

SUPPORTING STATEMENT

B. STATISTICAL METHODS

1. Universe and Respondent Selection

The Geospatial Capabilities Survey is the first data collection of its kind in fifteen years. The data collected in this survey will provide the updated data required for the government to make perceptive investments to meet the needs and enhance the effectiveness of geospatial capabilities to improve public safety.

The universe is the nation's law enforcement agencies (LEAs). For this study, we will be inviting a selection of the law enforcement agencies. We will base the selection on the 1997-1998 survey of police departments sponsored by the NIJ Crime Mapping Research Center (CMRC). We first updated the classification of the LEAs that were invited to take the 1997-98 survey by grouping the LEAs into two categories according to the number of sworn officers (100 or more sworn officers or less than 100 sworn officers). Based on data from the 2008 Census of State and Local Law Enforcement Agencies (CSLLEA), the latest agency size statistics available, we identify the current agencies with at least 100 or more sworn offices. Using this updated agency size classification scheme, agencies that responded to the 1997-98 survey that had at least 100 or more sworn officers were compared to the 2008 CSLLEA agencies to identify agencies that either did not respond to the 1997-1998 survey, or that have subsequently become 100 or more sworn. A breakdown of all respondents to the 1997-98 survey was then conducted. The results show that there were 217 agencies with at least 100 or more sworn officers that indicated they had computerized crime mapping as of the 1997-98 survey, 373 agencies did not, and 19 did not respond to this question. For agencies with less than 100 sworn, 49 had computerized crime mapping at the time of the 1997-98 survey, 1317 did not, and 57 did not respond to the question. These numbers were then used to identify the sampling frame for the current survey, and to identify the number of agencies to be selected in each category (please see Table 5 below). It should be noted that the original sampling frame from 1997-98 is no longer available and as such we reduced the sampling frame for agencies of 100 or less to those that responded to the original survey¹.

¹ This will limit the generalizability of the current study in two ways. First agencies that have recently formed will not have been in either sampling frame. Second agencies that have become 100 or more sworn (since 2008) and that did not reply to the original survey will also not be in either sampling frame. The findings of this survey will not be applicable to these two groups.

Table 5: 1997-98 CMRC Survey

Agency Size*	1997-1998 Computerized Crime Mapping Question				Total
	Yes	No	Missing**	Did not return 1997-98 Survey	
100 or more	217	373	19	465	1074
Less than 100	49	1317	57	Cannot be determined	1423
Total	266	1690	76	465	2497

*Based on # sworn officers in 2008 Census of State and Local Law Enforcement Agencies (CSLLEA)

**Did not answer computerized crime mapping question in 1997-98 survey

Based on the sampling frame shown in Table 5, we doubled the probability of selection for LEAs with 100 or more sworn officers. This action is not based on scientific deductions, but rather on the fact that past studies have shown lower use of computerized crime mapping by LEAs with fewer than 100 sworn officers.² This step results in the sampling that we will use for the 2014 Geospatial Capabilities Survey. That sampling frame will include 546 LEAs with 100 or more sworn officers based on 110 that replied “Yes” in the 1997-98 survey, 190 that replied “No”, 9 that did not answer the crime mapping question in the 1997-98 survey, and 237 that either did not return the 1997-98 survey or became 100 or larger between the 1997-98 survey and the 2008 CSLLEA. In addition, the 2014 Geospatial Capabilities Survey sampling frame will include 361 LEAs with less than 100 sworn officers based on 12 that responded “Yes” to the 1997-98 survey, 335 that responded “No”, and 14 that did not answer the crime mapping question. The number of agencies to be selected from each category in the sampling frame for the 2014 Geospatial Capabilities Survey is shown in Table 6.

Table 6: 2014 Geospatial Capabilities Sampling Frame

Agency Size*	Yes	No	Missing**	Did not return 1997-98 Survey	
100 or more	110	190	9	237	546
Less than 100	12	335	14	0	361
Total	122	525	23	237	907

*Based on # sworn officers in 2008 Census of State and Local Law Enforcement Agencies (CSLLEA)

**Did not answer computerized crime mapping question in 1997-98 survey

² For example, the 1997-1998 survey of 2004 police departments sponsored by the NIJ Crime Mapping Research Center (CMRC) found that 36% of the large departments used computerized crime mapping and only 3% of the small departments used crime mapping (Mamalian and LaVigne 1999). Other studies, such as Chamard’s examination of the CMRC data shows that diffusion of crime mapping was much more rapid in large department than those with fewer than 100 sworn officers. Moreover, data such as that from the Law Enforcement Management and Administration statistics surveys conducted from 1997 and 1999 show that the extent of discontinuing the use of crime mapping is much more prevalent in smaller departments (48.3% discontinuance) than in larger departments (2.7% discontinuance).

2. Procedures for Collecting Information

Data collection will involve a series of mailings, non-response follow-ups, and retrieval of inconsistent items. RAND is skilled at using the “classic” non-response conversion techniques. There is a delicate balance between strongly encouraging non-respondents to complete a survey and over-pressuring them. RAND staff recognizes that most law enforcement agencies are supportive of research but are burdened with competing demands on limited time resources. RAND staff members have a great deal of experience in tactfully persuading non-respondents to complete surveys and at the same time recognizing that the Geospatial Capabilities Survey is completely voluntary in nature. RAND’s approach to data collection and non-response follow-up is based on previous project experience and recommendations made by Dillman and colleagues (Dillman, Smyth et al., 2009).

Although Dillman et al. recommend that researchers implement five distinct contacts, RAND recognizes that surveys may have different requirements. RAND staff will use five contacts (i.e., pre-notification letter, initial survey mailing, initial thank-you/reminder letter, second reminder letter survey, and final reminder letter). Since RAND has no access to e-mail addresses or direct telephone numbers of the heads of law enforcement agencies, U.S. postal service letters are deemed to be the best method to solicit responses. NIJ has spoken with representatives of the International Association of Chiefs of Police (IACP) and the IACP leadership has agreed to support the survey by posting a notice on its website to encourage participation once the invitations have been mailed.

The Geospatial Capabilities Survey can be completed electronically or by paper. The pre-notification letter will serve as the letter of invitation. That letter will include a website address, login, and password information for the invited participant to download the electronic version of the survey questionnaire.

RAND’s offer of electronic and paper versions of the questionnaire will allow each law enforcement agency to choose the means most convenient for it to participate in the survey. Electronic versions can be returned by e-mail and paper versions can be returned by mail in a pre-addressed postage-paid envelope that will be mailed out with each paper questionnaire. It is estimated that completion of the geospatial capabilities questionnaire will take about 50 minutes to complete.

The electronic version of the questionnaire will be in the form of an Excel workbook. Participants will need access to Microsoft Excel 2007 or more recent for Windows computers (PC) or Microsoft Excel 2011 for Apple computers (Mac) to use the electronic version of the survey. Since Excel is included in the Microsoft Office suite commonly in use throughout government and business enterprises, we believe that most, if not all, of the nation’s largest law enforcement agencies will have access to Excel. The Excel workbook with the survey questionnaire will have two worksheets. The first worksheet will provide written instructions and contact information for further assistance. The second worksheet will be the electronic form of the questionnaire. The Excel workbook will be posted on a website. For security purposes, invited participants will receive the website address, login name, and password on their invitation letters. Once logged in, the

invited participant can download the Excel workbook, request or decline a paper version of the questionnaire, or decline the invitation to participate. Those invited participants who do not decline the paper version will receive a paper version by mail regardless if they have downloaded the Excel version. If an invited law enforcement agency elects to decline the invitation, that agency will not receive a paper version of the questionnaire. If a participant declines the invitation to participate, but later decides to participate, that agency can log in again at the website with the login and password provided in the invitation letter and download the questionnaire or request a paper copy by mail. The option to rescind a declination to participate will be available until the last day of the survey, TBD date here.

Those agencies that have not declined the invitation to participate, but have not submitted responses by approximately the three-week, five-week, and seven-week marks will receive thank-you/reminder letters, as appropriate. The agencies that have declined the invitation will not receive any subsequent mailings after declination unless specifically requested by the agency.

RAND will rely on experienced reviewers and coders to ensure that hardcopy surveys are free of errors prior to data entry. If clarifications are required, RAND will follow-up using the contact information provided on the submission to obtain clarified responses.

The Geospatial Capabilities Survey is completely voluntary. Therefore, some agencies will elect to not provide responses to some questions. Blank responses will be interpreted as declinations to provide responses. RAND will not make further contact in attempt to fill blanks in a submission.

To ensure high-quality data, RAND will employ a standard, integrated set of software tools that encompass the entire data processing and delivery mechanism, including receipt control, data entry, data quality review, and data delivery. All hard copy surveys will be entered directly into a database upon receipt. Electronic surveys are entered by the respondents and are checked for consistency within the controls built into the Excel based questionnaire system. The data submitted in an electronic version will be transferred to the database upon receipt. Both the electronic and paper versions of the survey will clearly display contact information for assistance in completing the survey. RAND will also review the frequencies from data entry as well as frequencies from early electronic survey responses. Any issues noted will be investigated and resolved. The data will also be subjected to rigorous automated cleaning.

3. Methods to Maximize Response

RAND staff recognizes the importance of achieving a high response rate to ensure the usefulness and credibility of the proposed data collection. RAND is highly skilled in getting practitioners to complete agency surveys. RAND recognizes though that despite planned efforts to achieve a high response rate (e.g., training the data collection staff and working with NIJ to secure support of key organizations such as the IACP), it is reasonable to expect that non-response will occur. To maximize response rates we will provide both a traditional paper option and an electronic means for the respondents to

complete the survey. Participants can return the paper survey questionnaires by mail in an enclosed pre-addressed stamped envelope or use the electronic version and return that by e-mail. Both the paper and electronic versions of the questionnaire have been designed to facilitate ease of completion. The follow-up plan is based off of best practices while balancing the need for response and the agency's right to decline and is comprised of letters to the head of the law enforcement agency.

RAND will provide NIJ with the website address for the electronic version of the questionnaire for forwarding to the IACP for posting on the IACP website along with a message from IACP leadership encouraging its members to participate in the Geospatial Capabilities Survey.

4. Testing of Procedures

Multiple rounds of review by RAND and NIJ staff and feedback from BJA, BJS, the Navy Research Laboratory (NRL), Department of Homeland Security (Science and Technology Office), and Community Oriented Policing Services (COPS) has attempted to minimize the complexity and length of the survey in order to lower the burden on respondents. Only those items of direct relevance and deemed critical by the project team and NIJ were kept in the survey. The level of effort necessary to complete the survey was assessed during a pilot test in 2013. Please see Attachment 3 which contains the Pilot Test Report.

Key elements of the pilot testing and the results are summarized here. A convenience sample was used for the pilot test based on recommendations from NIJ. Participants were asked to complete and return the survey questionnaire and complete a pilot test evaluation that solicited pilot test participant responses on their experience with the survey questionnaire. Nine law enforcement agencies completed the pilot test and all selected the electronic format.

Feedback provided by pilot test participants has been incorporated into the survey forms. Questions that were not easily answered by the pilot test responders were removed from the survey. Questions reported to be ambiguous were clarified.

5. Contacts for Data Collection

Person to contact for information on methodology, conducting the survey, and analyzing the data:

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C. ATTACHMENTS

Attachment 1: Geospatial Capabilities Survey
Attachment 2: Geospatial Capabilities Electronic Format (Excel) Example
Attachment 3: Pilot Test Report
Attachment 4: Geospatial Capabilities Pre-notification Letter
Attachment 5: Geospatial Capabilities Survey Electronic Format Introduction
Attachment 6: Geospatial Capabilities Thank You Reminder 1
Attachment 7: Geospatial Capabilities Thank You Reminder 2
Attachment 8: Geospatial Capabilities Last Chance Reminder

REFERENCES

Charmard, S., (2006). "The History of Crime Mapping and Its Use by American Police Departments," Alaska Justice Forum, Fall 2006, Vol. 23, No. 3.

Dillman, D. A., J. D. Smyth, et al. (2009). Internet, Mail and Mixed-Mode Surveys: The Tailored Design Method, 3rd edition. Hoboken, NJ, John Wiley.

Mamalian, C. A, N. G. LaVigne, et al (1999). The Use of Computerized Crime Mapping by Law Enforcement: Survey Results, United States Department of Justice, Office of Justice Programs, National Institute of Justice, Washington, D. C., FS 000237.