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Assessing Mobile Technologies in Child Protective Services

Columbia County
Department of Social Services
District Profile

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Introduction

Demonstration Project

The New York State (NYS) Mobile Technology Demonstration Project is an initiative to assess the use of mobile technologies in child protective services work in New York State. The project, a collaborative effort among the NYS Office of Children and Family Services (OCFS), 23 NYS County Departments of Social Services (DSS), and the Center for Technology in Government (CTG), focused on two core questions – how is mobile technology used in the work setting and did the technology impact the work itself?

In this project, OCFS was responsible for the selection, procurement, and deployment of mobile technologies. The County DSS were also responsible for the deployment of mobile technologies, in addition to the coordination and procurement of wireless connectivity, training, and the selection of Child Protective Services (CPS) staff to participate in the demonstration. CTG was responsible for the independent assessment of the use of the technology.

The *Demonstration Project in 23 Local Social Service Districts* produced profiles for each of the participating districts as well as a summary report. It may be useful to read through the summary report before reading the local district profile as the summary report explains the variability in the CPS environment across the state as well as describes the many polices and practices developed and implemented by districts. The report is available at:
http://www.ctg.albany.edu/publications/reports/demonstration2008.
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This profile presents findings for the Columbia County DSS. Findings are based on data collected through online surveys, district questionnaires, and analysis of CONNECTIONS data (data collection methodology and timeframe can be found in Appendix A). The field test lasted 75 days from 10/26/07-1/9/08.

District Deployment

Columbia County DSS has 12 CPS staff responsible for child protective services. Columbia County is mostly rural and has approximately 63,000 residents. The Columbia County DSS participated in the demonstration project to learn if mobile technologies can maximize field time, reduce the number of significantly overdue reports, and increase the accuracy of recorded notes.

The Columbia County DSS deployed 11 Dell Latitude D620 laptops to 11 caseworkers on 10/26/07 (see Appendix B for device specifications). All caseworkers received their own device and docking stations with keyboards and monitors. Ten caseworkers were given their own device and one laptop was shared among two caseworkers working different shifts. All 11 laptops were supplied with external Verizon broadband cards approximately one week after caseworkers received the device. Regardless of the network connections used, all access to the State network was through a virtual private network (VPN) that secures the transmission to and from the portable device and the network. In addition, PointSec encryption software was installed on each device before deployment. Each person received individual training on how to use the laptop, as well as security

precautions (as prescribed by OCFS). Caseworkers were instructed to make sure the laptops were docked at least once a week to upload software and security updates.

Finally, no policies were changed to support the introduction of mobile technologies before or during the pilot period. Some work practices were modified during the pilot period; for example, caseworkers were required to bring the laptops with them while in the field and at the court house. Caseworkers were allowed to bring the laptops home, but this was not a formal requirement.

Characteristics of Respondents

A total of 11 CPS caseworkers participated in this study: 10 took the baseline survey (response rate 91%); 9 took the post-pilot survey (response rate 82%); and 8 took both the baseline and post-pilot surveys (response rate 73%).

The length of experience in CPS work, amount of overtime accrued weekly, the number of court days and estimated court waiting time are all important to understanding the overall context of the work environment. The Columbia County DSS respondents[1] were relatively new to CPS field work, with an average of 2.7 years of experience; 78% reported CPS experience of three years or less. Respondents were working slightly less overtime hours during the pilot period. While the percentage of respondents reporting overtime of four hours or less in a week did not change for both the pre-pilot and pilot periods (75% for both periods), the average overtime hours shifted down from 4.6 hours in the pre-pilot period to 3.2 hours in the pilot period. All of the respondents reported a typical court waiting time of three hours or less and 60% reported on average spending two or fewer days in court per month.

Mobility

The laptops provided caseworkers opportunities to work outside the office environment in new ways. This section reports on how the participants used those opportunities in terms of the type of work done, locations, and issues that influence use. Survey questions inquired about use at home, in court houses, and in the field. Issue questions focused on using the laptop outside of the office, such as: (1) difficulty establishing connection, (2) loss of connection, (3) the speed of connection, (4) level of privacy (or personal work space and ability to ensure confidentiality of information), (5) personal safety, and (6) amount of time available to use the laptop. How information was accessed and entered by participants was also examined.

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[1] Participant(s) refers to those CPS caseworkers who tested the technology. Respondent(s) refers to the total number of participants who answered specific questions in either the baseline or post-pilot surveys or participated in the district teleconferences.

Use

Columbia County DSS respondents reported using the laptop during normal work hours, after work hours, and when working overtime. Columbia County DSS desktops were removed and docking stations installed. Therefore, the full range of CPS-related work was completed using the laptops. The laptop was used in case investigation and interventions, documentation and reporting, and court-related activities. Case documentation was the most frequent use, including inputting and updating notes, completing safety assessments, closing cases, writing petitions, word processing, email, and accessing information on the local L-drive. Overall, 50% of the respondents reported using the laptop to access various forms of information from government Web sites at least once a day. Similarly, 88% of respondents accessed email once a day or more, while 86% of respondents reported using their laptop at least once a day or more to access map directions.
The extent to which caseworkers could access information while out of the office has a big influence on what kinds of mobile work are possible. However, respondents reported returning to the office to access case information more frequently during the pilot period. Fifty percent of respondents reported returning to the office four or more times a week to access case information during the pilot period, compared to only 13% before the test. The respondents were in the field approximately the same number of days per week (average 2.5 days) during the pre- and pilot periods.

Columbia County DSS had district-provided external broadband cards during the pilot period. Respondents reported several obstacles to mobile use including the inability to establish a connection and slow speed or unreliable connections, mostly at home and while in the field. At the court house, the lack of privacy was the most problematic. Using docking stations presented some initial challenges and adjustments. One respondent reported, "After docking and undocking the laptop it takes a while to reboot. It is difficult typing notes on the laptop because of the placement of the mouse screen. My wrists must hit the screen and move the cursor and words end up misplaced in sentences and paragraphs. I am not really sure how that happens but it is annoying." Several others also noted the difficulty in getting the laptop "up and running."

Participants were also asked about ease of logging-on to the device. Overall, 37% said it was "Easy," 63% rated it as "Neither difficult nor Easy," and none of the survey respondents rated the log-on process as "Difficult" or "Extremely difficult."

Location

Table 1 below details the percentage of respondents using the laptop at different locations, as well as the average length of time the laptop was used. Aside from in the office, respondents reported using the laptop most frequently at home (67%), for an average of just under four hours per week. Thirty-three percent used it at the court house for less than one hour per week, compared to 22% who used it in the field for about 1.5 hours per week. One respondent stated, "I'm able to complete work at home that I had been unable to finish during work hours."

Table 1 - Location and Hours of Laptop Use per Week

	Use of Laptop (n)	Average length of use per week
Field	22% (2)	1.50 Hours
Court	33% (3)	0.38 Hours
Home	67% (6)	3.75 Hours
Do not use at all	11% (1)	--

* Based on survey respondents who took the post survey n=9. Total number of testers n=11.

The amount of time caseworkers spend in court suggests that it is an unexploited location for mobile work in most districts. Respondents in the Columbia County DSS spend on average of 2.5 days a month at court and wait on average 1.5 hours during a court visit. However, caseworkers may not be using the laptop in the court house or the field because of other competing interests that may limit the amount and type of work they can do. Open-ended survey responses did not account for this low level of use in court, although survey responses indicated that privacy may be an issue.
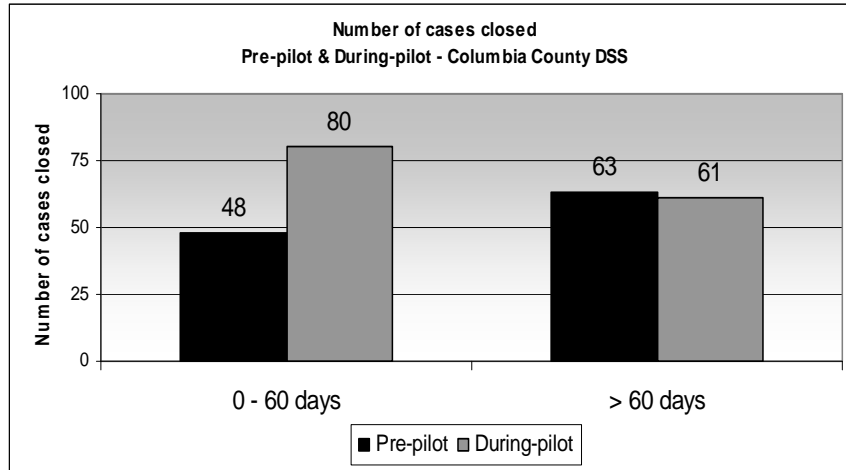
Productivity and Efficiency

This analysis uses central database data and survey responses to examine two core questions about possible technology impacts within the Columbia County DSS: (1) Are workers more productive with respect to case closings and progress note reporting? and (2) Does timeliness of reporting change?

Case closing is one way to assess any changes in efficiency and productivity. Figure 1 below shows the rate of timely closing of cases (in 60 days or less) increased substantially during the test period, up from 48 in the pre-pilot period to 80 during the pilot period. The number of cases closed in over 60 days decreased slightly from 63 in the pre-pilot period to 61 during the pilot period. This is a marked increase in productivity; the total number of cases closed increased from 111 in the pre-pilot period to 141 during the test period – a 25% increase. It is important to not that in this county the total number of cases available to be worked on[2] increased from 321 in the pre-pilot period to 350 during the pilot period – a 9.0% increase.
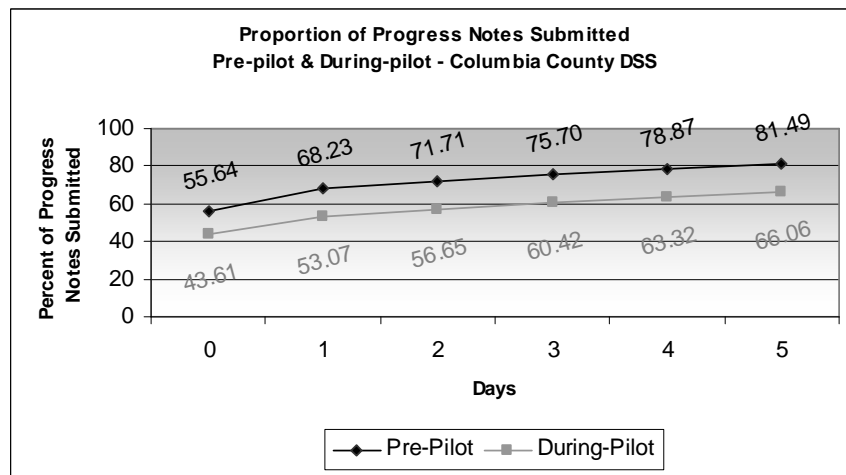
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[2] The number of cases available to be worked on is the total of investigation stages that were open at any time during each of the pre-or pilot periods.

Figure 1 - Number of Columbia County DSS Cases Closed Pre-Pilot and During Pilot

Number of cases closed
Pre-pilot & During-pilot - Columbia County DSS

[Bar chart. Y-axis: "Number of cases closed" from 0 to 100. Categories: "0 - 60 days" with Pre-pilot = 48, During-pilot = 80; "> 60 days" with Pre-pilot = 63, During-pilot = 61. Legend: ■ Pre-pilot ■ During-pilot]

Another indicator of timeliness is elapsed time – or the number of days between an event and the posting of documentation regarding that event in the central database system. Figure 2 below shows trends in the elapsed time between progress note entry and the related event. During both periods, the majority of all progress notes were entered by the second day following the event. But contrary to expectations, the proportion of progress notes entered in each time period during the pilot is marginally, but consistently, below that of the pre-pilot period. By the fifth day, over 80% of all notes were entered for the pre-pilot period, compared to 66% for the pilot. By this measure, timeliness decreased somewhat during the test period, but is still high overall.

Figure 2 - Proportion of Progress Notes Entered by Days Following Event

Proportion of Progress Notes Submitted
Pre-pilot & During-pilot - Columbia County DSS

[Line chart. Y-axis: "Percent of Progress Notes Submitted" from 0 to 100. X-axis: "Days" from 0 to 5. Pre-Pilot line: 55.64, 68.23, 71.71, 75.70, 78.87, 81.49. During-Pilot line: 43.61, 53.07, 56.65, 60.42, 63.32, 66.06. Legend: ◆ Pre-Pilot ■ During-Pilot]

There may be multiple reasons for this decrease in the timeliness of note entry. The overall increase in case closings during the pilot period may have changed the usual pattern of progress note entry. There was clearly an effort put into closing cases during the pilot period that could have had this effect. A total of 11 devices were deployed, with docking stations as desktop replacements, along with wireless cards and network access. The change in equipment and related work processes may account for a decreased workflow for progress notes during the pilot period.

Some additional adjustments to deployment and work processes may be necessary to take full advantage of the laptops. The most frequent performance problems commented on by respondents were slow booting and connection when in the field and getting accustomed to cursor control on the laptops. Adjusting to these issues can be part of the learning process in adapting to the new technologies.

Participants were asked to what extent using a laptop made a difference in CPS work compared to not having the laptop. Five different areas were examined: (1) timeliness of documentation, (2) ability to do work in court, (3) ability to access case information, (4) communication with supervisors, and (5) service to clients. Respondents were asked to rate the difference on a five-point scale where 1 = "Much worse," 3 = "About the same," and 5 = "Much better."

Almost two-thirds of the respondents reported that the use of laptops improved their work in terms of timeliness and 51% for accessing information. None reported a negative impact (Table 2 below). In addition, 13 % of the respondents reported improvement in communicating with supervisors and two (25%) reported positive impacts in providing service to clients. Ability to work in court also improved for 38% of these respondents. Only three respondents reported using the laptops in court, but survey data do not account for this reported low level of use in court.

Table 2 - Perceived Change Timeliness and Work Impacts – Columbia County DSS

	Much worse (n)	Somewhat worse (n)	About the same (n)	Somewhat better (n)	Much better (n)
Timeliness of documentation	0%(0)	0%(0)	38%(3)	50%(4)	13%(1)
Ability to do work in court	0%(0)	0%(0)	63%(5)	38%(3)	0%(0)
Ability to access case information	0%(0)	0%(0)	50%(4)	38%(3)	13%(1)
Communication with supervisors	0%(0)	0%(0)	88%(7)	13%(1)	0%(0)
Service to clients	0%(0)	0%(0)	75%(6)	25%(2)	0%(0)

Some caseworkers reported problems with slow speed or erratic behavior of the system while connected to the central database. These kinds of problems could account for the low levels of reported improvement. That none of the respondents reported a negative impact on timeliness is somewhat inconsistent with the timeliness of documentation results obtained from the central database. It is possible that the reduction in timeliness seen in progress note entry was too small to be noticed by the caseworkers.

For many of these respondents, however, the value of the portability was significant. One caseworker reported, " Due to the constantly changing schedule of the CPS worker, along with the amount of work and high caseload, it's helpful to have the opportunity to complete work any chance you can get. The laptops are what allow this to happen."

Satisfaction

The overall level of satisfaction with the laptops was high. Figure 3 below shows that 75% of all respondents expressed being "Somewhat satisfied" or "Very satisfied," compared to 13% being

"Somewhat dissatisfied." An additional 13% of the question respondents indicated that they were "Neither dissatisfied/Satisfied."

Figure 3 - Overall User Satisfaction with the Laptops
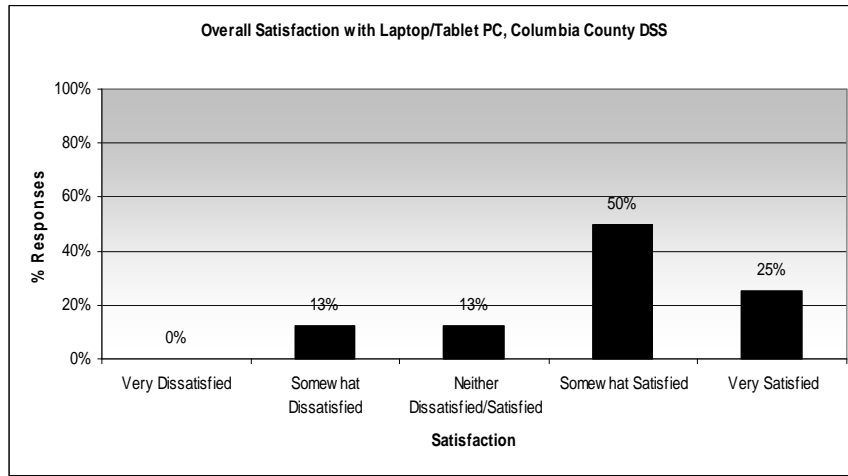
* Based on survey respondents who took the post survey n = 9. Total number of testers n = 11.

Laptop use was generally seen as contributing to lower job-related stress; three-quarters of respondents said that it did, while 25% said it did not. Those who reported a reduction in stress said that their ability to catch up on their work, just knowing the laptop is available, and having the flexibility of working on documentation outside of the office were reasons for stress reduction. One caseworker said, "I'm able to complete work at home that I had been unable to finish during work hours. Several others expressed this sentiment: "I like that I have the ability to do work while in the field." These types of comments are somewhat inconsistent with the reported low level of use while in the field and may point toward learning curve frustrations as a reason for low use while in the field (at this point in time).

Overall, 88% of respondents would recommend the use of laptops to colleagues, while 13% were unsure. The reasons mentioned for this positive recommendation included increased flexibility in ability to do work, the ability to use time more efficiently, the ability to do work outside of the office and increased access to information. One caseworker mentioned, "[The] laptop is extremely useful for entering notes at home, and in the field, as well as for finding names, addresses, phone numbers, and other vital information while in the field."

APPENDIX A – Methodology, Data Collection, and Timeline

There were three streams of data collection throughout the project. Two online surveys, as well as data from the central OCFS CONNECTIONS database, provided quantitative data to assess various productivity, satisfaction, and timeliness measures. In addition, the different uses and locations of use were documented. This data was supplemented by qualitative data gathered from ten district teleconferences. Each method is described in greater detail below.

Online Surveys

Two separate surveys, a baseline and post-pilot survey, were administered. The surveys collected data about respondents' perceptions and attitudes using the laptop or tablet PC within several areas of CPS work – work practice, work time, demographic information, mobility/location, skill and stress levels, technology acceptance, training, and use of technology. The surveys were developed over a period of a several months and a pre-survey was tested. The surveys were modified based on the pilot survey results and the project team's knowledge and understanding of CPS work. The online surveys were developed and administered through commercial software (Survey Monkey).

The names, email addresses, and titles of participating CPS caseworkers were collected from each of the participating District Offices. Personalized survey invitations were emailed to participants. The baseline survey was administered prior the deployment of laptops or tablet PCs to participating caseworkers. The baseline survey was open for three weeks starting on 9/21/07 and ending 10/5/07.

The post-pilot survey was administered three months following the deployment of laptops. The survey was open for one week; starting on 1/3/08 and ending 1/10/08. Data was collected from three new thematic categories, namely the impact of laptops on caseworkers' daily activities, mobility-related issues, and technical difficulties experienced during the pilot. Data quality checks were performed and the data was recoded as needed.

Teleconferences

During the week of December 10 – 14, 2007, CTG held separate teleconferences with project participants in 10 County DSS in NYS to learn more about how they were using the laptops and tablets deployed for CPS work. Participating County DSS were chosen by CTG and the NYS OCFS liaisons. Criteria for choosing the districts included (1) How long they had the technologies in use, and (2) districts that provided a full range of geographical representation across the state, in terms of rural and urban settings and overall size.

Each district participated in one teleconference with CTG interviewers. All participants were given sample questions before the teleconferences, which dealt with deployment, connectivity, use and location, changes in work, issues/concerns, policy implications, and overall benefits of laptop use. The following table shows the districts interviewed and the number of participants in each call.

Table 3 – Teleconference time and participant information

County DSS	Date of Teleconference Interview	# of Caseworkers	#of Supervisors	Other(s) Participating
Albany	12/10/07	6	0	LAN Administrator
Chemung	12/1107	6	1	-
Clinton	12/10/07	7	1	-
Nassau	12/13/07	13	0	Assistant Director
Niagara	12/10/07	2	2	Staff Development Coordinator; IT Representative
Onondaga	12/11/07	8	0	IT Representative
Orleans	12/11/07	3	0	LAN Administrator
Putnam	12/13/07	3	1	-
Ulster	12/15/07	4	3	-
Washington	12/12/07	4	0	-

CONNECTIONS Data

The overall objective for using CONNECTIONS data was to measure the effect of the use of mobile technologies on CPS work practices by using data from the central database. The CONNECTIONS dataset (i.e., the central database) contained information on case records and caseworkers' progress notes. The information contained within each of these records included: Stage ID, Person ID, time-related information about the *investigation stage* (Intake Start Date, Investigation Stage Start Date, Investigation Stage End Date); *progress notes information* (Progress Notes ID, Progress Notes Event Date, Progress Notes Time, Progress Notes Entry Date, Progress Notes Types, Progress Notes Purposes); *safety assessments* (Safety Submit Date, Safety Approval Date) logged by caseworkers in each County DSS. The CONNECTIONS data was pulled by the date a progress note was entered by participants during two timeframes, the pre- and during-pilot phases (08/11/07 – 10/25/07 and 10/26/07 – 01/09/08 respectively). A total of 6,830 progress note entries and 461 unique investigation stages made up the dataset from 11 caseworkers.

Appendix B – Device Specifications

All devices were selected, procured, imaged, and delivered to the County DSS by OCFS.

Laptop

Latitude D620, Intel Core 2 Duo T5500, 1.66GHz, 667Mhz, 2ML2 Cache, Dual Core, 14.1 inch Wide Screen WXGA LCD for Latitude D620, 1.0GB, DDR2-667 SDRAM, 1 DIMM for Dell Latitude Notebooks, Internal English Keyboard for Latitude Notebooks, Intel Integrated Graphics Media Accelerator 950 Latitude D620, 60GB Hard Drive 9.5MM, 5400RPMfor Dell Latitude DX20, Standard Touchpad for LatitudeD620, No Floppy Drive for Latitude D-Family Notebooks, Windows XP Professional, SP2 with media, for Latitude English, Factory Installed, Dell Black USB 2 Button Optical Mouse with Scroll for Latitude.

Tablet

HP Compaq tc4400 Tablet PC 26 EN376AV Product - HP Compaq tc4400 Tablet PC, Operating system - Genuine Windows® Vista Business, VISTA label - Microsoft® Vista Ready Label, Form Ultramobile form factor, Intel® Core™2 Duo Processor T5600, (1.83GHz, 2MB cache, 667MHz FSB), Intel® Centrino® Duo Label, 1024MB (667MHz, DDRII memory, 1 DIMM), 80GB Hard drive (5400 rpm), 12.1-inch TFT XGA WVA Display with Fingerprint Reader, 56K Modem, 10/100/1000 NIC, 6-cell high capacity Lithium Ion internal battery, Digital Eraser Pen with tether and clip, Keyboard with Enhanced Dual Pointing, Intel® Pro Wireless 3945ABG, security - Embedded TPM 1.2 security chip, and three year worldwide limited warranty.

Appendix C – The Center for Technology in Government (CTG)

The Center for Technology in Government (CTG) is an applied research center committed to improving government and public services through policy, management, and technology innovation. Through its program of partnership, research, and innovation, the Center provides government organizations and individuals with an array of tools and resources designed to support the development of a digital government. The goal of every CTG partnership project is to build knowledge that improves the way government works. CTG projects have helped state, local, and federal agencies increase productivity and coordination, reduce costs, enhance quality, and deliver better services to citizens and businesses. The results generated by each project add to a growing knowledge base designed to support the work of both government professionals and academic researchers. CTG receives funding through the University at Albany's state allocation, as well through grants and awards from foundations and federal agencies such as the National Science Foundation.

Since its creation in 1993, the Center has:

- conducted almost 50 partnership projects, which produced outcomes that have helped state, local, and federal government agencies improve services and operations;
- collaborated with nearly 100 government agencies, 42 private companies, and 14 academic institutions and research organizations;
- issued over 100 guides, reports, and online resources designed to support the work of government professionals, and over 300 scholarly articles that have contributed to the field of research on IT innovation in government organizations;
- developed and evaluated 12 prototype systems that answered critical policy, management, organizational, and technology questions;
- obtained 37 research grants and fee-for-service contracts for over $10 million;
- been honored with 16 state and national awards such as the Ford Foundation's Innovations in American Government award; and
- given over 250 trainings, workshops, and conference presentations provided data and support to more than 20 doctoral dissertations and masters projects.

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