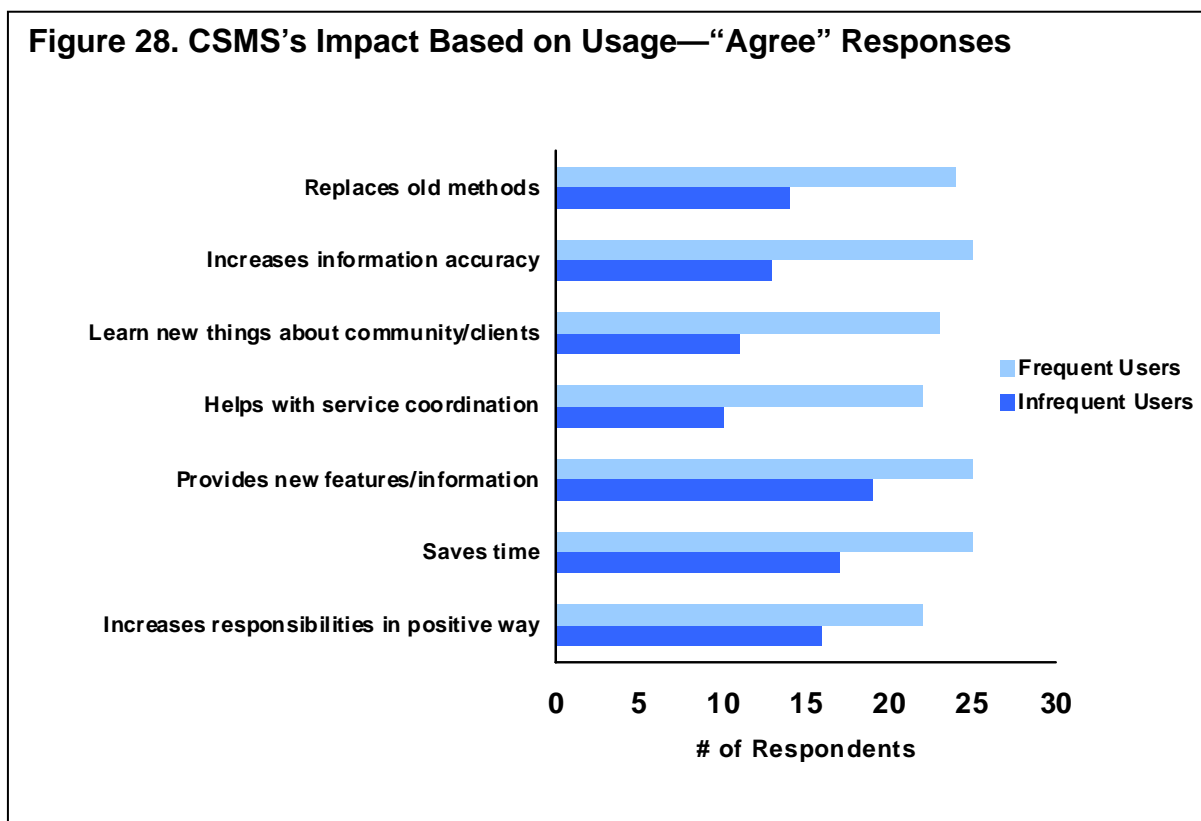
Note: This graph only displays those who agreed (strongly or moderately) that the listed element impacted their work.

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[42] These impacts were all significant at the .01 level, with chi-square values ranging from 21.29 to 42.30. There were four impact components (increased responsibilities in a negative way; tasks take longer with CSMS; increased stress/frustration; and increased pressure to adopt the tool) that were heavily leaned in one direction or the other (see Appendix C) regardless of the frequency of use.

[43] With a chi-square value of 26.87, this test was significant at the .001 level.

Figure 29. CSMS's Impact Based on Usage—"Disagree" Responses
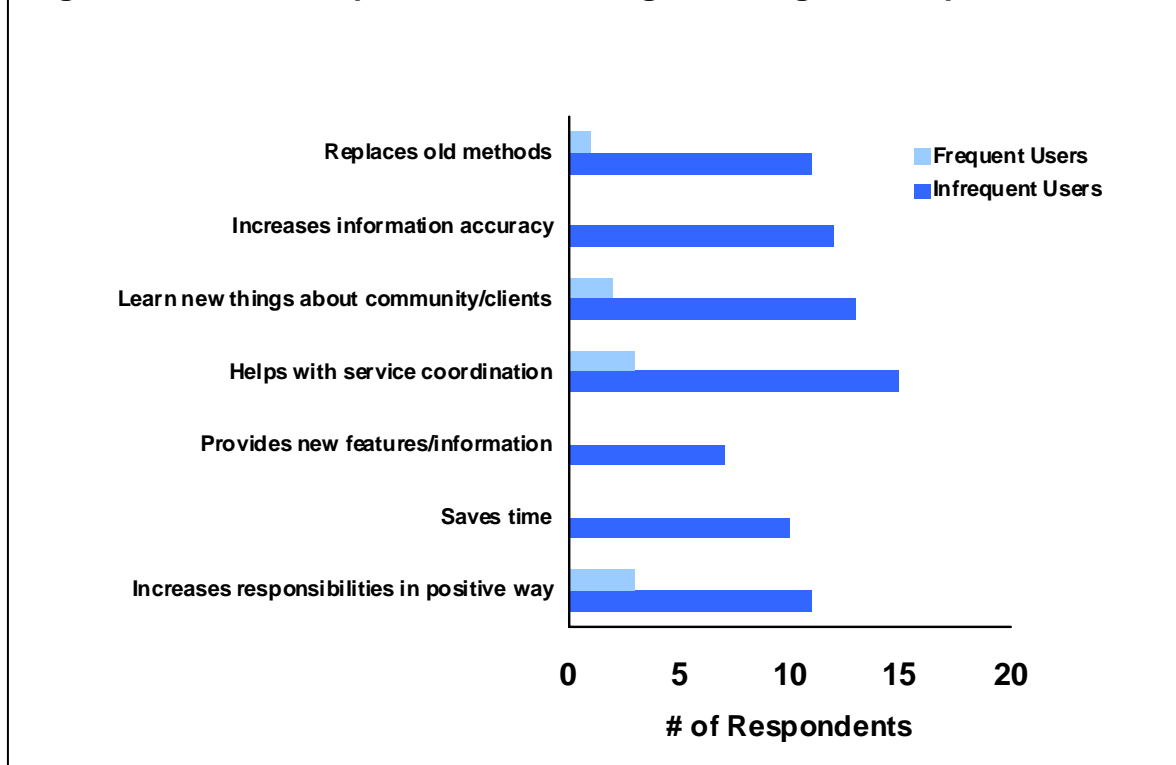
Note: This graph only displays those who disagreed (strongly or moderately) that the listed element impacted their work.

Other Impacts of CSMS

Although the perceived impacts of CSMS varied greatly based on how frequently respondents reported using the system, these effects were not identified in other expected outcome measures, such as the number of contacts made with clients or the number of hours spent on specific tasks. In fact, when all of the relevant job duty/responsibility measures were compared between frequent and infrequent CSMS users, only one factor was statistically significant: the number of hours spent planning and scheduling was higher for frequent users. This finding is unexpected, since CSMS is intended to reduce the amount of time spent planning by providing more readily available information. This result did not appear to be heavily influenced by the probation team that conducted large neighborhood "sweeps" or by the number of hours spent contacting clients in the

community (which was not significant in the analyses). See **Appendix E** for details on the mean comparison results.

Challenges

Evaluators also investigated potential problems or challenges users faced. As displayed in **Figure 30** below, 23 respondents reported never encountering problems, 14 respondents reported having hardware issues, and 25 respondents indicated having issues directly related to CSMS or the CSMS server.[44]

Figure 30. Problems Respondents Encountered with CSMS
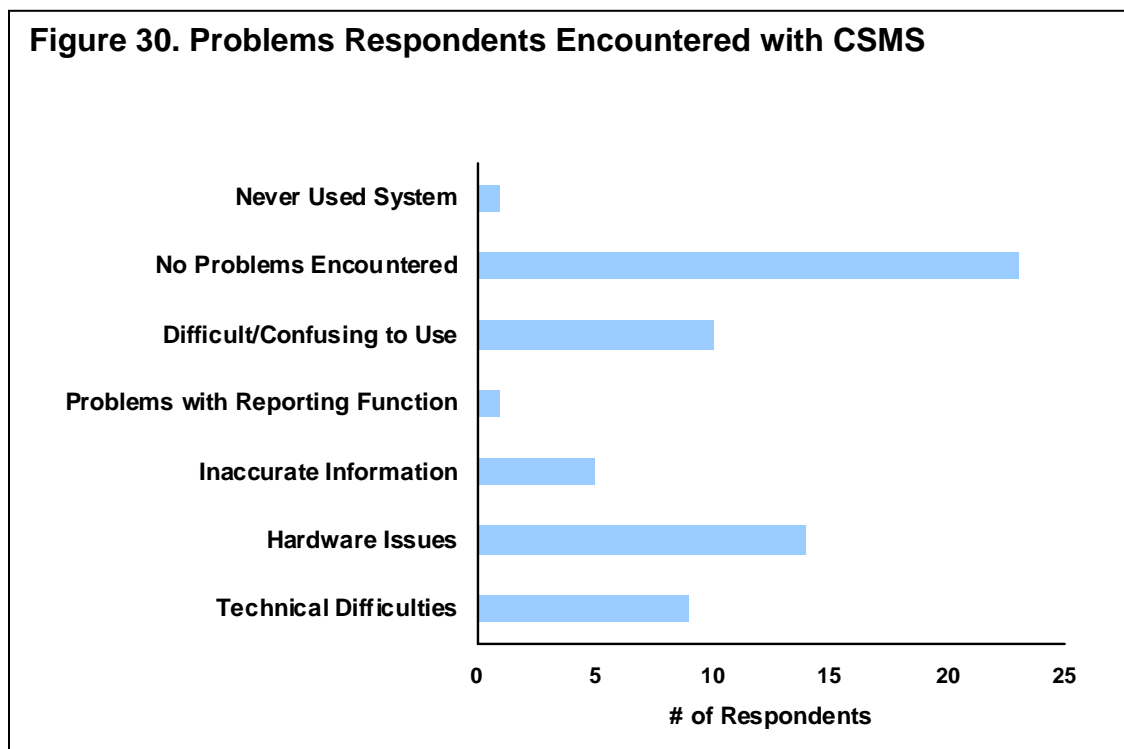
Note: Respondents were able to choose more than one problem or challenge.

Of the 21 respondents who reported a problem to the development team, 13 reported the developers were "always" helpful and responsive, seven reported

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[44] In an open-ended "other" option for this question, one respondent (included above) noted that CSMS does not list villages, which he/she reported as an "inaccurate information" response. Since other respondents did not elaborate in this open-ended field, it is unclear whether desired (but unavailable) information was frequently cited as "inaccurate."

they were "usually" helpful/responsive, and one respondent felt the developers were "somewhat" responsive.

Survey respondents were also asked about their planned future use of CSMS, and what might encourage them to use it more. The top reasons respondents reported as incentives for increased use include: having more or continuous training (37 percent, n= 19); providing probation officers with portable devices with which to use CSMS (35 percent, n= 18); giving probation officers smaller caseloads (31 percent, n= 16); and offering more or different features (27.5 percent, n= 14).

Figure 31. Factors that Would Encourage More Use
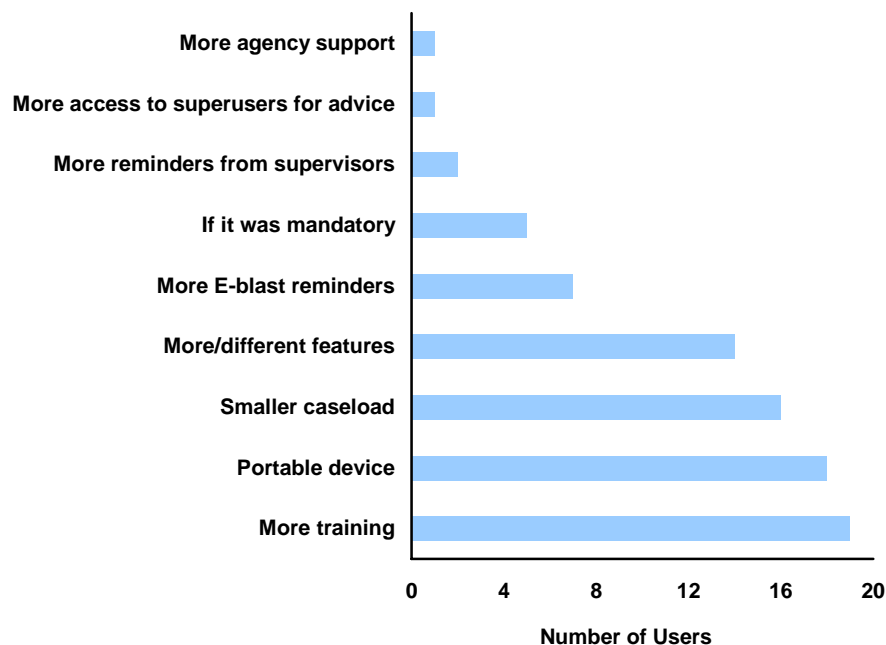
In addition to the above information, there were two open-ended questions in the survey. The first asked if respondents thought anyone besides probation officers could potentially benefit from CSMS. Of the twenty-four probation officers who responded to this question, 17 (71 percent) indicated law enforcement.

Seven (29 percent) responded that reentry personnel/organizations (which included responses such as "discharge planners," "community service providers," and "providers working with our population") could benefit. Finally, one respondent reported that administrative assistants could benefit from the system.

User Focus Groups

In order to obtain a qualitative understanding of the degree to which probation officers and police detectives use CSMS, which features users like or dislike, and how CSMS impacts their daily work, evaluators convened focus groups of mapping tool users. Two groups of probation officers were convened for focus groups in Rhode Island. The first group consisted of a random selection of officers out of the highest users of CSMS (according to a preliminary analysis of usage data), and the second group of probation officers was randomly selected out of all users from probation departments. A third focus group consisted of police detectives. Since police departments adopted CSMS after probation departments (and a smaller number of police departments received mapping access and training at that point), there was a limited group of active users for potential focus group participation. Therefore, this group was not randomly selected, and instead reflected frequent and early law enforcement users.

Seven probation officers attended the high frequency focus group session. Their experience in probation ranged from 2–15 years, they all considered themselves proficient with computers, and they had all used some type of informal mapping tool exposure (such as MapQuest) before using CSMS. Their caseloads ranged from zero (one was a supervisor; the other was in planning and research) to 244, with a median of 86. In describing CSMS, these probation officers indicated it was helpful and convenient, that it made their jobs easier, and that it was a useful organizational tool. One officer commented that the time it took to organize probationer files and geographical areas "was absurd before [CSMS]." They noted the positive relationship they all had

Figure 32. Probation Officers—Frequent Users

I find it to be very convenient. Before we used to see with a book, try to figure out...I used to use a GPS. But now I go to the mapping, bring my cases, check on clients—even [another probation officer's clients]—it has made my job easy.

When we do a field visit, it's like, "Oh, there are other people in the same radius!"

Even if they [other staff] don't mention a name, I can go back and plug in something.

When the addresses are not legal or real, it comes out as red, so we're able to see which are not real—we got that from the mapping.

For example, [a supervisor] is going to the police department, and they have hot areas—hot spots—and we pull all the people in that area and do it [home visits] in one night.

...it used to take me FOREVER—let me go through these sheets of paper...it was all we had to go by. But now, this is District 7, this is District 6.

I would literally sit at my desk, take an imaginary pencil, key it in, pull the files...that's how I knew how to see. But now...

The biggest thing is being more accurate.

with ProvPlan, commenting that "They've always been open to us." These users also discussed how a portable device could increase the use and convenience of CSMS, and that the feature for e-mailing a probationer's officer—although not widely used yet—also has the potential to increase communication among probation officers and between probation and police departments. One probation officer also noted that having more accurate information is a major advantage of

CSMS, but another officer cautioned that "It's only as accurate as the information we put in it."

One probation officer who was invited to the high frequency focus group was unable to attend the session, but was interested in talking with the evaluation team over the phone in a separate interview. Like many of the Superusers the evaluators spoke with, this probation officer was enthusiastic about CSMS, noting that it saves time and is "very helpful" for her job. When asked about her overall thoughts on CSMS, she commented, "If I told you the hours it took to do that [manual] excel sheet [before]…hours and hours and hours." She described how she will continue to use CSMS consistently because it has become integrated into her daily work routine.

The second focus group for probation officers consisted of a random selection of users. Only three officers chose to participate in this focus group (out of the twelve invited). These officers varied from 3.5 to 10 years of experience in probation, ranged from a self-reported 2.5 to 5 (out of 5) for computer familiarity, and all had specialized cases (two had domestic violence caseloads of

> **Figure 33. Probation Officers—Random Selection of Users**
>
> *Before we had the Mapper [CSMS], we used MapQuest or Google Earth, almost to cut and paste the 15 addresses—a pain in the ass.*
>
> *What they [law enforcement] haven't started doing yet is e-mailing me—I hope they do that! What it is doing is connecting us to people on the streets. I think that's very important.*
>
> *It's quite comfortable to use, it's quick. Data fax [the previous system] will give you some information, some lists, but more of a monthly list. But this is user friendly, I like using it. I like the tabs—things at DOC didn't really have it.*

around 100; the third had a sex offender caseload of approximately 60). One was also a Superuser for her department. Although they had used informal mapping technology (such as MapQuest) before, they felt that was time consuming.

While they expressed some overall positive reactions to CSMS, such as CSMS being user-friendly and saving time, they also reported using it infrequently ("Anytime I go on I love it, but I don't really use it much"). Through focus group discussions, the reasons for not utilizing CSMS frequently revolved around other work priorities. Probation officers primarily indicated that with full caseloads, officers are simply busy, and CSMS takes time to learn. However, they did provide several suggestions for incorporating CSMS into the work routine. They mentioned that the E-news Blast reminders are beneficial, that mobile devices might increase use, and that regularly convened training sessions would be helpful.

There were also aspects of CSMS the probation officer (randomly selected) group found frustrating, such as filter labels on CSMS that they felt were not intuitive or having to type in an address with the exact correct spelling.[45] One officer also reported feeling pressured into adopting this new technology. Specifically, she noted that supervisors are able to track her mapping usage, which "doesn't make [her] feel good about it." However, the other interviewees did not perceive that using the tool was mandated or that they would be

> **Figure 34. Probation Officers—Random Selection of Users**
>
> *It does have a history—people were feeling overwhelmed with caseloads. It was one more thing they were getting told to do.*
>
> *I thought [the training] was good, but we're all so busy ...I forgot how to use it and didn't use it for a while until they came up with the e-mails [E-Blasts]. Then I started again.*
>
> *We are all nailed to our desktops. We have got to get some laptops going, or Blackberries. So some kind of personal computing device to take into the field, but also to train people in the office.*
>
> *I think I'm under-using it. It does things I don't even know. A series of trainings—if you said there was one training a month, I'd put it on my schedule and show up. But...if you tell me a week before, I'm not going to show up. So if they scheduled in advance...*
>
> *[After a] staff meeting, [if we could] go to the conference room for half an hour with the Superusers, that would be really useful.*

penalized for not using it, commenting that there was encouragement and leadership support for CSMS. These officers all discussed that they would like to increase their use of CSMS, and will need to read through the user manual more closely before using certain features. They also suggested that ProvPlan or Superusers within departments should have more frequent training sessions to help "keep it fresh." One probation officer in this focus group concluded: "It's a tool I will be using more, but I'm just not there right now."

The final focus group was conducted with four detectives who ranged from 10 to 25 years of experience in law enforcement. This group varied in self-reported computer familiarity, and all had used GPS and police software previously. These detectives thought CSMS provided more reliable information than they typically have access to because the data is being reported to probation officers, not police officers. They also emphasized the usefulness of CSMS's photos for increasing data accuracy and reducing the likelihood of receiving a fake name from a probationer.

Figure 35. Police Officer Focus Group

Even if you use it in its most simplistic form, I can just run a query and it came up with a huge number...I think that is the biggest benefit, using the application in the simplest form.

The addresses are going to be much better on the Mapper [CSMS] than what the police have. Probationers and parolees want to be in the good graces of probation and parole rather than police so they won't lie about their addresses.

It can also help if the probationer or parolee gave us a fake name.

...we can do a radius check and we can give other jurisdictions a call and get more information. Or give them a heads up.

The big thing is that it doesn't cost [us] anything.

I think it's great that its web-based so we don't have to go to each department and get it updated.

I think it has legs...it will stick.

Although they had not received formal training through their police departments

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[45] Although the city name auto-fills in as the user types, the street name does not have this capability. As of May 2010, the ProvPlan development team was considering this suggestion,

at the time of the focus group, they felt it was best to jump in and experiment with various features. While the detectives noted the advantages CSMS provided for supervision and criminal investigations, they were also cautious about patrol officers using CSMS, stating that they "don't want to take the chance of having patrol use it." Although the reason was not clear, one of the detectives stated that "Patrol is more for responding to calls for service. I don't think they need the information." However, as detectives, the group all believed it was useful and beneficial. Overall, this group felt CSMS was "definitely a time saver" and will continue to be useful in the future.

The participants in these focus groups also explained which features of CSMS they found the most helpful. Although the favored features slightly varied, participants reported primarily using address search features, spatial or aggregate information, and offense information. Specifically, the high frequency focus group users reported using the address filters, looking up multiple people in the same area, services, offenses, caseload numbers, district lines, and the 300-foot radius for sex offenders the most frequently. The second group of probation officers reported using the following features the most: address filters, offense type, directions to services for clients, and visualizing multiple clients in the same area. The detectives reported using client photos, address filters, offense type, and spatial overviews (hot spots for sex offenders) the most.

Other Interviews

The evaluators conducted interviews with various stakeholders and RIDOC champions throughout the development and implementation of CSMS, which provided useful documentation of perceptions, intentions, and actual events. In addition to the information gained through these interviews (see the Documentation and Implementation sections above), the evaluation team conducted interviews with reentry staff members that provided an interesting perspective on CSMS. Both of these interviewees suggested that information on

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along with a list of user suggestions collected through focus group discussions.

services was already available and known to discharge planners, and that other information (updated addresses, photos, etc.) is more valuable to reentry users.

As one interviewee indicated, while the relationship created by CSMS (and the access to these data) is important from a research and policy angle, he did not understand how probation officers and other users would benefit from this type of open-source, electronic software. When probed for a more appropriate method, he suggested printed resource guides and online searches would be more effective. This reluctance to embrace new technology may provide insight into why reentry users generally adopt CSMS at a slower rate. As a different interviewee summarized when asked about user reluctant or resistance, "…when you have people working in a particular field and there's a particular way of doing things, and you change their habits…I guess additional training or reminders and refreshers to hammer home [are needed]. I'm not saying people aren't open to it, but maybe promoting it a little more [would help]."

Summary

By utilizing a variety of data sources, a number of conclusions can be drawn about how CSMS is used, which users appear to benefit from the technology, and how this geospatial application impacts the work of probation officers, police detectives, reentry organizations, and other criminal justice practitioners. CSMS use tends to be clustered in certain areas (such as specific cities)[46] and was largely based on the type of user. Probation departments had the most frequent users, followed by law enforcement and reentry users, respectively. Although the most commonly employed functions varied slightly by the user type, client names and address specific information (city name or radius search in an area) were the most popular features across the board.

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[46] According to Google Analytics, three out of forty cities and towns (Cranston, Providence, and West Warwick) in Rhode Island totaled 79 percent of all CSMS use. These three cities are geographically located near one another, along the eastern coast of Providence Harbor and Greenwich Bay.

When considering all users over time, use of the CSMS has gradually increased. Three-quarters of those surveyed reported being very or somewhat familiar with the application, and it was generally indicated (through various data sources) that CSMS was user-friendly, regardless of the type of user or position held. After focus group participants were broadly asked about any challenges they encountered with CSMS, these general ideas were expanded for a question on the probation officer (post-implementation) survey. Although around 44 percent of respondents (n= 23) reported that they had not encountered any issues, for those who faced challenges when using CSMS, all but one respondent felt the development team was always or usually helpful in response to their reported problems.

Focus group participants and survey respondents suggested that peer encouragement, reminders (such as E-news Blast messages), and frequent training sessions were the best methods for increased use. Focus group participants who reported using the CSMS frequently were unsure why other probation officers had not yet fully embraced CSMS. They believed that if nonusers jumped in and started experimenting with different CSMS features, they would quickly come to appreciate its utility. While informally using the system may be a valuable way to ease new users into using the system, a cultural shift to a more routine use of CSMS is necessary to fully engage users over time.

Finally, although direct impacts (or significant differences in the means) do not exist between the pre- and post-implementation samples, those who were exposed to CSMS reported a variety of perceived effects. Overall, positive impacts greatly outweigh any neutral or negative impacts, and most respondents feel CSMS provides accurate and new information, replaces old methods, assists with service coordination, and saves time. Crosstabs also indicate that respondents who report using CSMS frequently perceive significantly greater

impacts than infrequent users and are more likely to suggest the application to their coworkers.

LOOKING FORWARD

The following section describes potential expansions of current capabilities, directions for future use, lessons learned through the development and implementation processes, and the potential challenges and available options for jurisdictions looking to implement CSMS.

Future Evolutions of CSMS

As an iterative development process, developments and additions to CSMS were common. The development team continuously adjusted the technology to fit users' interests and needs, and the interactive process allowed for an open exchange of ideas. As such, there is still the potential for enhancing the current mapping tool to reflect the evolving needs of probation officers, police, reentry, or other users through three primary methods: adding data elements, incorporating other data sources, and increasing accessibility. Although some data elements were added throughout the implementation process (such as the inclusion of photos for probationers), police officers have also suggested adding data elements that would provide an increased level of detail for probationer characteristics (including hair color, eye color, height, and weight).

Incorporating additional data sources may be challenging, depending on the jurisdiction. Specifically, data sharing agreements would need to be established, and there may be resistance if previous partnerships are either lacking or were negative in the past. However, linking multiple databases to CSMS would provide additional data features and an enhanced centralized information system. The development team expressed interest in connecting CSMS to information from the State Police Sex Offender database or the National Crime Information Center (NCIC). A second potential issue with

connecting to additional data sources is that more detailed information available through CSMS may lead to more restricted access. Although CSMS was originally designed to assist with supervising and accessing services for probationers, the software tool is applicable to a variety of criminal justice practitioners. The inclusion of certain databases may raise concern about the type of users who have access. In 2009, one reentry organization expressed concern with one of their users, who was a formerly incarcerated individual listed in the database. It was unclear whether all employees should have access to CSMS data, or whether access should be restricted. As the potential for further uses and more detailed information grows, the type of user may need to be restricted to protect the goals and security of CSMS.

The third main future enhancement of CSMS could be increased accessibility. As a web-based application, smart phones and other mobile devices could easily access CSMS information. Surveys, focus groups, and usage data revealed that a few users have already run queries on CSMS through BlackBerry handhelds and many reported that having this type of access would increase their use of CSMS, especially for home visits.

Lessons Learned

Throughout the development and implementation process, there were several lessons learned for future adopters of CSMS. First, outreach is necessary. As the primary group targeted for CSMS, probation officers had the highest frequency of use and biggest range of uses (while all types of users explored basic search features, probation officers were the most likely group to export results or auto-fill and print forms). Those who received lower or later levels of outreach (such as reentry and legal users) had lower frequencies of use. In addition, regular training sessions, reminders (such as E-Blast messages) and Superuser involvement are all suggested methods for a successful CSMS adoption.

Similarly, having a champion for both the planning and research stage and a champion to identify with users of the system during the implementation phase were critical for CSMS's success in Rhode Island. Finally, the development team discovered several technical advantages (such as Django being a better software program than Ruby on Rails for the purposes of this project) that are detailed in the technical guide. Having a system serve multiple user needs and increase efficiency, such as having a web-based department directory that could generate various types of information (mailing lists, spread sheets, etc.) within CSMS is also preferable, although this had not been implemented as of early 2010.

Despite these positive lessons learned it remains a fact that relatively few intended users embraced CSMS and fully integrated the system into their work. This disappointingly low usage rate may be a result of the fact the many potential users are not comfortable with computer technology. However, as such users cycle out of the system, their younger replacements may be more likely to value and make use of CSMS. In the meantime, any efforts designed to communicated the value of CSMS to current probation officers, along with continued outreach from Superusers and TPP staff, could yield greater usage in the near term.

Replication in Other Jurisdictions

Only one jurisdiction is known to the project team as having implemented mapping software with very similar functionality. In 2008, New York's Department of Probation adopted ArcGIS to manage and supervise probationers.[47] Similar to CSMS, Arc extracts data from the department's primary database and automatically geocodes information to allow users to perform searches and basis analyses. Other jurisdictions have expressed an interest in using ESRI products to view address locations or other basic features.[48]

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[47] http://www10.giscafe.com/nbc/articles/view_article.php?articleid=611596

The primary difference between programs such as ArcMap and CSMS is cost. As open-source software, Google is notably less expensive than ArcMap or other popular mapping software. With automatically updated information through the DOC database, there is also a reduced need for a large staff to manage and maintain the database, which also minimizes costs. The pilot study in Rhode Island was designed to create and package an adaptable application in an attempt to further reduce start-up and development costs for new adopters. This section discusses potential obstacles and challenges with replication as described by a group of experienced GIS practitioners and existing alternatives to the current mapping tool for new adopters.

Feedback from the NIJ MAPS Conference

In August of 2009, UI and ProvPlan convened a group of practitioners who were experts in the field of geospatial technology at the 10th Annual NIJ MAPS Conference. This group included analysts/planners, administrators, and directors primarily involved in corrections or law enforcement who all had intermediate to advanced GIS experience. The purpose of the session was to present on CSMS and ask for feedback and potential applications in other jurisdictions. Although some participants believed that the implementation of this tool would be more useful for a higher level organization or application (e.g. statewide coverage) and others seemed to believe the opposite (e.g. local coverage), everyone agreed that field staff (or the consumers—and not necessarily the developers of information) would benefit the most from this application. This group suggested several areas of expansions, including enhanced analytic features (such as network or routing analysis), increased flexibility to manipulate the data presentation, and increased detail for incidents or returning prisoners (such as fuller criminal history data and information about special conditions or statuses).

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[48] For example, Arkansas reported using ESRI's ArcView software to view addresses for multiple decision-making purposes, although not for active monitoring or supervision: http://www.dcc.arkansas.gov/pdfs/publications/ar03_04.pdf

When asked to consider potential challenges for other jurisdictions hoping to adopt a similar tool, participants suggested that data sharing, security, and reliability would all potentially be concerns. As one conference participant wrote to the evaluation team after browsing the online demo, "I think it's wonderful and exactly the kind of tool my police service needs to effectively address prolific offenders. I have shown it to my supervisors and they agree…[But] our correctional services are providence-wide and that is a lot of bureaucrats to convince." Overall, the participants were positive about the application, felt the costs associated with open-source software were acceptable, and expressed that the application was user-friendly. Several contacted UI for follow-up questions and to inform the evaluation team that the leadership in their agencies expressed interest in CSMS after ProvPlan was able to create a demonstration site (with fictitious data) for dissemination purposes.

Available Alternatives

CSMS might look slightly different in other jurisdictions for several reasons. First, the data may come from multiple sources, which could alter the basic search capabilities.[49] Depending on the users in a hypothetical jurisdiction, the mapping functions or data report options could be adapted to focus in on the desired capabilities. CSMS might be more useful if it was county-based in some jurisdictions and covering multiple jurisdictions in other locations. The lead agency or organization for developing and managing CSMS would likely vary, and CSMS may be designed for slightly different types of users (such as a heavier focus on police line officers than detectives). In addition, the unified system and data sharing relationships in Rhode Island are unique, although an outside organization would not be necessary for implementation.[50] The same

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[49] Integrating different sources would be fairly straightforward and is explained in detail in the technical document. Also see http://www.urban.org/reentry_mapping/Potential_DOC_Data.pdf for potential DOC data elements and suggested solutions for working with confidential data.
[50] A sample Memorandum of Understanding is available online through the Reentry Mapping Network for organizations looking to establish a partnership with a Department of Corrections: http://www.urban.org/reentry_mapping/Sample_MOU.pdf

basic setup of the current mapping tool could be easily adapted to other jurisdictions, depending on the types of adjustments and modifications needed.

There are also alternatives available for the basic server if agency IT staff is unfamiliar with Linux. A programmer might consider Slicehost or a similar option. Alternatives also exist to using Google as the basis for the open-source framework. When the project was originally designed in 2007, the Google Terms of Service were not as specific in their requirement that all applications using their API or geocoded data be public. With the advent of the Google Premier license (during the project period in 2009) the terms of use have been clarified. It is currently unknown if Google will maintain the current restrictions since Bing and Yahoo, arguably their biggest competitors, have more lenient terms of use. If Google maintains these new terms of service, there is also the option of using OpenLayers (an open-source Google-like mapping service) and a local Ruby-based geocoder. A local geocoder would use locally-hosted data that could come from Census (TIGER), commercial companies (i.e. Navteq), or government (planning, engineering, or public safety). If the state or county has an existing ESRI ArcMap Server platform, the application could even be modified to use a geocoding service hosted there.

Summary

This pilot project in Rhode Island serves as a starting point for jurisdictions interested in adapting a low-cost, user-friendly spatial tool to supervise and assist returning prisoners. Ultimately it is ideal for a small community to form around CSMS development and implementation processes. Both users and developers could contribute by discussing new (and necessary) functionality before developing the code and submitting to a central repository (such as SourceForge). In addition to the possibility of applying for grant money to implement this new technology, salaried employees from state and county agencies might also consider contributing in-kind hours for development, with

one or more corrections agencies championing the application and leading the development effort among its peers.

While the project's development, implementation, and evaluation all came to a close by the spring of 2010, CSMS is still in the early stages of use, with the continuous potential for new users and new capabilities. In Rhode Island, the development team is planning to extend CSMS to new users within the state,[51] in addition to continuously reaching out to other jurisdictions interested in launching a similar application.

CONCLUSION

In 2007 the Providence Plan and Urban Institute partnered together to develop, implement, and evaluate an innovative computer mapping application in Rhode Island. CSMS is designed to help criminal justice practitioners monitor and support people on probation. It allows users to search and map the location of people under community supervision and view their relation to services, police districts, schools and other community landmarks. These basic and user-friendly features provide a new way for probation officers to visualize their caseloads and allow detectives to stay updated by geographically viewing who is returning to a community. Practitioners are able to connect individuals to resources; policy analysts could view trends over time. Through a variety of uses, CSMS provides the potential to increase job effectiveness, improve communication, and enhance partnerships.

The development team learned multiple lessons about CSMS through the development and implementation processes. From these experiences, suggested practices include: promoting and reaching out to agencies and users

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[51] As of 2010, Airport Police, Johnson & Wales University and University of Rhode Island public safety and Department of Environmental Management are scheduled future users of CSMS, and ProvPlan is also targeting reentry organizations, since this population was less engaged than expected throughout the implementation process.

early and frequently; jumping in and playing with new features initially and incorporating the application into a user's daily routine over time; peer encouragement and support is often cited as an effective method to increase use; and continuous reminders and additional training sessions encourage sustained use over time.

From a generalizability standpoint, it is important to note that Rhode Island was already philosophically supportive of CSMS prior to its implementation. Rhode Island's DOC was moving towards a more neighborhood-based approach to probation in the months leading up to CSMS project. Under Colonel Dean Esserman's tenure, the Providence Police Department was making an effort to decentralize and transition to a community or neighborhood-based approach. According to a probation administrator, their offices were recently regionalized and the department was "moving towards more of a meet and greet model." A project director for a reentry organization noted that different organizations (discharge planners, probation, etc.) were beginning to meet more regularly through community entry councils.[52] The DOC warden also envisioned the current project as a way to encourage neighborhood-based probation; he discussed how organizing home visits geographically could "free up time" for this purpose. A small group of probation officers in one city demonstrated the potential for this by using spatial features to locate probationers on their caseloads and printing home visit forms through the reporting function to conduct systematic sweeps (or visiting all probationers in a certain part of the city in one day). In other words, CSMS was introduced to a network of users who were interested and open to neighborhood-based supervision and envisioned this technology as a resource to further these community-based reentry goals. Other jurisdictions may not be as open by comparison.

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[52] While this began in Providence, other cities in Rhode Island were starting up reentry councils by early 2010. These interactions were not always perceived as positive; for example, one interviewee noted that he/she did not always "like the tone" of the meetings towards the reentering population. However, everyone the evaluation team spoke with (including that interviewee) felt it was important to attend and inform returning prisoners of available services.

With a user-friendly interface design, user-based modifications, a variety of features and functions, and a steadily growing number of users and amount of overall system use, the evaluation team was especially interested in knowing whether CSMS has an impact on those who use it. In general, probation officers who were surveyed perceived positive effects; importantly, those who use the application more frequently have a statistically significantly more positive outlook on CSMS than infrequent users. Positive impacts include increased perceptions of efficiency, new knowledge (about the community, clients, and other information), and more accurate knowledge. Probation and law enforcement focus group participants generally believe that CSMS is easy to use; helpful; advantageous for the work they do; and if continually promoted and encouraged, has the potential to continue and increase collaboration efforts, supportive services, and supervision duties for a variety of criminal justice professionals.

Utilizing geospatial technology in the field of reentry provides practitioners with the tools to visualize and address issues surrounding returning prisoners. While Rhode Island was the focus of this project, the state served as a pilot site for what is a broader intended use of CSMS. CSMS is easily transferable to other jurisdictions looking to implement a similar geospatial application, and leadership in other jurisdictions can take away lessons learned from Rhode Island's experiences. With the ability to directly access the source code and technical manual used to design the application, the replication of this open-source software program can be an invaluable resource if data sharing agreements can be established, agency leadership is willing to promote this technology, and users can successfully integrate this resource into their daily routines.

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WEB RESOURCES

CSMS demo application
http://local.provplan.org/pnphelp/demoportal.html

Council of State Government's Justice Reinvestment Initiative
http://www.justicereinvestment.org

Example MOU
http://www.urban.org/reentry_mapping/Sample_MOU.pdf

Google Analytics
http://www.google.com/analytics/

Justice Mapping Center
http://www.justicemapping.org

Potential DOC data elements
http://www.urban.org/reentry_mapping/Potential_DOC_Data.pdf

ProvPlan static reentry maps
http://local.provplan.org/reentry/Providence.html

Reentry Mapping Network
http://www.reentrymapping.org

RI Right to Vote Campaign
http://www.opendoorsri.org/righttovote

Appendix A: Geospatial Tool Logic Model

The mission of this project is to develop a web-based mapping tool designed to help institutional and community corrections, public safety, and social service agencies better supervise and assist returning prisoners.

Key Inputs →	Data →	Tool →	Service →	Expected Outcomes
Agreement between agencies to share both public and confidential data within a central repository and to update that data on a consistent basis. Partners • Parole and probation officers • Public safety officials • Case managers from community-based organizations that support former prisoners returning to the community • Rhode Island Department of Corrections • RI Department of Children, Youth & Families • Providence Police Department • Family Life Center of Rhode Island Standard software applications to support the creation of the mapping tool, store the data, and allow users to access that data. Technology • Ruby on Rails: open-source web framework that allows for easy programming to generate application • MySQL: relational database system that houses data • Google Maps: application programming interface and lower bandwidth requirements than normal GIS applications	Probation and Parole will provide data on all inmates released from state prison. Other data will be collected from multiple jurisdictions (federal, state, county, and local agencies) and users, all of whom will constantly update the data (open-source) Outputs include: • # of data sources • # of records geo-coded • Frequency of data updates (Daily, Weekly, etc.) • # of residential or work address change alerts issued • Frequency of residential or work address change alerts	The geospatial tool will offer users six different functions (Probation Mapper, Service Mapper, Residential Mobility Alert, Directions Function, Reporting Function, and Export Function). Outputs include: • Average time needed to generate report • # of export features used • User-friendly lists and summary reporting (subjective) Throughout the development process, users will provide feedback on how the tool works. Outputs include: • Frequency of user feedback (Daily, Weekly, etc.) • # of users who provide feedback • # of different types of feedback • # of structured comments received • # of open-ended comments received	Probation and Parole officers will use the tool to enhance their knowledge and improve service delivery in their daily work. Enhanced knowledge: • # of service providers known by P&P before & after tool implementation • # of individuals with special conditions (D/V, restraining orders, no-contact orders within a certain radius) discovered in violation of parole • # of "bad" addresses identified that were given to probation officers • # of times cross-tabs used to determine clusters of people in different districts • # of parolees identified that have changed districts, but are still physically proximate to old address Improved service: • Frequency of using the system to look up residential or work address of client • Frequency of using the system to obtain directions to/from client visit • Average time spent by PO in traveling to client before & after tool implementation • Frequency of using the system to identify services proximate to clients • # of service referrals given out / received • # of maps distributed to prisoners	Short-Term Improved efficiency and effectiveness of case management systems, scheduling and communication • More knowledge of who is in the neighborhood / clusters of people • Greater ease in locating parolees and identifying violations • Service provision for groups of individuals • Ability to "multi-task" / visit several parolees in an area on one trip • Better choices about PO re-assignment • More time for lower-priority items (supporting and monitoring parolees, e.g. # of home visits) Greater collaboration between correctional, law enforcement, and community entities Long-Term Improved service • Improved supervision and assistance • Increased surveillance and greater access to services across the country • Ability to track transience within population • Improved relationships between probation and the police department • Increased communication and rapport between agencies and probation • Community-based probation • Assignments by district, making home visits more feasible • More informed decisions when designing, implementing, and investing in reentry and community corrections interventions Dissemination of geospatial tools • Champions of the tool who will promote it to others • More knowledge of the viability and utility of geospatial technology as a tool to support community corrections' work Decreased recidivism

Appendix B: CSMS User Agreement

RHODE ISLAND DEPARTMENT OF CORRECTIONS
PROBATION / PAROLE MAPPING APPLICATION
USER AGREEMENT

By accessing the Probation / Parole Mapping Application, I acknowledge I accept the conditions set forth in this User Agreement.

The purpose of this Agreement is to set forth, in writing, the terms and conditions under which the Rhode Island Department of Corrections (RIDOC) will provide access to the web-enabled Probation / Parole Mapping Application as requested.

This agreement shall commence for the user on the date accessed and continue until RIDOC or the user terminates service. The user's User Id is for the exclusive use of the assigned user and shall not be given to or used by anyone else. System access granted by this Agreement is non-transferable by the above named user and if violated will be revoked by RIDOC. If the user leaves employment, it is the responsibility of their supervisor or site superuser to inform RIDOC.

The user will access, use and disseminate information, only when relevant and necessary for criminal justice purposes. Systems shall not be used for personal or non-governmental reasons. RIDOC will conduct regular and systematic audits of the system to alleviate the possibility of improper access, use and dissemination of information.

Individuals utilizing the Probation / Parole Mapping Application while on RIDOC network are additionally subject to the terms and conditions of Policy 6.08-1 DOC; Internet / Intranet / Electronic Email Use and Standards, or a subsequent policy.

RIDOC reserves the right to immediately suspend furnishing any information or services provided for in this Agreement to the user, if this agreement is violated or appears to be violated by the user.

Appendix C: Agency MOU

MEMORANDUM OF UNDERSTANDING

USING OPEN-SOURCE TECHNOLOGY TO
ENHANCE POST-RELEASE SUPERVISION SYSTEMS

This MEMORANDUM OF UNDERSTANDING is hereby made and entered into by The Providence Plan, Rhode Island Department of Corrections, the Rhode Island Department of Children, Youth, and Families; the Providence Police Department; and the Family Life Center.

A. BACKGROUND:

The goal of the "Using Open-Source Technology to Enhance Post-Release Supervision Systems" project is to develop a geospatial application designed to help corrections, public safety, and social service agencies better supervise and assist returning prisoners. Using open-source software – that is software that can be used, copied, studied, modified and redistributed without restriction - The Providence Plan will design a Web-based tool that will enable users to conduct specialized queries of the locations of released prisoners, map those results at the address level, and then overlay the results with additional spatially-enabled datasets, such as support services for former prisoners. The statewide application will also allow user-friendly list and summary reporting as well as data export capability. Users will include parole and probation officers, public safety officials, and case managers from organizations that support ex-offenders as they return to the community following incarceration.

While a few integrated criminal justice data systems with mapping capabilities currently exist, this application is unique in that it employs cutting edge open-source technology that can be replicated by other communities with minimal start-up costs and no requirements for ongoing GIS support. Our application will be piloted, evaluated, and disseminated broadly to enable other jurisdictions to integrate, analyze, and map criminal justice data in ways that better inform local reentry efforts.

B. PURPOSE:

The purpose of this Memorandum of Understanding is to declare a mutual interest and desire to participate as a partner in The Providence Plan's application "*Using Open-Source Technology to Enhance Post-Release Supervision Systems*" for funding to the National Institute of Justice (NIJ) under the Geospatial Technologies solicitation, and to identify the roles, responsibilities, and decision-making powers that each party will perform should The Providence Plan be selected as a NIJ grantee.

C. STATEMENT OF VISION:

As partners, we are committed to the vision that introducing new technologies into existing parole and probation management systems can lead to enhanced public safety and improved outcomes for ex-offenders who seek to make a successful return to the community. Through this project, our organizations will work together to make post-release supervision systems more effective and successful and to improve discharge planning systems in ways that will be enable social service organizations to provide better quality and more informed support to ex-offenders.

D. PARTNERSHIP PRINCIPLES:

As partners, we acknowledge and agree to operate under certain conditions. We will:

- Commit to a shared vision (stated above)

- Make decisions through consensus among individuals who are empowered by their organizations.

- Operate under a set of core values that emphasizes trust, respect, transparency, and inclusiveness.

- Promote effective communication strategies and feedback loops at all levels within the partnership.

- Use performance management standards that demonstrate partners' accountability for their actions.

- Expect partners to take ownership for delivering the objectives for which they are responsible.

- Build a culture of shared learning and take advantage of opportunities to share in each other's work.

- Work to promote systems reform within the field of parole and probation management systems in ways that support ex-offenders' successful integration into the community.

- Celebrate and publicize success and work together to overcome continuing barriers.

- Adhere to human subjects research protocols established by The Providence Plan in adherence to federal law.

- Explore opportunities to expand this partnership with other organizations who share a common interest in these issues and a commitment to the vision and principles presented in this MOU.

E.   ROLES AND RESPONSIBILITIES OF PARTIES:

1. PROVPLAN SHALL:

a. Serve as a Partner in the project and appoint one representative and one alternate who can attend meetings and act on behalf of the organization on matters related to the operation of the project.

b. Function as the lead entity for the project and be identified as such in the application submitted to the National Institute of Justice. Serve as the administrative and fiscal agent for the project, and complete all programmatic and financial reports as required by NIJ.

c. Design a Web-based tool that will enable users to conduct specialized queries of the locations of released prisoners, map those results at the address level, and then overlay the results with additional spatially-enabled datasets, such as support services for former prisoners.

d. Oversee the design and implementation of a rigorous training for end users, which includes hands-on instruction and the development of online tutorials and user manuals.

e. Host the application on its network and ensure that all data and related materials are stored on a secure data network that can be accessed only by personnel with proper permissions.

f. Enter into cooperative agreements with the Urban Institute and other third-party contractors as needed, to complete the tasks and activities outlined in the project scope of work.

g. Coordinate meetings to convene the Reentry Mapping Network as a way to gather feedback, improve systems, and promote the dissemination of findings.

h. Provide tool access to all signatories of the Memorandum of Understanding.

2. RI DEPARTMENT OF CORRECTIONS

a. Serve as a Partner in the project and appoint one representative and one alternate who can attend meetings and act on behalf of the organization on matters related to the operation of the project.

b. Provide parole and probation datasets pursuant to data sharing agreements executed with The Providence Plan and other project partners.

c. Work with The Providence Plan and the Urban Institute to provide baseline data collection for evaluation efforts.

d. Convene a cohort of parole and probation officers who will assist in the planning of the tool by providing input on the types of queries and functionality that would be most useful to them

e. Participate in the roll-out phase of the project by providing a pool of 12-15 parole and probation officers to pilot the tool.

f. Participate in the broader implementation phase of the project. Participate in evaluator-led focus groups and provide user log data for external evaluation.

g. Serve as a conduit between the project and the federal Bureau of Prisoners as a mechanism to expand the datasets.

h. Develop mechanisms and pursue strategies in which discharge planning agencies throughout the state could gain access to parole and probation data and thus become eventual users the tool.

i. Assist in dissemination activities by providing findings and information to other juvenile justice agencies at a regional and national level.

3. RI DEPARTMENT OF CHILDREN, YOUTH, AND FAMILIES

a. Serve as a Partner in the project and appoint one representative and one alternate who can attend meetings and act on behalf of the organization on matters related to the operation of the project.

b. Provide juvenile justice datasets pursuant to data sharing agreements executed with The Providence Plan and other project partners.

c. Identify a group of juvenile probation officers to participate in the broader implementation phase of the project.

d. Participate in evaluator-led focus groups and provide user log data for external evaluation.

e. Assist in dissemination activities by providing findings and information to other juvenile justice agencies at a regional and national level.

4. PROVIDENCE POLICE DEPARTMENT

a. Serve as a Partner in the project and appoint one representative and one alternate who can attend meetings and act on behalf of the organization on matters related to the operation of the project.

b. Provide crime data and recruit other police departments to provide near real-time data to support the development and further enhancement of the tool.

c. Assist in dissemination activities by providing findings and information to other public safety departments at a state, regional, and national level.

5. THE FAMILY LIFE CENTER

a. Serve as a Partner in the project and appoint one representative and one alternate who can attend meetings and act on behalf of the organization on matters related to the operation of the project.

b. Enhance existing support services datasets and provide update information to The Providence Plan.

c. Convene a cohort of case managers who will assist in the planning of the tool by providing input on the types of queries and functionality that would be most useful to them

d. Participate in the broader implementation phase of the project.

e. Participate in evaluator-led focus groups and provide user log data for external evaluation.

f. Recruit other discharge planning agencies to participate in the latter stages of the project.

g. Assist in dissemination activities by providing findings and information to other organizations serving ex-offenders at a state, regional, and national level.

F. DECISION-MAKING WITHIN THE PROJECT

a. All signatories to this Memorandum of Understanding will be considered as official Partners in the *Using Open-Source Technology to Enhance Post-Release Supervision Systems* project. Changes to this list can only be made by unanimous consent of all the Partners.

b. Partners will have decision-making authority on key components of the project. The scope of this authority includes shaping the strategic direction of the project, selecting (if applicable) third-party consultants who will provide training and/or technical assistance, and determining how project resources should be allocated.

c. Decisions within the project will be made through consensus. For the purposes of this Agreement, consensus will be defined as a process in which debate on an issue has taken place, the proposed solution/decision is acceptable to all Partners, and that agreement is strong enough that it can stand for some time without need to revisit the issue.

G. VOLUNTARY DISASSOCIATION
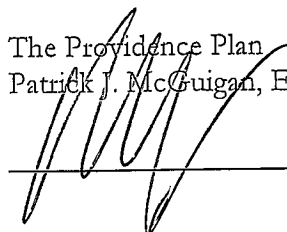
This Memorandum of Understanding is a nonbinding agreement that all parties have entered into in good faith. Any party may disassociate from the effort without penalty or liability by so notifying the other in writing. Written notice shall be sent sixty (60) days prior to the disassociation.

H. TERM AND AMENDMENT
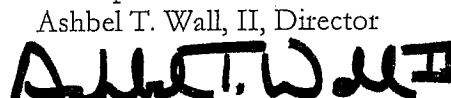
This Memorandum of Understanding shall go into effect when all parties have signed the agreement. The MOU shall remain in effect through December 2009 or until NIJ funding has ended. All parties reserve the right to renegotiate this Memorandum upon the unanimous consent of parties. This Memorandum may be extended beyond the time period indicated above by common written consent of all parties. This Memorandum represents the entire understanding of both parties with respect to this partnership. Any modification of this Memorandum must be in writing and signed by the parties.

IN WITNESS WHEREOF, the parties have executed this memorandum as of the last written date below.
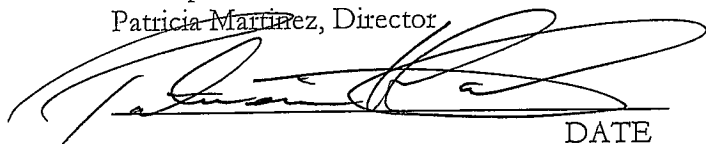
The Providence Plan
Patrick J. McGuigan, Executive Director

_____ 3/7/07
                                  DATE
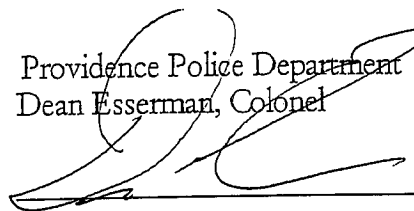
RI Department of Corrections
Ashbel T. Wall, II, Director

_____ 3/5/07
                                  DATE
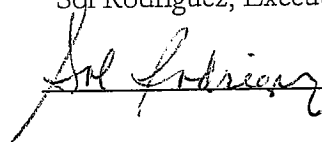
RI Department of Children, Youth, and Families
Patricia Martinez, Director

_____
                                  DATE

Providence Police Department
Dean Esserman, Colonel

_____ 3/6/07
                                  DATE

Family Life Center
Sol Rodriguez, Executive Director

_____ 3-6-07
                                  DATE

Appendix D: Data Tables from CSMS Survey

Data Tables from CSMS Survey

Background Characteristics

Years in Current Position (yrs)	2008 (Pre)	2009 (Post)
Min/Max	<1 - 20	1.5 - 20
Mean	5.26	6.79
Median	4.25	5.79
SD	4.4	4.34
n	56	52
Caseload Numbers		
Min/Max	38-500	50-380
Mean	190.45	130.8
Median	220	106
SD	106.90	74.4
n	55	45
Position Types		
Supervisor/Acting Supervisor	2 (3.5%)	6 (11.5%)
Probation/Parole Officer	23 (41.1%)	22 (42.3%)
Probation/Parole Officer II	31 (55.3%)	24 (46.2%)
n	56	52
Clients with a Legitimate Address		
Min/Max	50%-100%	50%-100%
Mean	81.5	83.43
Median	85	85
SD	14.84	13.5
n	56	49

Job Duties and Responsibilities

Contact with Clients (frequency)	2008	2009		2008	2009
More than once/week			*Once/month*		
Min/Max	0-50	0-20	Min/Max	0-100	0-100
Mean	4.57	3.5	Mean	51.89	50.25
Median	1	2	Median	50	50
SD	8.28	4.47	SD	27.41	28.87
n	54	48	n	54	48
Once/week			*Less than once/month*		
Min/Max	0-98	0-90	Min/Max	0-100	0-100
Mean	12.28	14	Mean	16.87	13.42
Median	9	7	Median	8	5.5
SD	16.05	19.36	SD	25.11	22.70
n	54	48	n	53	48
Once every two weeks					
Min/Max	0-60	0-45			
Mean	14.91	15.92			
Median	10	15			
SD	14.5	13.79			
n	54	48			

Note: Results are reported in percentages. One respondent in the 2008 survey left one portion of the question ("Less than once a month?") blank. Four respondents in the 2009 survey left the entire question blank; three of these respondents were supervisors.

Job Duties and Responsibilities (continued)

Job Duties (# hours)	2008	2009		2008	2009
Speaking with clients (phone)			*Completing paperwork*		
Range	0-10	1-23	Range	2-25	0-20
Mean	3.55	4.47	Mean	8.64	6.88
Median	3	3	Median	7	6
SD	1.96	3.86	SD	5.13	4.52
n	55	51	n	56	51
Mean % of all hours	9	11.21	Mean % of all hours	20.05	17.42
Visiting with clients in office			*Contacting service providers*		
Range	0-20	0-20	Range	1-11	0-5
Mean	10.85	10.75	Mean	3.11	2.17
Median	10	10	Median	2	2
SD	4.19	4.32	SD	2.28	1.38
n	55	51	n	55	51
Mean % of all hours	27.90	27.94	Mean % of all hours	8.09	5.40
Visiting clients in the community			*Providing court coverage*		
Range	0-20	0-15	Range	0-12	0-10
Mean	2.69	3.1	Mean	5.14	4.59
Median	2	2	Median	7	7
SD	4.12	3.41	SD	3.31	3.44
n	55	51	n	54	51
Mean % of all hours	6.87	7.93	Mean % of all hours	12.79	11.32
Locating clients			*Meeting with supervisors/staff*		
Range	0-7.5	0-10	Range	1-5	0-20
Mean	1.81	2.05	Mean	1.67	2.55
Median	2	2	Median	1	2
SD	1.51	1.95	SD	1.01	3.55
n	53	51	n	54	51
Mean % of all hours	4.34	5.23	Mean % of all hours	4.34	8.40
Scheduling and planning visits			*Other tasks*		
Range	0-10	0-7	Range	1-12	0-26
Mean	1.82	1.48	Mean	.48	.55
Median	2	1	Median	0	0
SD	1.46	1.32	SD	1.83	3.65
n	54	51	n	56	51
Mean % of all hours	4.68	3.77	Mean % of all hours	.71	1.39
Total hours					
Range	30-72	10-67			
Mean	38.95	38.59			
Median	37	36			
SD	6.95	9.86			
n	47	51			

Job Duties and Responsibilities (continued)

Contact with Clients (type; # clients)		2008	2009
Over the telephone?			
	Range	0-100	5-78
	Mean	30.38	27.49
	Median	25	20
	SD	21.03	17.43
	n	56	49
In the probation office?			
	Range	0-200	2-103
	Mean	35.76	31.06
	Median	30	26
	SD	27.29	19.35
	n	56	50
In the community?			
	Range	0-50	0-34
	Mean	6.66	6.9
	Median	3.5	5
	SD	10.24	7.06
	n	56	50
Time spent traveling		**2008**	**2009**
	Range	0-15	0-9
	Mean	1.9	1.73
	Median	1	1
	SD	2.99	1.96
	n	54	47

Service Coordination and Referrals

# Referrals/contacts		2008	2009
# Referrals to services			
	Range	0-150	0-200
	Mean	24.21	24.33
	Median	20	15
	SD	24.07	33.34
	n	55	52
# Contacts with service providers			
	Range	0-50	2-100
	Mean	9.98	10
	Median	8	6
	SD	7.51	14.38
	n	55	52
# Contacts with police about a client			
	Range	0-30	0-60
	Mean	8.65	8.35
	Median	5	5
	SD	8.26	10.79
	n	55	52

Technology Use

General frequency (computer use)	2008	2009
Frequently/feel comfortable	47 (83.93%)	45 (86.5%)
Occasionally/can figure things out	8 (14.29%)	7 (13.5%)
Rarely/sometimes have trouble	1 (1.79%)	0
Hardly ever or never/feel very unfamiliar	0	0
n	56	52
Frequency of computer use for work		
Multiple times/day	56 (100%)	52 (100%)
At least once/day	0	0
At least once/week	0	0
Less often than once/week	0	0
Never	0	0
n	56	52
Use of computer mapping before CSMS		
Multiple times/day	6 (10.71%)	5 (9.6%)
Once/day	10 (17.86%)	7 (13.5%)
Once/week	11 (19.64%)	17 (32.7%)
Less once/week	15 (26.79%)	8 (15.4%)
Never	14 (26.79%)	15 (28.8%)
n	56	52

Experiences with CSMS (2009 survey wave only)

Frequency R uses CSMS for work	
Daily	3 (5.8%)
Several times/week	11 (21.2%)
Once/week	11 (21.2%)
Several times/month	8 (15.4%)
Once/month	2 (3.8%)
Few times/year	9 (17.3%)
Never	8 (15.4%)
n	52
Familiarity with CSMS	
Very familiar	9 (17.3%)
Somewhat familiar	30 (57.7%)
Not very familiar	6 (11.5%)
Not at all familiar	7 (13.5%)
n	52
Are you a Superuser for your agency?	
Yes	13 (25%)
No	39 (75%)
n	52
How user-friendly is CSMS?	
Very user-friendly	15 (38.8%)
Mostly user-friendly	19 (36.5%)
Somewhat user-friendly	18 (34.6%)
Not at all user-friendly	0
n	52

	Reported features used		Ranked as the top feature?	
	n	%	n	%
To check residential/work addresses	36	69.2	8	15.4
To see where clients are clustered	34	65.4	5	9.6
To visit multiple clients on the same day	31	59.6	11	21.2
To determine the radius for sex offenders	23	44.2	3	5.8
To obtain directions to/from a visit	21	40.4	4	7.7
To determine whether clients live together	17	32.7	0	0
To direct a client to programs/services	13	25	0	0
To coordinate with police/reentry/other	13	25	0	0
To view information on criminal offenses	13	25	3	5.8
To locate police district lines	12	23.1	1	1.9
To coordinate with probation officers	12	23.1	1	1.9
To use the photo ID feature	7	13.5	0	0
Never used outside of training	7	13.5	3	5.8
Update a client's address	3	5.8	2	3.8
Other	1	1.9	1	1.9

Note: Respondents were asked to select all that applied; n represents the number of respondents.

CSMS's Impact

	SD	D	A	SA
Mapping tool has no effect	7 (13.5%)	26 (50%)	14 (26.9%)	5 (9.6%)
Increases responsibilities in a negative way	25 (48.1%)	25 (48.1%)	2 (3.8%)	0
Increases responsibilities in a positive way	5 (9.6%)	9 (17.3%)	29 (55.8%)	9 (17.3%)
Saves time/is more efficient	2 (3.8%)	8 (15.4%)	27 (51.9%)	15 (28.8%)
Takes longer than tasks previously did	15 (28.8%)	32 (61.5%)	3 (5.8%)	0
Provides features/info not previously available	1 (1.9%)	6 (11.5%)	28 (53.8%)	16 (30.8%)
Helps service coordination for clients	2 (3.8%)	16 (30.8%)	25 (48.1%)	7 (13.5%)
Learned new things about community/clients	2 (3.8%)	14 (26.9%)	28 (53.8%)	6 (11.5%)
Increases stress/frustration for me	17 (32.7%)	29 (55.8%)	4 (7.7%)	1 (1.9%)
Increases accuracy with information I use	2 (3.8%)	10 (19.2%)	31 (59.6%)	7 (13.5%)
Replaced old methods	4 (7.7%)	8 (15.4%)	28 (53.8%)	10 (19.2%)
Feel pressured to adopt mapping tool	18 (34.6%)	29 (55.8%)	4 (7.7%)	0

Appendix E: CSMS Survey Mean Comparisons

Mean Comparisons

Comparing Pre- and Post-Implementation Survey Waves

Background	Mean (2008)	Mean (2009)	t
Years in Current Position (yrs)	5.26	6.79	-1.82
Caseload Numbers	190.45	130.8	3.28**
Clients with a Legitimate Address	81.5	83.43	-.69
Job Duties and Responsibilities			
% clients contacted more than once/week	4.57	3.5	.83
% clients contacted once/week	12.28	14	-.49
% clients contacted once every two weeks	14.91	15.92	-.36
% clients contacted once/month	51.89	50.25	.29
% clients contacted less than once/month	16.87	13.42	.72
# hours speaking with clients (phone)	3.55	4.47	-1.52
# hours completing paperwork	8.64	6.88	1.88
# hours visiting with clients in office	10.85	10.75	.12
# hours contacting service providers	3.11	2.17	2.59**
# hours visiting clients in the community	2.69	3.1	-.57
# hours providing court coverage	5.14	4.59	.84
# hours locating clients	1.81	2.05	-.70
# hours meeting with supervisors/staff	1.67	2.55	-1.71
# hours scheduling and planning visits	1.82	1.48	1.26
# hours spent on other tasks	.48	.55	-.12
# clients contacted by phone	30.38	27.49	.76
# clients in the probation office	35.76	31.06	1.01
# clients visited in the community	6.66	6.9	-.14
# hours traveling to/from client meetings	1.9	1.73	.33
Service Coordination and Referrals			
# Referrals to services	24.21	24.33	-.02
# Contacts with service providers	9.98	10	-.01
# Contacts with police about a client	8.65	8.35	.17

Note: *$p<.05$, **$p<.01$

Comparing Frequent and Infrequent Users

Background	Mean (Infrequent Users)	Mean (Frequent Users)	t
Clients with a Legitimate Address	82.85	84.09	-.32
Job Duties and Responsibilities			
% clients contacted more than once/week	4.32	2.52	1.41
% clients contacted once/week	9.88	18.48	-1.51
% clients contacted once every two weeks	18.40	13.22	1.31
% clients contacted once/month	48.08	52.61	-.54
% clients contacted less than once/month	15.32	11.35	.60
# hours speaking with clients (phone)	4.08	4.88	-.74
# hours completing paperwork	6.42	7.36	-.74
# hours visiting with clients in office	10.85	10.64	.17
# hours contacting service providers	2.10	2.24	-.37
# hours visiting clients in the community	3.02	3.20	-.19
# hours providing court coverage	4.50	4.68	-.19
# hours locating clients	1.92	2.18	-.47
# hours meeting with supervisors/staff	2.54	2.56	-.02
# hours scheduling and planning visits	1.85	1.10	2.11*
# hours spent on other tasks	.00	1.12	-1.08
# clients contacted by phone	28.04	26.81	.24
# clients in the probation office	29.11	33.35	-.77
# clients visited in the community	5.93	8.04	-1.06
# hours traveling to/from client meetings	1.75	1.71	.06
Service Coordination and Referrals			
# Referrals to services	29.26	19.00	1.11
# Contacts with service providers	13.11	6.64	1.71
# Contacts with police about a client	6.81	10.00	-1.07

Note: This chart only includes expected outcome measures from post-implementation survey respondents. *p<.05, **p<.01