Center for
Technology in Government

Maximizing Current and Future Mobile Technology Investments in NYS's Child Protective Services

Maximizing Current and Future Mobile Technology Investments in New York State Child Protective Services

Meghan E. Cook
Natalie Helbig
Anthony M. Cresswell
Fawzi H. Mulki
Bahadir Akcam

Center for Technology in Government
University at Albany, SUNY
187 Wolf Road, Suite 301
Albany, NY 12205
Phone: (518) 442-3892
Fax: (518) 442-3886
E-mail: info@ctg.albany.edu
www.ctg.albany.edu

November 2008

Acknowledgments

We are indebted to many folks within NYS Office of Children and Family Services (OCFS) and NYC's Administration for Children's Services (ACS) who have dedicated time and resources to learning how mobile technologies impact child protective services (CPS) work. Of those who worked directly with us: *William E Travis Jr.*, OCFS Deputy Commissioner and Chief Information Officer, *Jack Nabozny*, Operations & Field Support Manager, *David Kislowski*, Supervisor Network Access Deployment Administration, *Dane Sprague*, Business Analyst Rochester Regional Office, *Dennis Watrous*, IT Coordinator, *Willie Maye Jr*. LMSW, Director of Administrative Services, *Earl Thomas*, Operations & Field Support Supervisor NYC Regional Office, and *Paul Nance*, Strategic Planning and Policy Development Bureau of Management Information.

In addition, we very much appreciate the time that caseworkers and supervisors took to talk with us about how technology has impacted their work. Their insights and expertise are the foundation of this report.

TABLE OF CONTENTS

Executive Summary

This report presents results from an assessment of laptop computer deployment to Child Protective Services (CPS) caseworkers in three New York State Local Departments of Social Services (LDSS): New York City Administration for Children Services (ACS), Onondaga County Department of Social Services, and Wayne County Department of Social Services. The assessment reported here is part of a much larger effort by the New York State Office of Children and Family Services (OCFS) and the state legislature to deploy and assess mobile technologies in CPS. The larger project known as *The New York State Mobile Technology Project* has two major parallel components – deployment and evaluation. The deployment of mobile technologies was a collaborative effort between OCFS and the LDSS. The Center for Technology in Government (CTG) at the University at Albany/SUNY, an independent research center, was contracted to conduct the evaluation.

To date, three phases of mobile technology deployment across the state and three corresponding evaluations to assess the impact of mobile technologies in CPS work have been completed. The fourth evaluation effort, entitled the *2008-2009 Demonstration Project*, is the subject of this report. The most recent evaluation strategy is an extended assessment of three LDSS who previously deployed laptops in order to learn more about the impact of mobile technology over longer periods of use.

This report examines the use of mobile technology in these three LDSS for a period of eight to ten months. This longer time period for the initial assessment differs from that in previous deployment and assessment phases, which covered less than three months of use. The longer time period provides an opportunity to explore how caseworkers are using mobile technologies and the resulting new ways of working. This assessment also examines productivity results through analysis of data from the state central database as well as satisfaction of caseworkers through group interviews with a sample of users from each district.

Productivity increases were evident in all three LDSS, but each followed different patterns. The NYC ACS results showed the largest productivity increases in terms of timely case closings. In NYC, laptop users handled approximately 28% more cases during the ten month test period compared to the preceding ten months. The rate of case closings within the required 60-day period increased from 52% to 75%. Both Onondaga and Wayne handled slightly more cases during the eight month test period compared to the preceding eight months. Both experienced increases in the rate of case closings within the first 60 days. All three districts experienced an increase in the volume of progress note entries as well as an increase in the volume of safety assessments completed within seven days. For safety assessments, the volume closed with the seven-day requirement increased, but not the proportion. For example, Onondaga and Wayne showed an increase in volume entered, but showed either no change or small decreases in the percentage of notes entered within each day. Lastly, Onondaga and Wayne showed an increase in the number of cases closed after 60 days. This last trend may be a result of clearing of older case backlogs.

Caseworkers in the second data collection period reported a two-phase learning process – focused first on the technology itself, then on how to best integrate it into work practices. Over time, it seems caseworkers are able to integrate the laptop use into CPS work. In the interviews, CPS caseworkers reported a wide variety of ways in which they integrated the devices into daily routines, ranging from carrying them along in the field on a regular basis to keeping the laptops at home for after-hours catch-up work (i.e., generally documentation). There remained some important barriers to this deeper integration. On the technical side, caseworkers reported continuing to experience poor connectivity and

cumbersome log-on and data entry procedures. Lack of incentives and supportive policies for field, home or overtime compensation for the use of the laptops emerged as barriers to more extensive and integrated use. In spite of the lack of compensation, however, many users reported substantial use at home to help stay current with their work load. This was described as an important, though intangible benefit. Overall, in both data collection periods, satisfaction with laptop use was high.

The policy and technical barriers illustrated by caseworkers reveal the difficulty of mobile technology deployment in a complex environment such as that of the social services field in New York State. Implementing a statewide initiative such as this one, and within a limited period of time, is complicated by the local administration of CPS work. The prospects for rapid change in such a two-layered system are unlikely. OFCS' strategy of incremental change, where feedback informs subsequent deployment phases, is more likely to succeed. A deployment and assessment schedule that aligns well with a more natural progression of organizational, policy, and technical change may allow for the realization of the full impact of the mobile technology. Even in this current and deliberate process, however, LDSS are already starting to share information with other LDSS about supportive policies and practices. With a strong and steady pace, OCFS can continue to make modifications along the way so that cultural changes are effected and barriers minimized.

Background

Over the last two years, New York's Office of Children and Family Services (OCFS), Local Departments of Social Services (LDSS), and the state legislature embarked on a coordinated effort to deploy and assess mobile technologies in child protective services (CPS). New York is among a handful of states examining the use of mobile technologies to enhance child welfare and child protection service delivery. To date, over 600 caseworkers across the state have received laptops and various other mobile devices. Under the umbrella of *The New York State Mobile Technology Project*, four distinct and successive pilot and demonstration projects, along with the corresponding evaluation studies, were initiated and completed.

The New York State Mobile Technology Project

In 2006, the state legislature charged OCFS with testing and reporting on the use of multiple technologies in three LDSS. From that experience, lessons were applied to subsequent laptop deployments in two New York City (NYC) boroughs in late 2006, and at 21 additional LDSS in 2007.

The larger project known as, *The New York State Mobile Technology Project,* has two major parallel components – deployment and evaluation. The deployment of mobile technologies was a collaborative effort between the OCFS and the LDSS. The evaluations were the responsibility of the Center for Technology in Government (CTG) at the University at Albany/SUNY, an independent research center.

The project, to date, has completed three phases and their corresponding evaluations of mobile technology deployment across the state to assess the impact of mobile technologies in CPS work. The fourth evaluation effort, entitled the *2008-2009 Demonstration Project,* is the subject of this report.

Each deployment and assessment is briefly described below:

- In the summer and fall of 2006, the first deployment and assessment, the *NYS Portable Information Technology Pilot*, was carried out with three LDSS – the New York City Administration for Children's Services (NYC/ACS), Monroe County Department of Human Services, Child and Family Services Division, and Westchester County Department of Social Services, Family and Children's Services. During this time, mobile technologies were deployed to approximately 60 CPS caseworkers to support casework and related-documentation activities. A range of mobile technologies were tested, including: laptops, notebooks, tablet PCs, Personal Digital Assistants (PDAs), telephonic dictation services, digital pens, and dictation software. The purpose of the assessment in this first deployment was to evaluate how was technology used in the work setting and the impact of technology use on the work itself. This report is available at: http://www.ctg.albany.edu/publications/reports/assessing_mobile/assessing_mobile.pdf.

- From July 2007 to October 2007, a second deployment and assessment, the *Extended Pilot in New York City's Administration for Children Services*, focused exclusively on connected laptops and expanded the number of caseworkers testing technology. Connected laptops were selected based on findings from the *NYS Portable Information Technology Pilot*, which highlighted connected laptops as enabling information entry and retrieval to the state central database while out in the field. Two field offices from NYC – Manhattan and Staten Island – were selected and approximately 200 CPS caseworkers, supervisors, and managers received laptops and wireless

cards. The objective of the assessment was to examine in greater depth the use of connected laptops in CPS work and to learn more about laptop use in large urban areas. The report is available at: http://www.ctg.albany.edu/publications/reports/assessing_mobile_2008/assessing_mobile_2008.pdf.

- The state legislature continued to provide funding in State Fiscal Year (SFY) 2007-08 to test mobile technologies in more LDSS across the state. In May 2007, OCFS issued a call for proposals to all LDSS interested in applying for funding to pursue mobile technology strategies in CPS work. In October 2007, following the completion of the extended pilot in New York City, a third deployment and assessment, the *Demonstration Project in 23 NYS Local Social Service Districts*, issued over 450 laptops and tablet PCs to 21 selected LDSS in rural, suburban, and urban areas across the state. The objective of the assessment was to examine the opportunities and barriers for statewide deployment of connected laptops as well as the impact of laptops on CPS work in various settings across the state. The report is available at: http://www.ctg.albany.edu/publications/reports/assessing_mobile_demo/assessing_mobile_demo.pdf.

- In SFY 2008-09, the state legislature provided additional funding to examine mobile technologies across the state. This assessment entitled, *An Extended Assessment*, focuses on three LDSS that previously deployed laptops as part of earlier deployments.

An Extended Assessment

Previous pilot and demonstration assessments have established a solid foundation of information to support a reasonably clear picture of the short term impacts of deploying and using laptops in CPS work. However, both OCFS and CTG recognized the need to learn more about the long term impacts and conditions necessary for statewide deployment.

The three LDSS chosen to participate in this assessment were: NYC ACS, Onondaga County, and Wayne County. These LDSS were selected based on the length of time caseworkers had to use laptops, geographical area, favorable policy and management setting, and connectivity capability. Two data collection periods, a pre-test period and a test period, were contrasted to illustrate changes from the first data collection period to this second data collection period. For information about the data collection periods and the data collection methodology, see Appendix A.

This extended assessment, therefore, builds upon the already strong foundation of knowledge generated in the previous assessments, but focuses more narrowly on three LDSS that have long term laptop experience. In order to learn more about how laptops are integrated into CPS work, the assessment examines findings on use, mobility, productivity, and satisfaction. This report concludes with observations that shed light on concrete strategies which can assist LDSS in maximizing all current and future mobile technology investments.

Findings and Themes

The evidence obtained from the previous evaluations has shown that mobile technology, most notably the use of laptop PCs in tandem with wireless connectivity, provides CPS caseworkers with increased capacity to enter documentation and access information from the state central database while out in the field, and assists caseworkers during investigation tasks. The multiple assessments also found evidence of improved but modest productivity gains including increased timeliness of documentation and case closings with the use of laptops.

One fundamental question in this extended assessment is whether or not its findings concur with or are different from the previous findings. The following categories present themes that emerged in this study with a description of any differences from the previous assessment.

Mobility and use

The laptops provided caseworkers with opportunities to work outside the office environment in new ways. To understand what mobility meant for caseworkers in CPS, we examined how caseworkers were using laptops, where use occurred, shifts in work opportunities, and changes in communication patterns. Our goal was to gauge to what degree the laptops have become integrated within the daily work practices of CPS caseworkers.

Types of use

How the laptops were used did not seem to change significantly over time. As in previous assessments, the full range of CPS-related work was completed using the laptops. The laptops were used for case investigations and interventions, documentation and reporting activities, as well as court-related activities. Case documentation was the most frequently mentioned use in both periods, including inputting and updating notes. Other work included court-related documents, safety

assessments, reading and reviewing case histories, opening new cases, doing person searches, checking client histories, email, and accessing the Welfare Management System (WMS). In the second data collection period, one caseworker mentioned she no longer uses the laptop to look up driving directions because she received a GPS system.

Accessing and entering information while out of the office was an important feature of connected laptops. This enhanced capability was reported positively by participants in both data collection periods. For example, caseworkers reported enhanced information access and retrieval capability as well as increased data entry capability. However, it appears that accessing case information from the field is not a daily need for most caseworkers. Caseworkers did express that the laptop was very helpful in times 'when they need it.' The nature of casework in child protection work means that emergencies may not happen everyday, but when they do arise, the laptops are very beneficial. For example, caseworkers reported using the laptop to access information on the Sex Offender Registry and to make decisions as to whether or not a child could be placed at the suggested residence. This type of scenario may happen about once a month.

Shifts in work opportunities and location of use

There are two main benefits of mobility: 1) increased flexibility regarding where and when CPS work is done, and 2) increased access to information while out of the office. Together, these two benefits potentially allow CPS caseworkers to shift when and where they work. In fact, in both data collection periods respondents in the three LDSS reported using the laptop during normal work hours, after work, on-call, and when working overtime. In the first data collection period, caseworkers alluded to patterns of use and shifts in work opportunities. However, in the extended assessment, the patterns and changes that emerged were clearer:

> **Non-traditional field locations.** Caseworkers reported experimenting with non-traditional work locations away from the office. For example, in both data collection periods, caseworkers reported using their laptops in libraries, parks, hospitals, schools, and commercial coffee shops. In all three LDSS, during both data collection periods, respondents stated that they do not and will not bring laptops into clients' homes. Some caseworkers said it was a formal policy, and others suggested it was an informal policy but suggested by supervisors or management. The reasons mentioned included that it interfered with relationship building or it was seen as a barrier between the caseworker and the client.
>
> **Shifts in when work is done**. Laptops were originally conceived as enabling opportunities to do work in situations where caseworkers were previously unable to access the state central database. These situations included waiting times in court and in between field visits (i.e., client visits, schools, hospitals, etc.). However, the opportunities to do work during waiting times in court proved less attainable than anticipated. Many obstacles to working in court were identified, including poor connectivity, lack of confidential work areas, and overcrowding. Several caseworkers reported using the laptop while sitting in their cars, although it was noted that cold weather and location are important factors concerning the extent to which the laptop is used in a car.
>
> Caseworkers, especially in a rural or geographically large LDSS, suggested travel time to and from the office was significantly reduced as a result of using the laptop. Many participants reported that they experimented with staying in the field instead of returning to the office between appointments, saving time and travel expenses. However, some caseworkers reported that they still return to the office, because they feel pressure to 'be seen' by supervisors.

On-call practices. On-call caseworkers usually remain at home while they wait for new cases or issues to happen during their shift. In both data collection periods, on-call caseworkers reported increased productivity and satisfaction using the laptops while on-call. Almost all reported saving time by not having to travel to the office to examine case records while on-call, as well as increased opportunities to complete documentation.

Using the laptop at home after work hours. During both data collection periods, using the laptop at home, mostly after work hours, was reported most frequently. Many caseworkers reported fewer interruptions at home than when working in the office and reported more satisfaction in their ability to get work done. Others reported they used the laptop at home to catch-up on casework, thus affording them 'peace of mind.' However, not all caseworkers used the laptops at home. Many cited personal reasons such as infringement on family time while others stated they stopped taking the laptop home after they were told by management not to use it while at home.

Communication patterns

The laptop creates new communication channels. Prior to laptops being introduced, most caseworkers relied on cell phones while in the field (either personal cell phones or district issued cell phones). Laptops, however, enable the use of email while out of the office. Our findings from the first data collection period revealed that laptops modestly changed the way caseworkers communicated with supervisors or other caseworkers. Caseworkers reported calling supervisors about cases more frequently than emailing supervisors about new or existing cases while in the field. Some caseworkers did use email pretty regularly, just not for discussing cases with supervisors. In both data collection periods, caseworkers reported initiating cases while out in the field by accessing CONNECTIONS; still others reported that it was still necessary to call a supervisor to initiate an assigned case while not in the office.

Changes in communication channels were most apparent for on-call caseworkers. Prior practice before laptops involved on-call caseworkers receiving cases from the State Central Registry (SCR) by phone. For example, caseworkers would have to talk with an SCR caseworker by telephone and then write down the details of the case as it was read over the phone by the SCR caseworker. Overwhelmingly, in both data collection periods, caseworkers reported that this practice had largely changed, and on-call workers were now able to receive cases from the SCR through their laptops. Caseworkers reported time savings and satisfaction that this time consuming practice of listening to and writing down case information from SCR caseworkers had changed.

Integration into work life

Any social, procedural, or management change in work environments may take a period of adjustment before employees are really able to change their habits and routines to match new working conditions. Therefore, it was expected that integrating laptops into CPS casework may take some time. In the second data collection period, we asked participants how long it took for the laptops to become a normal part of their daily routines. A significant number of respondents suggested the transformation was almost immediate, citing that laptops are very similar to their existing office workstations. Other respondents suggested it took them on average up to three months to feel comfortable with the technology, citing not being computer savvy and the difficulty of changing habits. However, several mentioned that once one became familiar with the technology, there was an additional learning curve

with respect to using the laptops in the field: knowing when, where, and at what times one may need the laptop and how to incorporate the laptop into one's daily work.

Mobility also implies integrating laptop use into normal work routines. For example, caseworkers reported using laptops while in the field. However, the majority of caseworkers carried the laptop in the field only when they knew they were going to use it. In areas where cars are used for field visits, laptops were often kept in the car. Other caseworkers reported that they leave their laptops at home, however those with docking stations stated that the need to bring the laptop back and forth from home to the office is frustrating. A very small number of caseworkers reported carrying the laptops with them at all times.

Productivity

The findings presented in this section are based on the analysis of data extracted from CONNECTIONS. The data examined were separated into a pre-test period and a test period (see Appendix A for more information). In order to support comparisons of productivity that reflect as much as possible the effect of mobile technology, the pre-test and the test performance periods were conducted with as much similarity as possible. Therefore, the productivity data was collected for the same caseworkers, doing the same kinds of work as in the test period, and for the same number of days. There was, however, some caseworker turnover between the first data collection period and the second, as well as for both the pre-test and test periods.

During the first data collection period, an assessment of productivity was completed and subsequently, showed modest gains. Additionally, caseworkers had relatively high levels of satisfaction with the use of laptops in CPS work – generally between 65 and 80 percent of respondents were satisfied and 80 percent would recommend the use of laptops to colleagues. Those who reported less satisfaction with laptop use in the first data collection period, tended to do so because of connectivity issues and inconsistencies in some management and policy issues (i.e., working from home and compensation questions).

This assessment focuses on productivity improvements in the timeliness of documentation, including case closings, safety assessments, and progress notes:

- **Timeliness of case closing:**
  CPS workers are mandated to complete the investigation of a case within 60 days from its opening. Our measure of improvement in timeliness of case closing was therefore the number of cases closed within 60 days during the pre-test period compared to the test period.

- **Timeliness of safety assessments:** These assessments are to be completed (i.e., approved by a supervisor) within seven days of the opening of an investigation. Our measure of improvement in timeliness of safety assessments was the number of assessments completed within seven days in the pre-test period compared to the test period.

- **Timeliness of progress notes:** These notes are to be entered into the system as soon as possible following the event or activity to be documented. Timeliness would therefore be reflected in how many days elapse between a particular event date and the date the progress note conveying that event was entered. We examined the proportion of progress notes entered each day following the related event. This yielded a productivity improvement measure based on the proportion of notes entered closer to the event date.

Productivity could be affected by possible variation in the volume of open cases between the pre-test period and the test period, a factor which would be outside of the control of either the workers or the evaluators. Case volume is defined as the total number of cases available to be worked on during the pre-test period and the test period. Fortunately, there was very little change in overall case volume in two LDSS from pre-test to test periods. Onondaga experienced a 5% increase in the test period (from 2,674 cases pre-test to 2, 819 test) and Wayne experienced an 8% increase (975 cases pre-test to 1,060 test). However, in New York City, there was approximately a 28% increase (2,090 cases pre-test to 2,671 test).

Timeliness of documentation

The data extracted from CONNECTIONS during the extended assessment shows that each LDSS increased its rate of case closings in the first 60 days. New York City ACS experienced the largest increase in cases closed within the first 60 days and a reduction in cases closed after 60 days. Wayne and Onondaga experienced an increase in case closings in the first 60 days, but also reported increases in case closings after the first 60 days. However, since this pattern resulted with a simultaneous improvement in case closings within the first 60 days, these results can indicate improvements in both volume and timeliness of work. Another way to interpret this is by suggesting the increase in case closings after 60 days represents backlog reduction. Many caseworkers from both LDSS stated that they often used the laptop after hours at home, and on weekends to 'catch-up' on cases. New York City, in contrast, did not present evidence of backlog reduction. It appears, based on an increase in case closings for the first 60 days and a decrease of case closings after 60 days, that NYC ACS increased both timeliness and volume.

Improving the timeliness of safety assessments is another area where mobile technology may support improved performance. Therefore, the assessment includes an examination of the timeliness of safety assessments during the pre-test period and the test period. A safety assessment is considered timely if completed (i.e., approved by a supervisor) within seven days of opening of a case. In all three LDSS, the volume of safety assessments submitted within seven days increased. During the test period, safety assessments submitted past seven days increased for Wayne and Onondaga. This suggests that timeliness of safety assessment submissions closely follows patterns in case closings and that the same 'catching up' effect seen in the case closings is impacting safety assessment submissions. The catching up effect may be directing limited attention and resources toward case closings, instead of safety assessments.

Progress notes represent the narrative updates about case work, completed tasks, and communications throughout the course of an investigation. Progress notes, as a matter of good practice, are encouraged to be entered into the CONNECTIONS system as contemporaneously as possible (i.e., following the actual event date). Therefore, we looked at the lapsed time between the related event and the progress note entry into CONNECTIONS. Onondaga and New York City entered approximately 45-50 percent of all progress notes on the same day as the event and about 70 percent by the third day. Both LDSS entered approximately 80 percent of progress by the fifth day after an event. These patterns were almost identical (i.e., no shifts occurred) for the pre-test period and the test period. Wayne County participants entered approximately 26 percent of progress notes on the same day as the event and about 48-52 percent by the third day. About 55-59 percent of all progress notes were entered by the fifth day. Again, these patterns were almost identical for pre-test period and the test period. All three LDSS showed no overall increases in the proportion or progress notes entered within the first five days, nor any shifts in the timeliness of progress notes submitted across those five days. However, if

entering progress notes by the third day is considered contemporaneous, then New York City and Onondaga only have approximately 30 percent of all notes where improvement can be made. In Wayne County, however, would have approximately 50 percent of all notes where improvement could be made.

General Satisfaction

We looked at various measures of satisfaction in relation to CPS work and job-related stress to assess how using the laptop impacts employee morale. The first assessment study revealed that caseworkers were satisfied with using laptops in CPS work and would likely recommend using a laptop to colleagues. However, those who were not satisfied generally reported connectivity issues, such as the lack of connectivity or connectivity problems (i.e., slow speeds or inconsistent signals) as reasons.

In the extended assessment, caseworkers and supervisors again reported their overwhelming satisfaction with having a laptop. However, there was more frustration reported with policy and management messages regarding laptop use.

In both periods, the major benefits reported from using the laptop included increased flexibility in when and where work was done, value for on-call and emergency situations, and better use of time while on-call. For example, caseworkers reported that when the laptop is really needed, it is available and beneficial. However, between the initial assessment and the extended assessment, the caseworkers in the extended assessment were less likely to report that the laptop had increased their flexibility of when and where work gets done. Most, as noted, used the laptop at home, versus using it while in the field or in court. Another example demonstrated the value of having laptops in emergency or on-call situations. Emergency situations may not happen on a daily basis, however caseworkers repeatedly reported the important value of a laptop and access to information when needed. In addition, when on-call, the laptop provides access to information at the worker's home. This saves time traveling back and forth to the office. Another example of laptop convenience in extreme situations is child removals where a caseworker can do clearances (i.e., background checks) from the field to ascertain whether a child can be placed with referred individuals.

Policy and Management

Child protective services in New York State is locally administered within Local Departments of Social Services (LDSS), usually in each county's Department of Social Services (DSS) and in New York City. In a federated system, such as CPS work in New York State, policies and practices are developed and implemented by LDSS. This structure, common of intergovernmental programs, typically creates a diverse administrative environment across the state. While some of the variations in conditions are natural and unavoidable characteristics of locally administered programs, it also means that management has substantial leverage over the mix of strategies and adaptations to normal working policies that can positively or negatively impact how caseworkers ultimately use and take advantage of mobile technologies.

Understanding the policy, management, and organizational variation across NYS is important, as the overall productivity gain resulting from a large-scale deployment of mobile technology will need to consider the variability of conditions that exists across LDSS.

Policies and management practices were reported as issues affecting the following situations: a) mobility or non-traditional field work locations, and b) overtime and compensation while working at

home. In both assessments, inconsistent policy and management practices were reported. Caseworkers noted they felt the full capability of the laptop was not being realized due to management, policy, and technical barriers.

Non-traditional field work locations: Mobility implies being able to do work while away from the office. As noted above, working at home was the most reported location for use of the laptop. In addition, caseworkers reported using the laptop while out in the field – including parks, libraries, while taking public transportation (i.e., ferry or train), while in cafes, while in parking lots, or while outside of a client's home. Caseworkers reported that working in these non-traditional field work locations was difficult for several reasons – connectivity, their comfort level, and work place policies.

In the extended assessment, accounts pointing at the inconstancy of policies regarding how managers and supervisors treated mobility surfaced again. For example, some caseworkers reported that they were told by supervisors not to work in these locations – even though they had done so in the early months of laptop deployment, while other caseworkers reported that their supervisors encouraged working in various locations.

Overtime, compensation, and working from home: Caseworkers reported using the laptop most frequently while at home – generally after work hours. In the initial assessment, caseworkers reported using the laptops while at home in order to 'catch-up' on documentation. Each of the three LDSS initially stated that they would provide some type of compensation for time spent working from home after regular work hours with the mobile device. However, in the extended assessment, inconsistencies regarding overtime, compensation, and working from home policies were reported. Some respondents reported that they were provided compensation; others stated they were told they would not receive compensation. One LDSS provided up to four hours of compensatory time each week for using the laptop after work hours to catch up on documentation.

Maximizing Current and Future Technology Investments

A Return on Investment

The question of what overall gains or benefits can result from this laptop deployment is a difficult one. In such questions of return on investment (ROI), it is important to recognize the variety of value propositions that can be used to describe the desired or expected benefits. These benefits vary with different points of view, and can range from simple cost savings from operational efficiencies in CPS work to improved quality of life for children at risk and their families. The value proposition from the point of view of the individual CPS worker may include such benefits as improved quality or timeliness of documentation, increased time available for client contact, decreased work-related stress and better information access for decision making. The agency perspective might expand this value proposition to include higher morale and job satisfaction, cost savings on travel, lower staff turnover, and improved agency performance on productivity metrics. By contrast, the value from the public's point of view may focus instead on lower incidence of child abuse and better support for families and communities. Other relevant points of view could include related state or local agencies or the state government as a whole.

This assessment report presents results from two main points of view, that of the agency and that of the individual CPS worker. Moreover, only certain measures of results were used. Therefore any discussion of return on investment is limited to those points of view and the related results. We therefore have a useful but necessarily limited picture of ROI. It is arguable that other benefits were obtained, particularly from the point of view of the public, but they were not included. While the public perspective is the ultimate basis for determining the benefits of such an investment, tracing and documenting those outcomes was not possible for this assessment. Therefore it is not possible to judge whether the maximum returns were obtained.

The question of whether maximizing returns could be obtained hinges in part on possible barriers to full implementation and optimal use of the technology. Our results in this assessment showed that there are important barriers to obtaining the maximum value from the use of these laptop computers, even in the limited number of measures we used. These issues are discussed in more detail below.

New York State's Mobile Technology Investments

Over the past two years, New York State has invested two million dollars on mobile technology devices for child protective services. Spreading the resources throughout the state, caseworkers in over 23 LDSS now use laptops and tablets to enter and access information directly into the state's child welfare system on a regular basis. Although this large investment has seen payoffs, conflicting policies and management practices are slowing efforts to truly maximize this important investment.

In a complex environment such as NYS social services, a statewide technology deployment is very challenging. Local districts are state supervised but administered locally so the probability of making change immediately is low but also not recommended. Incremental change where feedback informs subsequent phases is preferred and is exactly what OCFS is doing. Thus, NYS's Mobile Technology Pilot Program has moved through a natural progression of stages in uncovering and addressing issues

in order to make the most of laptop use. Slowly, LDSS are sharing information with other LDSS about supportive policies and practices. With a strong steady pace, OCFS can continue to make modifications along the way to bring about positive cultural changes and reduce barriers.

How to Maximize

NYS OCFS and the Local Departments of Social Services wanted to obtain the best possible returns on their investment on mobile technology deployment. The original goals state that increasing caseworker productivity by allowing more work opportunities was highly desired. Laptops could be used at times during the day when caseworkers could not access their computer. Thus, if caseworkers could use those times more effectively, productivity would increase.

Assessment findings show that to maximize returns from the laptop investment, policies, procedures, and practices must be addressed within each LDSS. This extended assessment and previous work suggests that the use of technology alone does not drive substantial productivity increases in CPS casework. More specifically, it seems that caseworkers' productivity may be far more influenced by their current caseload size and polices and management practices that surround mobility. Technology is a core component of this organizational change but in the current environment, its highest value may be difficult to attain.

This extended assessment and previous work suggests that the use of technology alone does not drive substantial productivity increases in CPS casework. More specifically, it seems that caseworkers' productivity may be far more influenced by current caseload size and polices and management practices that surround mobility.

Maximizing the investment starts with wireless connectivity. A laptop is only a piece of hardware until it has a wireless connection. Once that is in place, the laptop becomes a useful tool for caseworkers. If a LDSS chooses not to provide wireless connectivity, the technology cannot be used to its fullest capability and, subsequently, the return on the laptop investment will decrease. Not addressing this fundamental component will result in fewer benefits and less return on investment.

Once the core technology and connectivity pieces are in place, policies and practices gain more importance. Creating supportive policies about compensation for work done outside regular work hours and scheduling "office-time" are critical. When a LDSS creates policies which promote some type of compensation, even with pre-approval processes or over time limits, the likelihood of using the laptop increases. When policies are created that discourage or restrict use, the propensity to experiment with using the laptop and likelihood of using the laptop decreases.

The existence of uniform policies for scheduling and working in the field are critical to gaining the most benefits. The lack of a blanket policy that describes laptop use in the field causes each supervisor to set his or her own policies, which creates inconsistent use across districts and fosters frustration for caseworkers. One supervisor in this assessment, for instance, discouraged caseworkers from using the laptop in the field to document notes. He felt that sitting in a public parking lot or at a public library was not acceptable and reported that caseworkers should drive back to the office to document notes. In that same district, another supervisor openly supported using the laptops in the field and the caseworkers were able to document notes without having to travel back to the office. When caseworkers talked to each other, both were openly frustrated with the conflicting policies.

If a LDSS does choose to set policy that encourages use in the field and promotes flexible scheduling of field visits, the likelihood of using the laptop increases. Similarly, if the policy discourages use in the field, caseworkers will be less apt to bring the laptops with them and subsequently miss many opportunities for use.

Understanding Compounding Effects on Productivity

In order to better understand the true effects on caseworker productivity and how influences can quickly compound, the following formula shows, in the most basic way, a caseworker's potential for productivity. A caseworker's amount of work is based on the rate at which work is done multiplied by the time available to do work.

RATE x **TIME** = **AMOUNT OF WORK**

This equation is quite simplified, as it takes into account several assumptions, including a) caseworkers are working at their maximum effort at all times but are not capacity constrained, b) case difficulty is evenly distributed among caseworkers, and c) caseworkers are using laptops with wireless connectivity.

In this equation, the rate at which a caseworker does work, such as case documentation, is multiplied by the time available to do this work equaling the amount of work completed. Increasing or decreasing the rate and/or time will either positively or negatively impact the amount of work completed. In theory, laptops should increase the rate and time that work can be done and subsequently the amount of work each caseworker completes. Factors such as poor or nonexistent wireless connectivity, practices that discourage use, and heavy caseloads, create a compounding effect where any laptop benefit is diminished exponentially.

Impacts on Rate of Work

The LDSS with the lowest cases per employee per day indicator – NYC/ACS – showed the most positive gains in timeliness and productivity, while the LDSS with higher cases per employee per day indicators (as compared to NYC ACS) showed gains in timeliness and productivity although with more modest changes (Onondaga and Wayne) (see Appendix E for more details). Although in some districts the suggested reasonable caseload levels are very hard to achieve, it is seems likely that those LDSS where caseloads are at more manageable numbers may benefit more directly from the use of technology and therefore be more likely to demonstrate a more noticeable return on investment.

Mobile technologies such as wireless laptops have the potential to increase the rate of work by providing access to information in the field and reducing a large portion of travel time. Traditionally, when a case is assigned and a caseworker is in the field or at home, he or she would call a colleague and have them read the case information. With a laptop, caseworkers in the field can access the information and get started on the case without having to take the information by hand. When any case information is needed in the field, access to that information can happen almost immediately.

The amount of work completed is highly impacted by technology and connectivity. Processes that have multiple sign-ons increase the amount of time that it takes to boot-up the system, thus slowing down the rate at which work can be done, or if the boot-up time becomes prohibitive, it could deter use altogether. Connectivity speed and availability play a large role in rate of work. If it becomes faster to drive back to the office than to work from the field because the connection is slow and multiple

interruptions in connection mean subsequent sign-ons, the potential for an increased rate of work is diminished.

Management policies influencing the amount of resources invested in infrastructure and connectivity solutions also affect rate of work. Management decisions that reduce infrastructure and technological support resources may impair the operating environment and increase the likelihood that the technologies are not used or become obsolete overtime. For instance, if caseworkers lack access to their own broadband card, their opportunities to connect are limited. Also, LDSS which are supporting mobile technologies require a different type of technology support, so that the devices can be maintained appropriately and consistently over time. .

Impacts on Time

Connected laptops hold the most potential to increase opportunities to work. Some caseworkers have time to do work in between client visits potentially avoiding a trip back to the office, some on their commute, others in court, and some catch-up at home after regular work hours instead of sitting in the office. There is tremendous potential for using time differently with a connected laptop. Even if rate of work did not increase, a caseworker's productivity could increase by simply opening up more opportunities for pockets of work time. There are many incentives and disincentives in creating more work opportunities, some of which are described below:

- *Willingness to use laptop at home.* Working after regular work hours at home is dependent on policies. If there is no policy about compensation, some caseworkers may use it at home just for their own "piece of mind." Although this is true for some caseworkers, there are just as many that will not use it at home because there is no policy. This is because if they work in the office, they get paid, whereas if the work at home they do not. Some LDSS created policies that did not support laptop use at home. It was reported that this type of policy had an effect on everyone, even those who were using the laptop at home after hours for their own personal satisfaction. A district-wide unsupportive policy has a clear overall negative effect on laptop use.

- *Willingness to use laptop in the field.* If a caseworker can foresee themselves using the laptop in the field he/she will bring it into the field. If not, caseworkers generally leave it at the office, at home, or the in the trunk of the car. Since it was widely agreed that caseworkers should not use a laptop in a client's home, the only time they can use out in the field is before or immediately after the visits. Subsequently, if policies (or suggested practices) discourage using laptops in the field, caseworkers will not take the laptop with them when they leave the office. In one LDSS, a supervisor was not comfortable with caseworkers doing work in places other than the office and therefore would not let caseworkers use the laptop in the field. The caseworker reported that the supervisor preferred to monitor the employees' work while in the office. Variations in supervisory policies, specifically those that discourage use outside the office, drastically decrease the potential for spontaneous work opportunities that exist during the day. Creating policies and practices that promote using the laptop in the field add to the opportunities to use "existing time during regular work hours." Increasing the time a caseworker has during regular work hours to complete work can potentially have a positive effect on productivity.

- *Willingness to use laptop in court.* Court presents many opportunities to do work. The original thinking about waiting time in court was that it had the potential to be used more productively.

Caseworkers sometimes waited two or three hours to represent their cases. However, caseworkers reported that there are many barriers (including technical, social, and procedural) to using the laptops while in court house. Courts also pose other issues, which may or may not be within the control of the LDSS, including cramped and non-private spaces to work, the security and anti-terrorism infrastructure of new courthouse buildings, and court room overcrowding. Many caseworkers reported that they are less apt to bring the laptops to court if they are aware of these barriers, which subsequently decreases other spontaneous uses.

- *Willingness to work during commute.* For those workers who have time during a commute to do work, productivity depends on the wireless connectivity and the physical space to work. If each person has their own broadband card and is comfortable in the space to work, then they do so. These pockets of time prove to be quite productive for some caseworkers who get extra work time in every day. Investment in connectivity solutions that work for each caseworker is critical to make sure that when these opportunities arise, caseworkers can take advantage of them.

- *Willingness to use on weekends*. A laptop is considered very useful by caseworkers who are on-call for the weekend. On-call caseworkers are compensated for this period of time and it is considered part of their normal work assignments. For those that are not on-call but are looking to catch-up on documentation over the weekend, the policies for compensation after work hours applies here as well. If policies are supportive of after hours compensation, caseworkers indicated they would use time during weekends; if not, then only those seeking personal 'piece of mind' will use the laptop over the weekend to catch up on documentation.

Conclusion

If productivity is a desired way to measure the value of an investment, understanding the impact of technology on rate and time is necessary to know how to maximize that value. Connected laptops open up new opportunities to do work, but if they are simply placed within the old realm of existing culture and policies, the gains become only small to modest. However, if the environment can change to accommodate a new technology, then broader and more significant benefits can accrue.

Recommendations

When seeking funding for laptop use, almost all LDSS identified goals of catching up on case backlogs and being able to use the laptops in the field. But after deployment, most LDSS made no policies to govern laptop use. This led managers and supervisors to develop policies for their own staff that were inconsistent with the overall goals. Despite the policy inconsistencies, almost every CPS caseworker reported liking the laptop, indicated it was a new way of working, and did not want to work without it. However, a very small number did resist the use of technology in CPS work. Productivity gains were achieved across all three LDSS despite engaging in relatively unchanged policies for mobility and use, leaving room for improvement. This statewide investment could potentially see more substantial gains in caseworker satisfaction and productivity with the following recommendations:

Connectivity, Connectivity, Connectivity

Wireless connectivity is the cornerstone of laptop use in the field. It is clearly necessary for every LDSS to invest in wireless connectivity for each laptop user. Sharing broadband cards is not as efficient, nor effective. Even in counties that have overall poor wireless reception, there are still some areas where solid connections are present. Investment in connectivity is essential and absolutely lays the foundation for laptop use.

Supportive Policies and Management Practices

- *Flexible scheduling and laptop use in the field*. Flexibility is a fundamental benefit of mobility and provides the capability to increase opportunities to do work during the normal work day. It is counterproductive to give caseworkers a laptop but to discourage them from using it in the field. Districts should create flexible polices for scheduling visits, allow caseworkers to use laptops outside the office, and not require them to travel back to the office to document notes. One caseworker provided a good suggestion – to have locations in the field (i.e., libraries, police barracks, and community spaces) that are designated as appropriate areas to use laptops. Locations can be spread across the LDSS.

- *Compensation for laptop use after regular work hours.* Caseworkers use the laptops most often at home to document notes. Although working from home is a sensitive topic, this study and previous studies show that districts that present favorable conditions (such as overtime or compensatory time, and supportive mobility policies) see a higher percentage of cases closed within the first 60 days[1]. Supportive policies may include a pre-approval process or a cap on time; however, some type of policy that acknowledges use while at home needs to be in place.

Standard Policies and Practices throughout District

Policies about laptop use must be districtwide. Divisions or units should strive to have a uniform set of rules or practices. The opposite can create inconsistent use, confusion, and likely resentment among units, which can lead to decreased or no laptop use. Supportive policies and clear procedures for compensation (for use after regular work hours) and laptop use in the field are the two most critical inconsistencies.

[1] See http://www.ctg.albany.edu/publications/reports/assessing_mobile_demo/assessing_mobile_demo.pdf.

Management and Supervisory Awareness and Discussion Sessions

While written policies serve an important role, it is only one part of changing the culture. Sessions where managers and supervisors can review policies, share ideas and thoughts, and ask questions will help manage expectations and create a more consistent and positive environment. Changing the way caseworkers are supervised will require quite a shift in culture, but having open supervisory forums to learn about new and best practices may allow for more unity across districts around the state and a better informed approach to this change.

Cross-District Information Sharing

There are districts in NYS that have created policies and practices that support full use of the laptop computers. For districts with unclear policies about mobility, supervision, or compensation, a forum to promote information sharing across the districts would be helpful, so that districts feel that they are not alone in thinking about changes as a result of connected laptops.

APPENDIX A: Methodology

The extended assessment examines the long term impacts of laptop use in child protective services in NYS and makes recommendations for maximizing mobile technology investments. In order to do this, three districts were selected to participate in data collection activities from July 2008 to October 2008. Districts selected to participate in this extended assessment were considered the 'best case for use' and were selected based on several criteria including:

- *Participation in a previous assessment:* All districts that participated in prior assessments where considered for participation.
- *Connectivity:* Only districts that secured wireless connectivity for each laptop were considered for participation.
- *Length of time*: Districts with wireless connection in use for over 240 days (6 months) were considered for participation.
- *Geographical location:* Districts representing regional and geographical differences in NYS were considered for participation.
- *Favorable policy and management conditions*: Districts representing favorable overtime or general use policies in prior assessments were considered for participation.

From these criteria, three districts were chosen – New York City Administration of Children Services, Onondaga County Department of Social Services, and Wayne County Department of Social Services.

Types of Data

The data used in this extended assessment comes from two data collection periods. The first data collection period represents the initial assessment completed in each of the three districts. In this initial assessment, data was collected using surveys, workshops, and data extracted from NYS's child welfare information system, CONNECTIONS. In the second data collection period, data was collected by group videoconference interviews and data extracted from CONNECTIONS (see Table 1 below).

Table 1. Data collection timeframe and type of data collected

	First data collection period		**Second data collection period**	
	Pre-test period	*Test period*	*Pre-test period*	*Test period*
NYC				
Timeframe	82 days 4/29/07-7/21/07	82 days 7/29/07-10/19/07	293 days 10/08/06-7/28/07	293 days 7/29/07-8/1/08
Data collection	Baseline survey; Post survey Workshops; teleconferences CONNECTIONS data		Video conference CONNECTIONS data	
Onondaga				
Timeframe	51 days 9/28/07-11/18/07	51 days 11/19/07-1/09/08	256 days 3/07/07-11/18/07	256 days 11/19/07-8/1/08
Data collection	Baseline survey; Post survey Teleconferences; District questionnaire CONNECTIONS data		Video conference CONNECTIONS data	
Wayne				
Timeframe	40 days 10/20/07-11/29/07	40 days 11/30/07-1/9/08	245 days 3/29/07-11/29/07	245 days 11/30/07-8/1/08
Data collection	Baseline survey; Post survey Teleconferences; District questionnaire CONNECTIONS data		Video conference CONNECTIONS data	

Both data collection periods extracted CONNECTIONS data for two time periods – a pre-test period (i.e., caseworkers had not received mobile technologies) and a test period (i.e., the time following caseworkers receiving the laptops). Data extracted from the CONNECTIONS database contained information on case records and caseworkers' progress notes. The information within each of these records included: State 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.

Wayne County Department of Social Services

First data collection period

The first data collection period collected data from a pre and post online survey, telephone interviews, and data extracted from CONNECTIONS. For a full description of the methods used please reference: http://www.ctg.albany.edu/publications/reports/assessing_mobile_demo. Click on "Wayne County" and see Appendix A.

Second data collection period

The second data collection period used two types: videoconferences with a sample of caseworkers and supervisors, and data extracted from CONNECTIONS. Two video conferences were held with caseworkers and supervisors on August 27, 2008. Seven caseworkers and seven supervisors from both Manhattan and Staten Island participated. All participants were given sample questions prior to the videoconference focusing on: use, location, changes in work, integration into work like, satisfaction, perceptions of timeliness, and value to clients.

The CONNECTIONS data were pulled by the date a progress note was entered by participants during two timeframes—the pre-test and test periods. These timeframes were equal in duration. A total of 30,972 progress note entries and 1,650 unique investigation stages made up the dataset from 14 CPS caseworkers (see Appendix E for more information).

Onondaga County Department of Social Services

First data collection period

The first data collection period collected data from: a pre and post online survey, telephone interviews, and data extracted from CONNECTIONS. For a full description of the methods used please reference: http://www.ctg.albany.edu/publications/reports/assessing_mobile_demo. Click on "Onondaga County" and see Appendix A.

Second data collection period

The second data collection period used two types: videoconferences with a sample of caseworkers and supervisors, and data extracted from CONNECTIONS. Two video conferences were held with caseworkers and supervisors on September 8, 2008. Five caseworkers and eight supervisors participated. All participants were given sample questions prior to the videoconference focusing on: use, location, changes in work, integration into work like, satisfaction, perceptions of timeliness, and value to clients.

The CONNECTIONS data were pulled by the date a progress note was entered by participants during two timeframes—the pre-test and test periods. These timeframes were equal in duration. A total of 83,734 progress note entries and 4,406 unique investigation stages made up the dataset from 47 CPS caseworkers (see Appendix E for more information).

New York City Administration for Children's Services (ACS)

First data collection period

The first data collection period collected data from a pre and post online survey, workshops, individual interviews, and data extracted from CONNECTIONS. For a full description of the methods used please reference http://www.ctg.albany.edu/publications/reports/assessing_mobile_2008. See Appendix B.

Second data collection period

The second data collection period used two types: videoconferences with a sample of caseworkers and data extracted from CONNECTIONS. Two video conferences were held with caseworkers and supervisors on September 15, 2008. Three caseworkers and eight supervisors participated. All participants were given sample questions prior to the videoconference focusing on: use, location, changes in work, integration into work like, satisfaction, perceptions of timeliness, and value to clients

The CONNECTIONS data were pulled by the date a progress note was entered by participants during two timeframes—the pre-test and test periods. These timeframes were equal in duration. A total of 73,212 progress note entries and 3,797 unique investigation stages made up the dataset from 72 CPS caseworkers (see Appendix E for more information).

Appendix B – Wayne County Department of Social Services

Background

Over the last two years, NYS OCFS, selected LDSS, and the state legislature provided funding to deploy and test the use of mobile technologies in Child Protective Services (CPS) work. In April 2007, Wayne County Department of Social Services submitted a mobile technology proposal and was awarded funding to deploy laptops for CPS work. As a result, on November 30, 2007, 16 Dell Latitude D620 laptops were distributed to 14 caseworkers and two managers.

Following this deployment in November 2007, an initial assessment of the use of laptops in CPS work took place. The initial assessment examined how mobile technology affects CPS caseworker productivity, mobility, and satisfaction. This extended assessment examined similar questions over an eight-month period, longer than the time period in the initial assessment. .

District context and deployment

At the time of data collection, Wayne County DSS had 15 CPS staff responsible for child protective services. Wayne County is a mostly rural area with approximately 93,000 residents. Wayne County DSS submitted a mobile technology proposal to OCFS stating that they wanted to learn if connected laptops would provide caseworkers with more opportunities to complete work while waiting in court and in between caseworker visits while in the field. In addition, Wayne's proposal stated they hoped that by using laptops, their district would see improved case coordination and more timely entry of progress notes.

Each participating caseworker received their own laptop and docking station with keyboard and monitor. District-provided external broadband cards were distributed and all access to the State network (i.e., to access the central database) was through a virtual private network (VPN) that secured the transmission to and from the laptop and the network. The district provided all participants with a training manual as well as a one-hour group training session demonstrating basic user functions of the laptop and security precautions.

In this profile

This profile is specific to Wayne County and brings together the most comprehensive data on the two data collection periods as well as presents findings on use, mobility, productivity and satisfaction.

Mobility

The overall objective of deploying the laptops was to provide caseworkers with opportunities to work outside the office environment in new ways. This section reports on how participants used those opportunities in terms of 1) type of work done, 2) location of use, and 3) factors influencing use. Additionally, this section reports on the major technical problems reported by the caseworkers. See Appendix A for a full description of the data collection and analysis methods used.

Use

During the first data collection period, survey respondents reported using the laptop during normal work hours, after hours, on-call, and while working overtime. Therefore, the full range of CPS-related work was completed using the laptops. The laptops were used in case investigation and interventions, documentation and reporting, and court-related activities. Case documentation was the most frequent use identified by respondents including entering and updating notes, completing safety assessments, and court reports. Other work reported included accessing: government Web sites, email, outside database sources (i.e., the Welfare Management System) and driving directions. During the second data collection period, respondents reported using the laptops in similar ways.

In the first data collection period, caseworkers' reported the following benefits to laptop use: 1) access to information while in the field was very important, and 2) needing to return to the office to access case information less frequently. In the second data collection period, respondents reported these same benefits. Lastly, in the first data collection period, some caseworkers reported taking the laptop into the field regularly and other caseworkers reported less consistent or sustained use. This pattern again emerged in the second data collection period. For example, some caseworkers continue to take their laptops into the field and use them before or after their client visits and some caseworkers do not take their laptops in to the field at all.

Location

As part of the first data collection period, caseworkers were surveyed on where they used their laptop, as well as the average length of time they used it. Table 2 below represents findings from the first data collection period.

Table 2 - Location and Hours of Laptop Use per Week

	Use of Laptop (n)	Average length of use per week
Field	69% (9)	1.70 Hours
Court	31% (4)	0.40 Hours
Home	77% (10)	3.45 Hours
Do not use at all	0% (0)	--

** Based on survey respondents who took the post survey n=13. Total number of testers n=14.*

As noted from the table above, the majority of caseworkers used the laptops from their home, followed by use in the field. The data gathered also indicates that caseworkers used the laptops from home for approximately three and a half hours a week. While no survey was used for the second data collection period, interviewed caseworkers still reported using the laptops primarily from their homes after normal working hours. All the caseworkers emphasized the value of having the laptop with them at home during on-calls. If they are not behind on their work or not on-call, caseworkers interviewed reported they generally do not take laptops home.

Caseworkers in the first data collection period reported using the laptops while at the court house. However, technical and privacy barriers were noted. Respondents reported during the second data collection period that many prefer not to use their laptops at court. Several cited too many distractions and lack of privacy as reasons court houses are an unfavorable place to use laptops.

Using the laptops while in the field was reported during the first data collection period. However, some caseworkers reported use in the field while others reported never using the laptops in the field. This pattern remained in the second data collection period. While some caseworkers take their laptops

with them in the field, others leave them at their office. In both periods, weather conditions, lack of places to work in rural settings, personal preferences, and policies not supporting field use were reasons for not taking the laptops in the field. Some caseworkers also expressed concern about leaving their laptops in the trunk of their cars; especially in the hotter and colder weather. Although there is currently no statewide policy prohibiting using the laptops in clients' homes, caseworkers indicated that they do not take their laptops into the clients' homes.

Examples in both data collection periods revealed innovative locations for using the laptop. One caseworker used the laptop in a public library to enter notes between appointments. The benefits of the public library included its quiet and relatively private environment to use their laptops while out in the field.

Technical Problems

During the first data collection period, participants were asked about ease of logging-on to the device. Overall, 91% of respondents said it was "Easy" to "Extremely easy," compared to 9% of respondents who rated the log-on process as "Difficult," none of the respondents rated it as "Neither difficult nor Easy."

Overall, during the first and second data collection period, respondents reported relatively few technical obstacles to laptop use – including 1) relatively little interruption with respect to establishing a connection, slow connection speeds, or losing connections in any locations or 2) relatively little interruption using docking stations. Caseworkers stated they adjusted fairly quickly to the new docking stations. The only technical challenge that was most frequently reported was the length of time needed to boot-up the system and establishing a wireless connection.

Productivity and Efficiency

This analysis uses central database data to examine two core questions about possible technology impacts within the Wayne County DSS: 1) Are workers with laptops more productive with respect to case closings, safety submissions, and progress note reporting? And 2) Does laptop use change timeliness of reporting? Additionally, this section presents the findings based on an analysis of the perceived usefulness of the laptops. See Appendix A for a full description of the data collection and analysis methods used.

Case Analysis

Case closing is one way to assess any changes in efficiency and productivity. Figure 1 below shows that the volume of timely closing of cases (in 60 days or less) increased during the test period, up from 443 in the pre-test period to 545 during the test period. The number of cases closed that were over 60 days old increased from 297 to 365 during the test period.

Figure 1 - Number of Wayne County LDSS Cases Closed Pre-Pilot and During Pilot

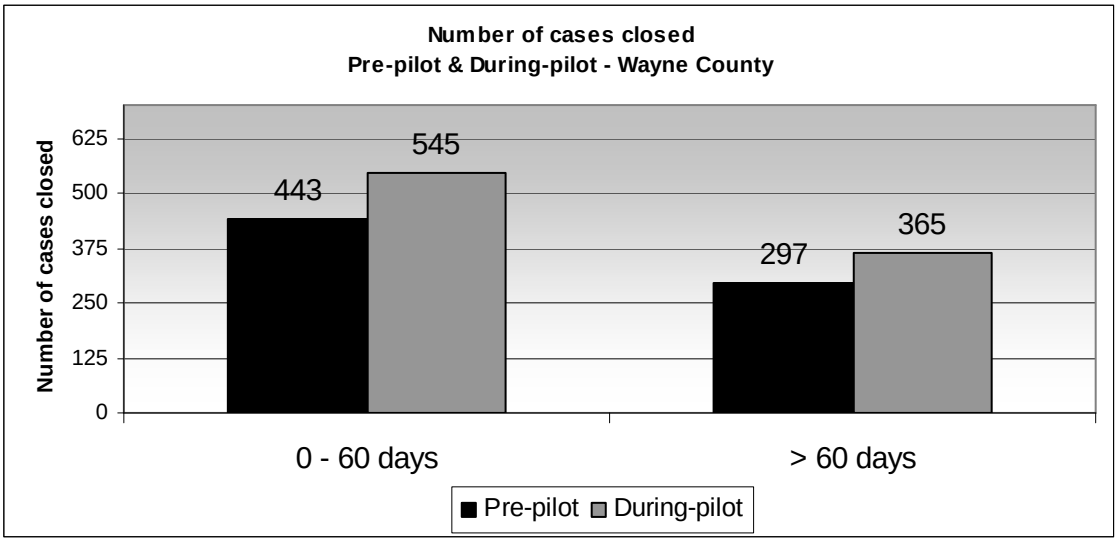
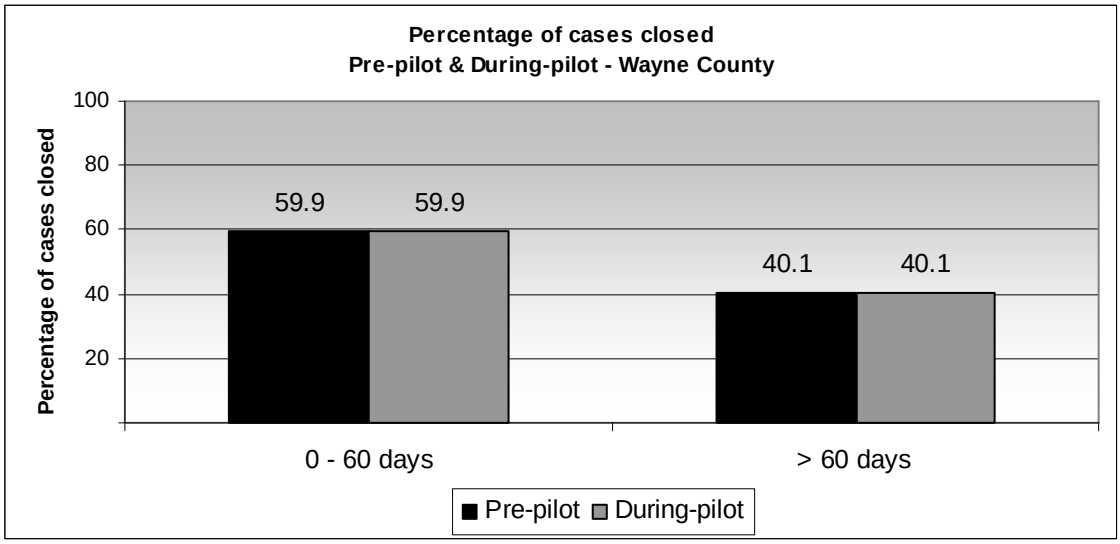


Figure 2 shows that the percentage (or proportion) of timely closing of cases (in 60 days or less) out of total the cases did not change during the test period. It is important to note that, in this county, the total number of cases available to be worked on increased from 975 in the pre-test to 1,060 during the test period—a 9% increase. Since the proportion of timely case closings did not change despite an increase in cases, we can conclude that an increase in productivity occurred, albeit a modest one. The length of the test period during the second data collection period was 245 days. However, a positive trend in cases closed was also seen during the initial assessment, which lasted 40 days.[2]

2 The initial assessment was based on 40 days of CONNECTIONS data. The findings revealed: (1) the rate of timely closing of cases (in 60 days or less) increased during the test period, up from 79 in the pre-test period to 90 during the test period; (2) the percentage of timely closing of cases (in 60 days or less) out of total cases also decreased from 68% to 64% during the test period; and (3) there was an overall 20% increase in cases closed (cases closed under 60 days as well as over 60 days) during the test period, given that the available cases decreased (around 6%).

Figure 2 - Percentage of Wayne County LDSS Cases Closed Pre-Pilot and During Pilot



Safety Submission Analysis

The rate of completing safety assessments is another way to assess any changes in efficiency and productivity. Figure 3 below shows the volume of timely submission of safety assessments (in seven days or less) increased during the test period, up from 502 in the pre-test period to 615 during the test period. The number of safety assessments submitted that were over seven days old increased from 235 to 289 during the test period.

Figure 3 - Number of Wayne County LDSS Safety Assessments Submitted Pre-Pilot and During Pilot

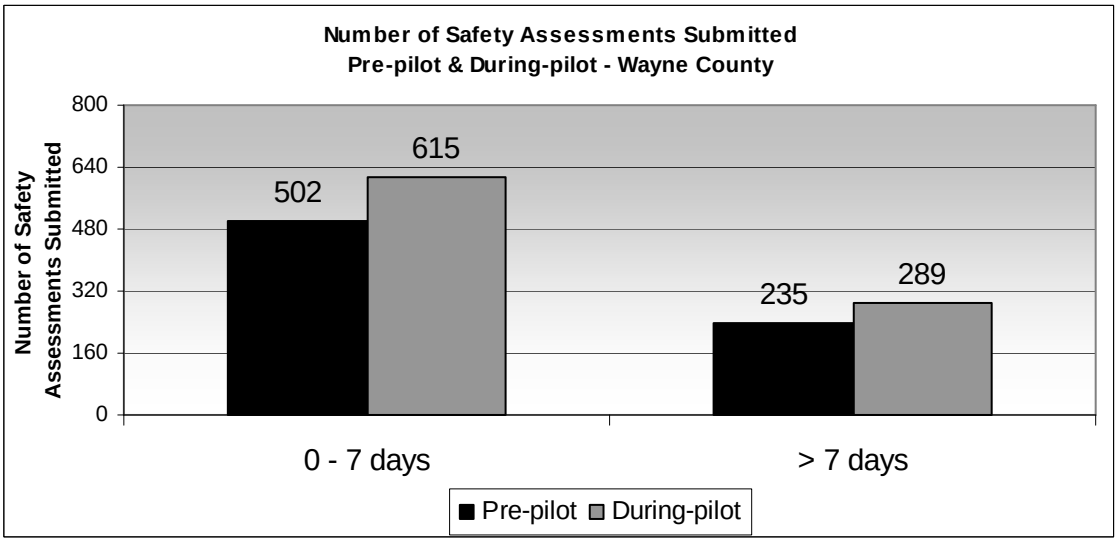
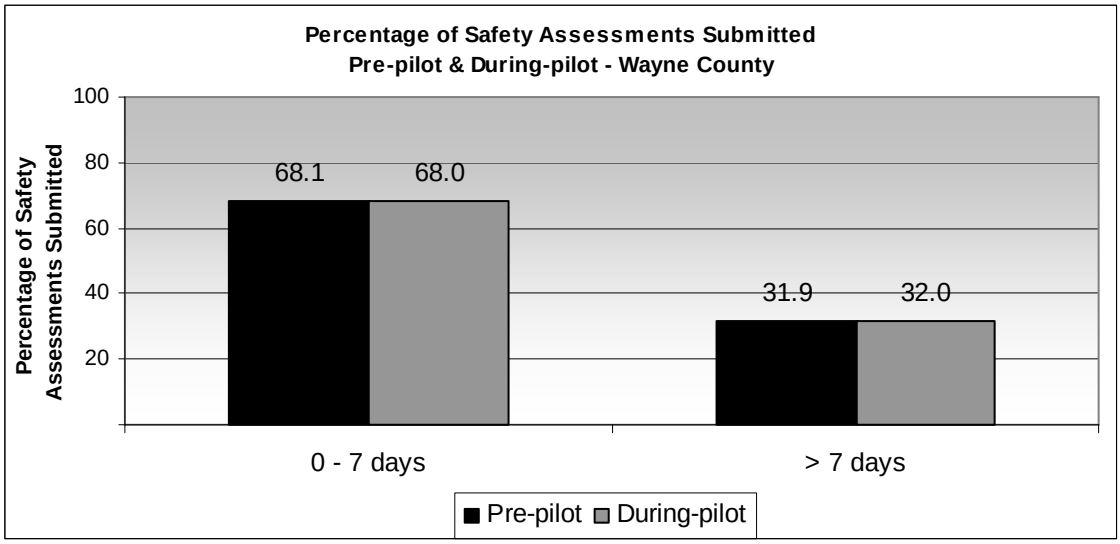


Figure 4 below shows that the percentage of timely (within in seven days or less) submission of safety assessments as a percent of total cases changed very little during the test period. However, again, the total number of cases available to be worked on in this county increased from 975 in the pre-test to 1,060 during the test period—a 9% increase. A safety assessment must be completed for each case. Therefore, in the second data collection, caseworkers seemed to maintain their level of submission (approximately 68 percent) despite a 9% increase in cases.

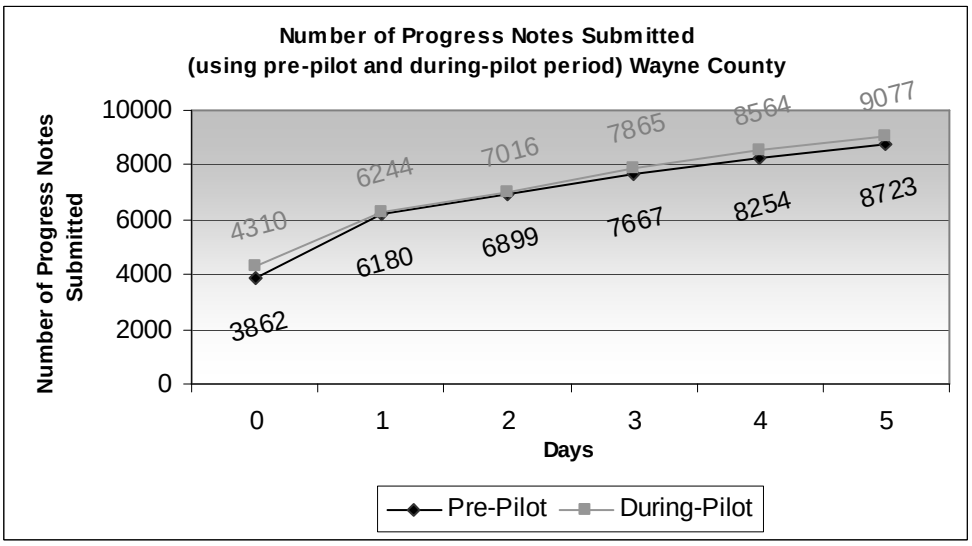
Figure 4 - Percentage of Wayne County LDSS Safety Assessments Submitted Pre-Pilot and During Pilot



Progress Notes Analysis

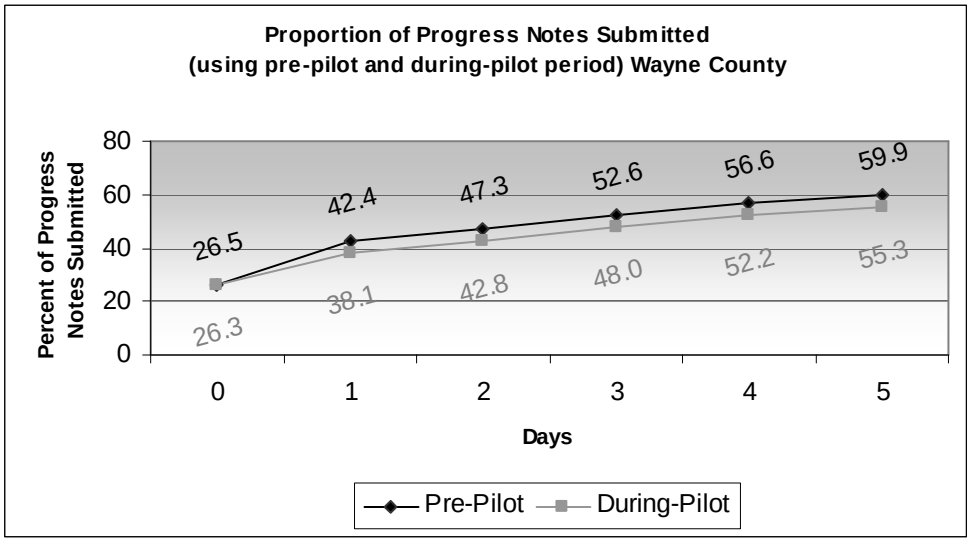
An indicator of timeliness is elapsed time, which is the number of days between an event and the posting of documentation regarding that event in the central database system. Figure 5 and Figure 6 below show trends in the elapsed time between progress note entry and the related event. Figure 5 shows that the number of progress notes entered (i.e., volume) slightly increased during the test period from 14,572 in the pre-test period to 16,400 during the test period – a 12.5% increase. Figure 6 shows that the rate of progress note entry decreased slightly during the test period but remained moderate overall. During both periods more than half of all progress notes were entered by the fifth day following the event. In the first data collection period, timeliness (or the rate of entry) decreased slightly during the test, but was a moderate decrease overall[3].

Figure 5 - Number of Progress Notes Entered by Days Following Event



[3] The initial assessment was based on 40 days of CONNECTIONS. The findings revealed that by the fifth day, over 76% of all notes were entered for the pre-test period, compared to just over 53% for the test period.

Figure 6 - Percentage of Progress Notes Entered by Days Following Event



Perceived Usefulness

During the first data collection period, participants were surveyed to evaluate whether using a laptop made any difference in their CPS work. The survey included questions on five areas: timeliness of documentation, ability to work from court, ability to access case information, communication with supervisors, and services provided to clients. Survey respondents were asked to rate the difference on a five-point scale where "1" indicated "Much worse," "3" represented "About the same," and "5" was indicative of being "Much better."

Overall, respondents from Wayne County DSS reported perceived positive impacts on their work resulting from laptop use, shown in Table 3 below. For documentation, 73% of the respondents reported improvements in timeliness of documentation and 91% for improved ability to access case information. Ability to work in court improved for 55%, and 27% reported improvements in ability to communicate with supervisors. Forty-six percent reported improvements in service to clients. None reported a negative impact.

Table 3 - Perceived Change Timeliness and Work Impacts – Wayne County

	Much worse (n)	Somewhat worse (n)	About the same (n)	Somewhat better (n)	Much better (n)
Timeliness of documentation	0%(0)	0%(0)	27%(3)	64%(7)	9%(1)
Ability to do work in court	0%(0)	0%(0)	46%(5)	46%(5)	9%(1)
Ability to access case information	0%(0)	0%(0)	9%(1)	36%(4)	55%(6)
Communication with supervisors	0%(0)	0%(0)	73%(8)	27%(3)	0%(0)
Service to clients	0%(0)	0%(0)	55%(6)	46%(5)	0%(0)

The analysis of the first data collection highlighted the lack of reported negative impacts on timeliness and other work activities as somewhat inconsistent with the analysis of the timeliness of progress note entry results obtained from the central database. Thus, the reported positive impacts may be related more to the increased rate of case closing.

In the second data collection period, data gathered from the videoconferences supports the general findings from the first data collection. The majority of the caseworkers present in the videoconference reported a perceived change in the way they conducted their work. A few caseworkers once again commented on how having a laptop has given them freedom to conduct their work wherever they find it necessary; and particularly when they are on-call. Additionally, many caseworkers again indicated that having a laptop has been useful for catching up on their progress notes. As one of the respondents from the first data collection said, "Having a laptop when on-call during the evening and weekends takes away the need to take reports orally. [It] saves a lot of time…being on-call is much easier with a laptop. When at court, I no longer feel like I am standing around, wasting time while waiting for my case to be called. Also, I know that I can type notes whenever I want to." Similar comments were conveyed during the second data collection period.

Personal preference was a consistent theme during the first data collection period. For example, some caseworkers expressed a preference for using the laptop at home after normal business hours, while others expressed the preference for using the laptop to enter notes immediately following a visit. Caseworkers interviewed during the second data collection period reported no significant change in the way they communicate with their supervisors. The lack of change in communication patterns with supervisors was consistent with results from the first data collection period. Caseworkers indicated continued reliance on the use of cell phones and in-person meetings to communicate with their supervisors. Regarding work while in the court, more than half of the respondents in the first data collection period indicated an improvement in the ability to work in the court. However, during the second data collection, a few caseworkers reported taking the laptops with them to court and the majority found they could not use the laptop effectively. Therefore, they stopped taking the laptops with them to court. They said there were too many distractions and little or no privacy to work,

Nearly one year after the laptops were deployed, there were mixed responses regarding the effect the laptops had on the quality of service caseworkers provide to their clients. While some caseworkers felt that they still perform the same set of tasks using the laptops, others indicated some improvements, but that was dependent on the particular case they were assigned. Many caseworkers believe using the laptop has made them more efficient in entering their progress notes; and therefore, the use of the laptop has saved them time and energy, which is perceived to be reinvested into serving their clients. One of the interviewed caseworkers commented that the value of the laptop is not necessarily appreciated on a daily basis rather, the true value is its availability in certain critical situations. Finally, caseworkers valued the ability to lookup case histories while they were away from the office without having the need to constantly call a colleague or a supervisor.

Satisfaction

In the first data collection period, survey respondents reported a high level of satisfaction. The survey data showed that all questioned respondents reported being "Somewhat satisfied" or "Very satisfied" with the use of the laptops in CPS work. While no surveys were administered in the second data collection period, caseworkers in the videoconference reported similar and consistent sentiments regarding their overall satisfaction with the laptops.

Despite the high levels of satisfaction reported in both data collection periods, caseworkers reported issues during the second data collection period that they hoped would have been addressed by then. For example, one of the interviewed caseworkers mentioned having used the laptop from a public library; however, at a later time, the caseworker was told to no longer use the laptop at that location- or any other location in the field. Many caseworkers expressed that they had hoped policies would

change, but since the laptops were deployed, there has not been consistent changes in policy regarding use of laptops in the field or from home.

Additionally, caseworkers indicated that management approves compensation for using the laptop after normal work hours only under certain circumstances—such as being substantially behind on progress notes but only as long as they are *in* the office when using the laptop (which is opposite of the intended purpose of having laptops). Moreover, caseworkers cannot get compensation for time spent on the laptop in the field or at home after normal work hours. Caseworkers feel this contradicts the purpose of the laptop, which is to increase work opportunities outside the office. Caseworkers continue to be compensated for working at home during on-call duty, and when visiting their clients in the field after normal working hours.

During the second data collection period, caseworkers reported several incentives associated with laptop use, including a desire of self satisfaction and a need to reduce work-related stress. Despite not being compensated, virtually all caseworkers reported self satisfaction and the desire to keep up on their progress notes as the main drivers behind using the laptops from home. Furthermore, caseworkers reported high satisfaction during on-call duty as it allowed them to access in-depth case information relatively quickly and without having to take extensive hand-written notes from the Statewide Central Registry (the state's child abuse hotline).

Finally, almost all caseworkers interviewed expressed the desire and need for county-issued cellular telephones and stated they were a necessity of their job.

Appendix C – Onondaga Department of Social Services

Background

Over the last two years, NYS OCFS, the LDSS, and the state legislature provided funding to deploy and test the use of mobile technologies in Child Protective Services (CPS) work. In April 2007, Onondaga County Department of Social Services submitted a mobile technology proposal and was awarded funding to deploy laptops in CPS work. As a result, on November 19, 2007, 56 Dell Latitude D620 laptops were distributed to 40 caseworkers and 10 managers. Six laptops were also shared on a rotating basis among night service staff.

Following this deployment in November 2007, an initial assessment of the use of laptops in CPS work took place. The initial assessment examined how mobile technology affects CPS caseworker productivity, mobility, and satisfaction. This extended assessment examined similar questions over an eight-month period, longer than the time period in the initial assessment.

District context and deployment

At the time of data collection, Onondaga County DSS had 56 CPS staff responsible for child protective services. Located in Central New York, Onondaga County has approximately 458,000 residents. The county has a land area of about 790 square miles and has one major city. Onondaga County DSS submitted a mobile technology proposal to OCFS stating that they wanted to learn if connected laptops would provide caseworkers with more opportunities to stay in the field (i.e., reducing travel time returning to the office), and to provide supervisors with more immediate information on case-related issues. In addition, Onondaga's proposal also identified high caseloads and high numbers of overdue safety assessments as two important drivers for testing mobile technologies.

The district-provided external broadband cards were distributed and all access to the state network (i.e., to access the central database) was through a virtual private network (VPN) that secured the transmission to and from the laptop and the network. The district also provided a one hour and fifteen minute small group training session which covered: (1) orientation to the initiative, (2) orientation to the equipment, (3) local guidelines, and (4) initialization of individual IDs, and setup of broadband and VPN access. Each participant received a small training packet at the end of the session for future reference.

In this profile

This profile is specific to Onondaga County and brings together the most comprehensive data on the two data collection periods as well as findings on use, mobility, productivity, and satisfaction.

Mobility

The overall objective of the laptops was to provide caseworkers with opportunities to work outside the office environment in new ways. This section reports on how participants used those opportunities in terms of 1) the type of work done, 2) locations of use, and 3) factors influencing their use. Additionally, this section reports on the major technical problems reported by the caseworkers. The

data used in this analysis was collected soon after the laptops were deployed, as well as after an extended period of use. See Appendix A for a full description of the methods used.

Use

During the first data collection period, survey respondents reported using the laptop during normal work hours, after hours, during commute times, and while working overtime. In addition, the full range of CPS-related work was completed using the laptops. The laptops were used in case investigation and interventions, documentation and reporting, and court-related activities. Case documentation was the most frequent use identified by respondents, including entering and updating notes. Other work reported included reading and reviewing case histories, opening and closing cases, conducting clearances and safety assessments, preparing court petitions, using the Welfare Management System (WMS), and communicating via email. During the second data collection period, respondents reported using the laptops in similar ways as previously reported, and added uses such as looking up addresses and driving directions, and accessing information on the sex offender registry.

In the first data collection period, caseworkers reported the following benefits to laptop use: 1) access to information in the field was very important, and 2) needing to return to the office to access case information less frequently. For example, one caseworker reported the following: "It [the laptop] gives you more flexibility in when you enter your notes and you don't have to call anyone else or go back to the office if you need to look up information you may need in the field." Similar trends were reported consistently during the second data collection period. One of the caseworkers interviewed indicated that they often use the laptop during hospital visits with clients in order to look up case histories.

While all the caseworkers reported they were comfortable using the laptop to conduct their work, the time it took to incorporate it into their daily routine varied from one caseworker to another.

Location

As part of the first data collection period, caseworkers were surveyed on where they used their laptop, as well as the average length of time they used it. Table 4 below represents findings from the first data collection period.

Table 4 - Location and Hours of Laptop Use per Week

	Use of Laptop (n)	Average length of use per week
Field	24% (10)	0.70 Hours
Court	17% (7)	0.19 Hours
Home	63% (26)	3.07 Hours
Do not use at all	(0)	--

** Based on survey respondents who took the post survey n = 41. Total number of testers n = 69.*

As noted from the table above, the majority of caseworkers used the laptops from their home, followed by use in the field. The data gathered also indicates that caseworkers used the laptops from home for approximately three hours a week. While no survey was used for the second data collection period, interviewed caseworkers still reported using the laptops primarily from their homes after normal working hours.

During initial planning for this project, the amount of time caseworkers reported spending in court suggested that the courts could potentially be an unexploited location for mobile work in many LDSS. However, respondents during the first data collection reported spending on average just under two days

a month at court and waiting on average 1.5 hours during a court visit. A smaller percentage of respondents reported using the laptop in court. Findings from the second data collection period indicated that caseworkers still have problems using the laptops in courts. Several caseworkers suggested a dedicated area for laptop use is important and would likely increase use in court. Privacy issues and confidentiality were the main reasons reported for not using the laptop in court. Furthermore, a shortage of tables and power outlets created barriers to using the laptops in court.

During the second data collection period, caseworkers continued to report using the laptops from the field. Several caseworkers indicated using their laptops while parked in a secure parking lot and several reported using their laptops while at coffee shops or hospitals. Caseworkers also reported using laptops while on-call. Having the laptops during these periods allowed the caseworkers to access full case information as opposed to having to take extensive notes from the hotline.

Caseworkers reported during the second data collection period that using the laptops within clients' homes was not encouraged by supervisors. Several mentioned a formal policy was enacted. One caseworker mentioned the need to make clients aware of the caseworker's use of the laptop while sitting outside the client's home in their car. For example, one caseworker was unfamiliar with a particular area and used the laptop to lookup an address and driving directions. At that time, the caseworker notified the client of the situation and asked permission to use the laptop in their car outside the client's residence.

Technical Problems

During the first data collection period, the most common noted technical problems were slow connections and loss of wireless connectivity. Additionally, most respondents reported that privacy was less problematic in the field, but some did experience privacy problems. Again, in the second data collection, caseworkers reported problems with the lack of privacy and confidentiality in court.

Participants were surveyed in the first data collection period about the ease of logging-on to the device. Overall, 39% said it was "Easy," 50% rated it as "Neither difficult nor Easy," and another 11% of survey respondents rated the log-on process as "Difficult." Nearly a year after the laptops were deployed, caseworkers reported very few technical problems similar to those identified in the first data collection period. Most commonly, caseworkers continued to experience lengthy system boot up times, lagging wireless connection speeds, or cumbersome log-on processes. In the second data collection period, a few caseworkers suggested the ability to print from the field would be an added benefit that may increase use and increase their ability to fully exploit the potential for mobility and communication.

Productivity and Efficiency

This analysis uses central database data to examine two core questions about possible technology impacts within the Onondaga County DSS: 1) Are workers with laptops more productive with respect to case closings, safety submissions, and progress note reporting? And 2) Does laptop use have an effect on the timeliness of reporting? Additionally, this section presents the findings based on an analysis of the perceived usefulness of the laptops. See Appendix A for a full description of the methods used.

Case Analysis

Case closing is one way to assess any changes in efficiency and productivity. Figure 7 below shows that the volume of timely closing of cases (in 60 days or less) increased during the test period, up from 1,197 in the pre-test period to 1,422 during the test period. The number of cases closed that were over 60 days old increased from 833 to 954 during the test period.

Figure 7 - Number of Onondaga County LDSS Cases Closed Pre-Pilot and During Pilot

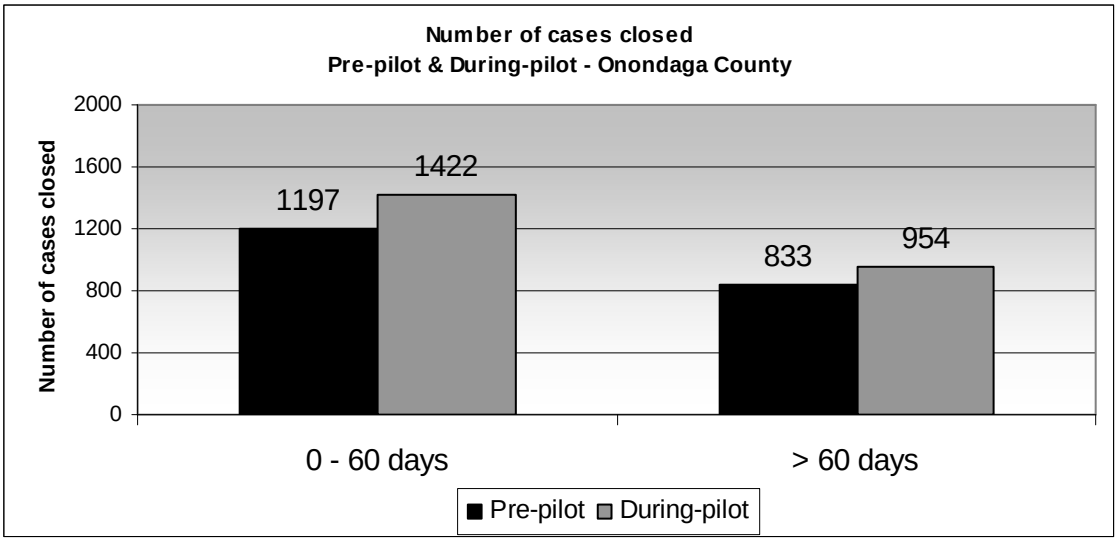
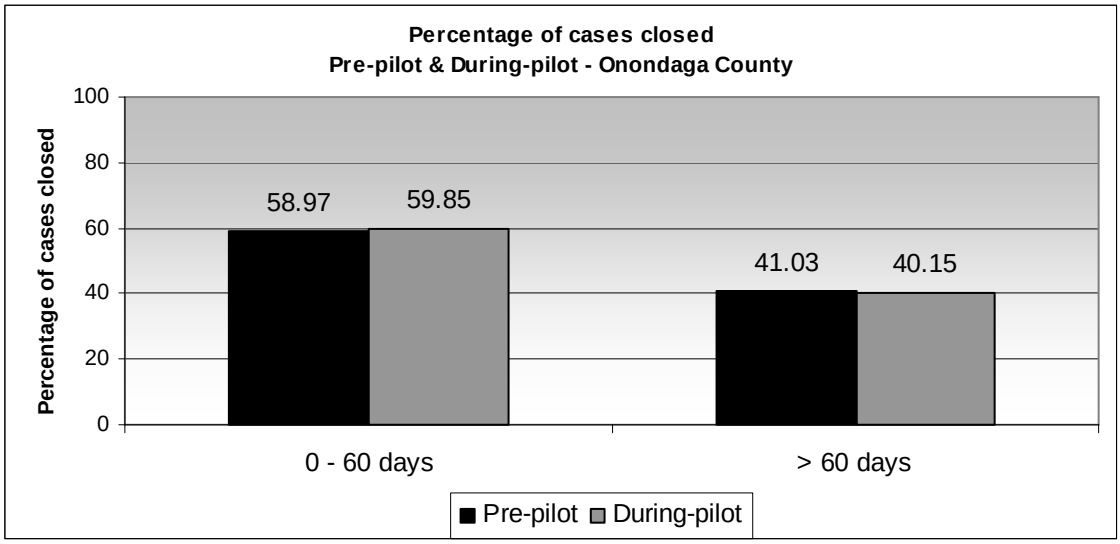


Figure 8 below shows that the percentage of timely closing of cases (in 60 days or less) out of the total did not change during the test period. It is important to note that, in Onondaga County, the total number of cases available to be worked increased from 2,674 in the pre-test to 2,819 during the test period—a 5% increase. Since the proportion of timely case closings did not change despite an increase in cases, we can conclude that an increase in productivity occurred, albeit a modest one. The length of the test period during the second data collection was 256 days. However, a positive trend in cases closed was also seen during the initial assessment, which lasted 51 days. [4]

[4] The initial assessment was based on 51 days of CONNECTIONS. The findings revealed: (1) the volume of timely closing of cases (in 60 days or less) increased during the test period, up from 244 in the pre-test period to 321 during the test period; (2) the percentage of timely closing of cases (in 60 days or less) out of total cases decreased from 70% to 61% during the test period; and (3) overall, there was over a 50% increase in cases closed (for both 60 days or less and 60 days or more) given the available cases increased only 6.7%.

Figure 8 - Percentage of Onondaga County LDSS Cases Closed Pre-Pilot and During Pilot



Safety Submission Analysis

The rate of completion of safety assessments is one way to assess changes in efficiency and productivity. Figure 9 below shows the volume of timely (within seven days or less) submission of safety assessments increased during the test period, up from 859 in the pre-test period to 1,020 during the test period. The number of safety assessments submitted that were over seven days old increased from 1,143 to 1,328 during the test period.

Figure 9 - Number of Onondaga County LSSD Safety Assessments Submitted Pre-Pilot and During Pilot

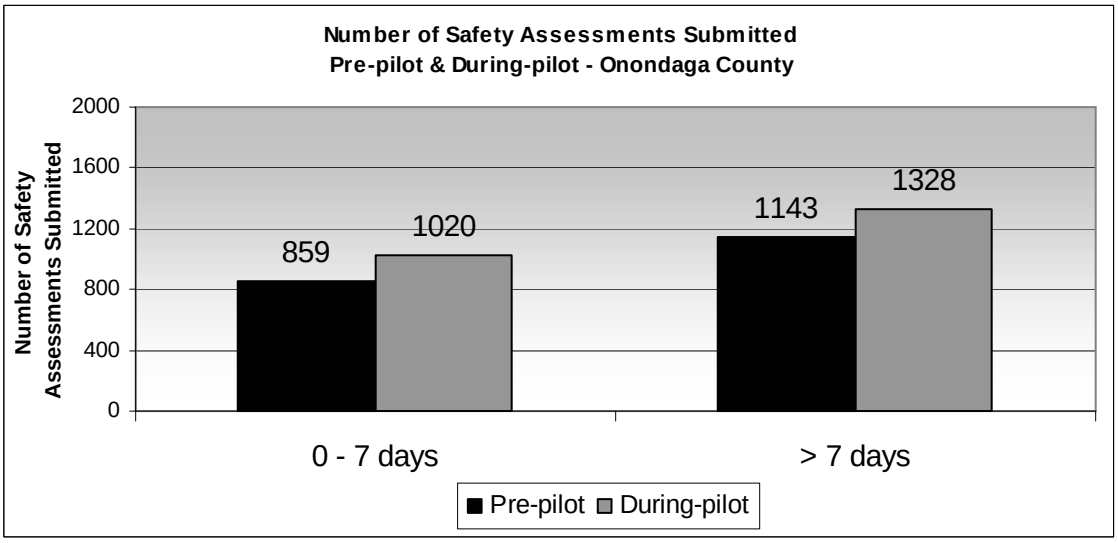
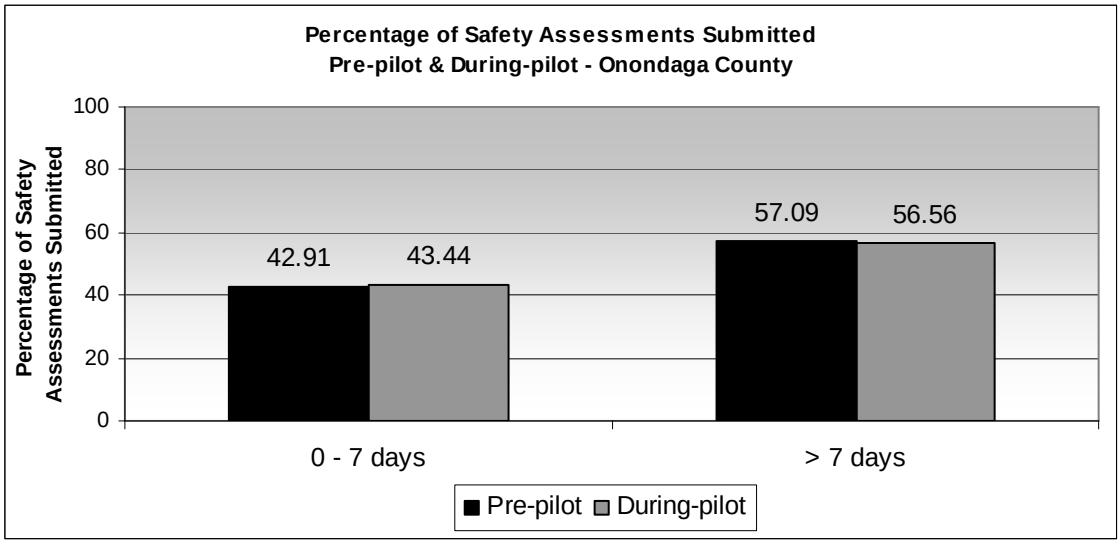


Figure 10 below shows that the percentage of timely submission of safety assessments (in seven days or less) as a percent of total cases changed very little during the test period. However, again in this county, the total number of cases available to be worked on increased from 2,674 in the pre-test to 2,819 during the test period—a 5% increase. In the second data collection, caseworkers maintained their level of submission (approximately 43%) despite a 5% increase in cases available to be worked on.

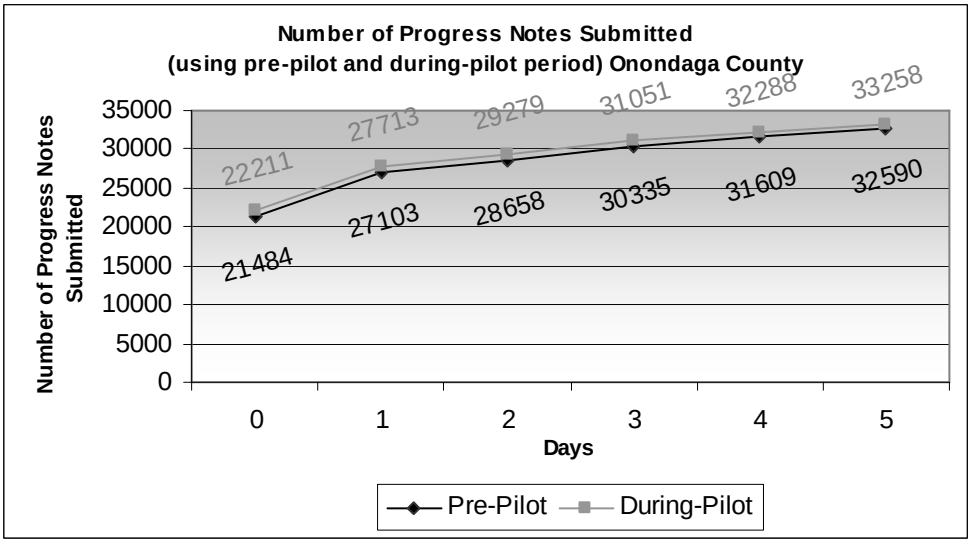
Figure 10 - Percentage of Onondaga County LDSS Safety Assessments Submitted Pre-Pilot and During Pilot



Progress Notes Analysis

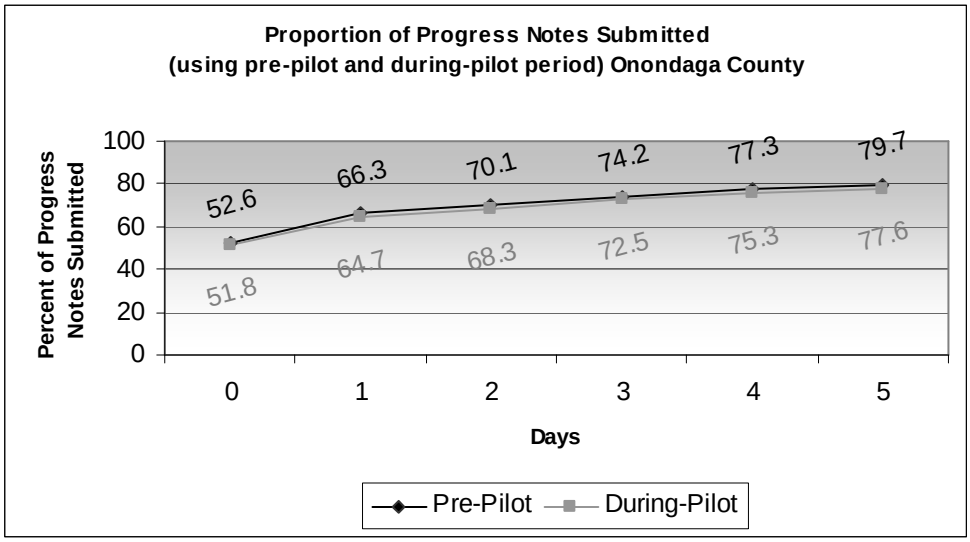
An indicator of timeliness is elapsed time, which is the number of days between an event and the posting of documentation regarding that event in the central database system. Figure 11 and Figure 12 below show trends in the elapsed time between progress note entry and the related event. Figure 11 shows that the number (or volume) of progress notes entered rose slightly during the test period from 40,876 in the pre-test period to 42,858 during the test period – a 5% increase. Figure 12 shows that the rate of progress note entry changed very little during the test period but remained high overall. During both periods close to 80% of all progress notes were entered by the fifth day following the event. In the first data collection period, timeliness (or the rate of entry) slightly decreased during the test period, but was high overall.[5]

Figure 11 - Number of Progress Notes Entered by Days Following Event



[5] The first data collection period was based on 51 days of CONNECTIONS. The findings revealed that by the fifth day, over 83% of all notes were entered for the pre-test period, compared to just over 75% for the test period.

Figure 12 - Percentage of Progress Notes Entered by Days Following Event



Perceived Usefulness

During the first data collection period, participants were surveyed to evaluate whether using a laptop made any difference in their CPS work. The survey included questions on five areas: timeliness of documentation, ability to work from court, ability to access case information, communication with supervisors, and services provided to clients. Survey respondents were asked to rate the difference on a five-point scale where "1" indicated "Much worse," "3" represented "About the same," and "5" was indicative of being "Much better."

Overall, nearly 90% of survey respondents reported improvements in timeliness of documentation and 92% reported increased ability to access case information from the field. There were smaller proportions of respondents reporting improvements in their ability to work in court (25%), communicating with supervisors (23%), and providing service to clients (31%). None reported a negative impact.

Table 5 - Perceived Change Timeliness and Work Impacts – Onondaga County

	Much worse (n)	Somewhat worse (n)	About the same (n)	Somewhat better (n)	Much better (n)
Timeliness of documentation	0% (0)	0% (0)	11% (3)	52% (14)	37% (10)
Ability to do work in court	0% (0)	0% (0)	75% (18)	17% (4)	8% (2)
Ability to access case information	0% (0)	0% (0)	7% (2)	44% (12)	48% (13)
Communication with supervisors	0% (0)	0% (0)	77% (20)	23% (6)	0% (0)
Service to clients	0% (0)	0% (0)	69% (18)	27% (7)	4% (1)

This is somewhat inconsistent with the timeliness of documentation results obtained from the central database. Thus the self-reported (i.e., survey responses) positive impacts may be related more to the increased rate of case closing than the timeliness of progress notes.

Data gathered from the videoconferences in the second data collection period supports the general findings from the first data collection period. The majority of the caseworkers present in the videoconference reported a change in the way they conduct their work. Almost all stated they felt more organized as a result of having the laptop. Many commented that they were more caught up on their progress notes and have either eliminated or reduced their documentation backlog. One respondent noted from the first data collection period, "It [the laptop] allows me to catch up on progress notes and related work while at home, at my own speed, instead of having to be pressured to come into the office. It will also be effective while on night service." Similar statements were made during the second data collection period. The caseworkers attributed the reduction in backlog to the introduction of the laptops.

Personal preference was a consistent theme during the first data collection period. For example, some caseworkers expressed the preference to use the laptop at home after normal business hours, while others expressed the preference to use the laptop to enter notes immediately following a visit. Caseworkers interviewed during the second data collection period reported no significant change in the way they communicate with their supervisors, many stated how they communicate is based on personal preference. One caseworker stated that prior to having a laptop, working after normal business hours from the office was rare, but the laptop allows the caseworker to continue working from home and also to attend to her family's needs. Caseworkers indicated continued reliance on the use of cell-phones and in-person meetings to communicate with their supervisors. Supervisors reported using email to communicate with caseworkers while they were out of the office. Several supervisors suggested utilizing a chat-like feature as a way to enhance communication between supervisors and caseworkers.

Nearly one year after the laptops were deployed, there were mixed responses regarding the effect the laptops had on the quality of service caseworkers provide to their clients. While some caseworkers felt that they still perform the same set of tasks using the laptops, others indicated some improvements, but that was dependent on the particular case they were assigned. For example, one caseworker spoke about the use of the laptop to begin a critical action before returning to the office. Another caseworker valued the ability to lookup case histories while they were away from the office without having to constantly call a colleague or a supervisor.

Satisfaction

In the first data collection period, survey respondents reported a high overall level of satisfaction. The survey data showed that 81% of respondents reported being "Somewhat satisfied" or "Very satisfied," compared to 11% being "Somewhat dissatisfied" or "Very dissatisfied." Additionally, 7% responded that they were "Neither dissatisfied/satisfied." While no surveys were administered in the second data collection period, caseworkers in the videoconference reported similar and consistent sentiments regarding their overall satisfaction with the laptops.

Despite the overall high levels of satisfaction reported in both data collection periods, caseworkers reported issues during the second data collection period that they hoped would have been addressed by then. For example, in the first data collection period, participants indicated technical difficulties, inconsistent access to CONNECTIONS, lengthy boot up times, and issues related to login passwords as problematic. Nearly one year after deploying and using the laptops, similar observations were reported by caseworkers in the videoconference, where technical issues identical to those previously mentioned were cited. Additionally, frustration regarding the lack of comprehensive or consistent policies on acceptable use and compensation were identified. In the second data collection period,

caseworkers indicated that acceptable use of the laptops is primarily dictated by individual supervisor preference. Some supervisors allowed caseworkers to work outside of the office, others preferred them working from the office. Caseworkers who were allowed to work from the field reported high levels of satisfaction. They attributed this satisfaction to their ability to access case information regardless of where they were. Other caseworkers indicated that their stress level would be reduced if they were allowed to work more from the field.

There was no policy change regarding the use of laptops from home for CPS work between the initial and extended assessments. Caseworkers could work from home if they obtained prior approval; noting that they are allowed up to four hours a week of overtime (issued as compensatory time). Other issues such as the lack of dedicated work areas in court, inability to print from the field, and inconsistent Wi-Fi connections were additional barriers cited.

Appendix D – New York City Administration for Children's Services (ACS)

Background

The New York City Administration for Children's Services' (NYC ACS) strategy to test mobile technologies was originally developed in response to Mayor Bloomberg's "Safeguarding our Children 2006 Action Plan." Over the last two years, in conjunction with the NYS OCFS and the state legislature, NYC ACS provided funding to deploy and test the use of mobile technologies in Child Protective Services (CPS) work. During the weeks of July 16 through July 27, 2007, ACS deployed 190 Panasonic Toughbook to managers, caseworkers, and supervisors. Of the 190, 135 caseworkers and supervisors in two field offices – Manhattan and Staten Island – received laptops.

Following this deployment in July 2007, an initial assessment of the use of laptops in CPS work took place. The initial assessment examined how mobile technology affects CPS caseworker productivity, mobility, and satisfaction. This extended assessment examined similar areas over a longer period of time totaling ten months.

District context and deployment

At the time of data collection, ACS had approximately 1,310 CPS staff in five boroughs which investigates approximately 70,000 reports of suspected child abuse and neglect a year. The overall goal of the initiative was to provide CPS caseworkers with remote access to CONNECTIONS (the OCFS central child welfare information system) and other ACS applications in order to allow caseworkers to complete reporting activities while outside of the office. Specifically, the goal was to enable caseworkers to use time spent waiting for appointments, in between appointments or during court appearances to complete their required case documentation.

NYC ACS provided internally mounted Verizon Wireless Wide Area Network (WWAN) cards and access to the city network went through several passwords (i.e., one log-on provided access to the server at NYC's central IT office; another log-on provided access to ACS' remote access server) designed to prevent unauthorized access to sensitive client data. During the initial assessment, access to the State network (i.e., the state central database) was through NYC ACS networks. After technical difficulties from this arrangement substantially slowed connections to the state's central database, NYC allowed access to the state network through a virtual private network (VPN). This practice was consistent with other districts across the state. In addition, each laptop hard drive was encrypted using BeCrypt data security software.

Prior to receiving a laptop computer, each participant attended a three-hour orientation and training session, which introduced them to the device and provided training on connecting to NYC ACS and CONNECTIONS networks.

In this profile

This profile is specific to NYC ACS and brings together the most comprehensive data on the two data collection periods as well as findings on use, mobility, productivity and satisfaction.

Mobility

The overall objective of the laptops was to provide caseworkers with opportunities to work outside the office environment in new ways. This section reports on how participants used those opportunities in terms of 1) the type of work done, 2) locations of use, and 3) factors influencing their use. Additionally, this section reports on the major technical problems reported by the caseworkers. The data used in this analysis was collected soon after the laptops were deployed, as well as after an extended period of use. See Appendix A for a full description of the methods used.

Use

During the first data collection period, survey respondents reported using the laptop during normal work hours, after hours, during commute times, and while working overtime. The laptops were 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, and completing safety assessments. Other work included reading and reviewing case histories or new cases, doing person searches or checking client histories, conducting clearances, email, accessing government or other Web sites, and looking up services for clients. During the second data collection period, respondents reported using the laptops in similar ways.

In the first data collection period, caseworkers reported the following benefits to laptop use: 1) access to information in the field, and 2) less frequent need to return to the office to access case information. For example, one caseworker stated, "It increases caseworkers' opportunities to access services while in the field and affords the CPS worker more independence in acquiring clearances." Similar trends were reported nearly one year after the laptops were deployed.

Location

As part of the first data collection period, caseworkers were surveyed on where they used their laptop, as well as the average length of time they used it. Table 6 below represents findings from the first data collection period.

Table 6 – Location and Hours of Use per Week

	Overall (n)	Average length of use per week	Manhattan (n)	Staten Island (n)
Home	86 % (82)	4.47 hours	89 % (41)	84 % (41)
Court	44 % (42)	2.34 hours	44 % (20)	45 % (22)
Field	42 % (40)	2.33 hours	35 % (16)	49 % (24)
Office	6 % (6)	0.30 hours	0 % (0)	12 % (6)
Do not use at all	4 % (4)	--	2 % (1)	6 % (3)

As noted from the table above, the majority of caseworkers used the laptops from their home, followed by use in court and the field. The data gathered also indicate that caseworkers used the laptops from home for approximately four and a half hours a week. Several stated they were more productive at home due to fewer interruptions from their colleagues, while others stated that technical problems deemed them less effective than at the office as it took them longer to do the same amount of work. While no survey was used in the second data collection, teleconference participants reported using the laptops primarily from their homes after normal business hours. Supervisors also indicated that they use the laptops at home to review their cases on an as-needed basis (e.g., depending on workload).

In the first data collection, technical problems (i.e., connection problems) and work environment issues (i.e., privacy or perceived physical danger) were important factors that shaped the use of laptops in the field, particularly in clients' homes. During the second data collection, caseworkers again reported using the laptops from the field and similar technical difficulties were reported. As well, many caseworkers noted it was nearly impossible to use the laptops when in clients' homes or in client meetings. Several concerns were noted: slowness of connection, delayed connection, and impersonal interaction. Caseworkers explained the nature of casework documentation requires quick notes when visiting clients and using a laptop generally interferes with communication.

In the first data collection period, the amount of time caseworkers spent in court suggested that it was possibly an important location for mobile work. However, caseworkers reported privacy and connection problems at court as barriers to use. The second data collection indicates that caseworkers still have similar barriers when using the laptops in court. One caseworker stated their preference would be to have a dedicated area for caseworkers to use laptops while waiting to be called for cases. Respondents noted a dedicated area in family court in Manhattan, but reported difficulty hearing cases being called and therefore, did not feel comfortable using that area. Most caseworkers reported using the court computers instead (i.e., they are considered faster than the laptops). Family courts in Staten Island do not have dedicated areas and barriers such as inadequate privacy and confidentiality were reported.

In the first data collection, it was suggested that caseworkers will be able to use their laptops during their commutes to and from work, but it seemed that the nature of the commute (i.e., using various forms of public transportation or dealing with traffic) may not allow optimal conditions for laptop use. During the second data collection, some caseworkers reported using laptops successfully during their commutes. One caseworker mentioned the laptop was convenient for working on progress notes when on an above-ground train. The caseworker's commute to and from work was about 45 minutes and this time frame allowed the laptop to be used to catch up on work.

During the second data collection period, caseworkers stated that having the laptop allows them to shift the time and place of where they work and to do work in non-traditional work locations. For example, one caseworker used the laptop in the park and in a coffee shop. The caseworker commented on doing this about once a week and self reported being mostly caught up on cases.

Technical Problems

In the first data collection period, the most common noted technical problems were related to the wireless connection. Specifically caseworkers reported problems establishing and maintaining a wireless connection. The speed of the wireless connection was also reported as problematic. Additionally, a number of caseworkers reported problems related to the lack of privacy and confidentiality when using the laptop in the field. .

Participants in the first data collection were surveyed and 48% of participants rated the log-on process as "Very difficult" to "Extremely difficult," compared to only 20% who described it as "Easy." An additional 28% of the participants rated the log-on process as "Neither difficult nor easy." While no surveys were used in the second data collection, interviewed caseworkers reported continued programs with the log-on process and described it as cumbersome and time consuming.

Overall, nearly a year after the laptops were deployed, caseworkers reported relatively few new technical challenges using the laptop in the field. The same issues were reported in the second data

collection period, but were not considered major barriers to use. Most commonly, caseworkers continued to experience lengthy system boot up times, continuous disconnection from CONNECTIONS, and lagging wireless connection speeds. Several caseworkers from Staten Island reported wireless difficulties, but attributed this mostly to the lack of coverage in the court. One caseworker recommended experimenting with the use of printers in the field.

Productivity and Efficiency

This analysis uses central database data to examine two core questions about possible technology impacts within the New York City ACS: 1) Are workers with laptops more productive with respect to case closings, safety submissions, and progress note reporting? and 2) Does laptop use have an effect on the timeliness of reporting? Additionally, this section presents the findings based on an analysis of the perceived usefulness of the laptops. See Appendix A or a full description of the methods used.

Case Analysis

Case closing is one way to assess any changes in efficiency and productivity. Figure 13 below shows the volume of timely closing of cases (in 60 days or less) increased during the test period, up from 916 in the pre-test period to 1,527 during the test period. The number of cases closed that were over 60 days old decreased from 851 to 503 during the test period.

Figure 13 - Number of New York City ACS Cases Closed Pre-Pilot and During Pilot

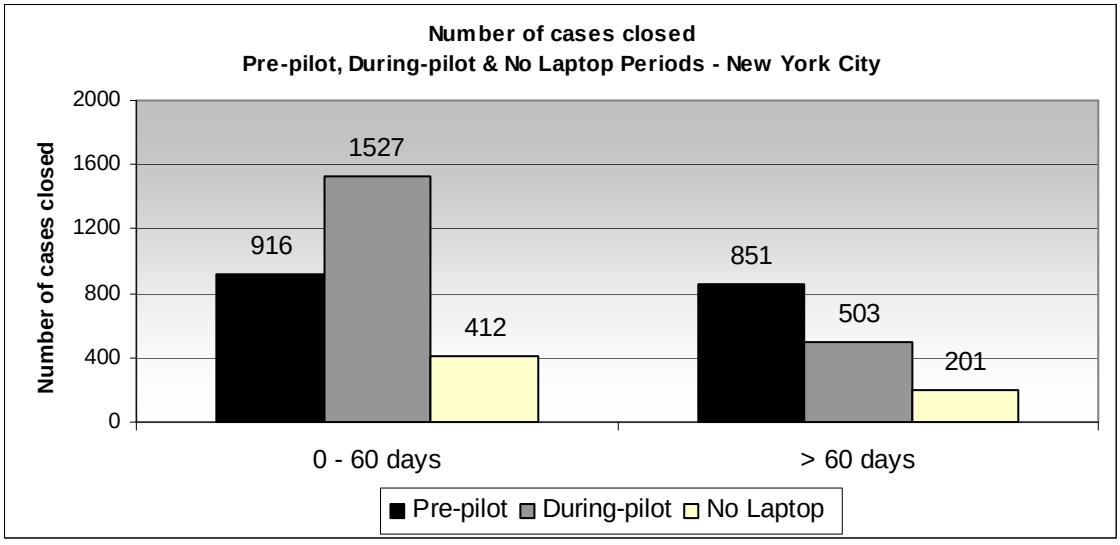
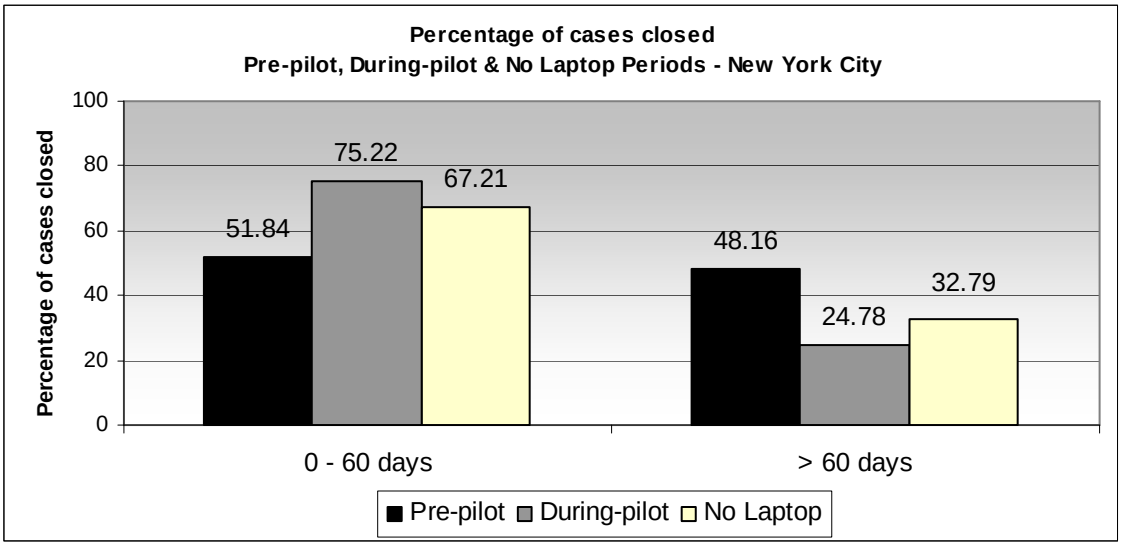


Figure 14 below shows the percentage (or proportion) of timely closing of cases (in 60 days or less) out of the total increased during the test period, up from 52% to 75%. It is important to note that in this county, the total number of cases available to be worked also increased from 2,090 in the pre-test period to 2,671 during the test period—a 28% increase. Caseworkers improved their percentage of timely case closings (in 60 days or less) while absorbing a 28% increase in cases available to be worked on. This represents is a marked increase in productivity. Also, the closing of cases after 60 days dropped, indicating that the prior 'catching up' effect was not present. Overall, this suggests that caseworkers, overall, complete a higher percentage of cases on time. The length of the test period

during the second data collection was 293 days. However, a positive trend in cases closed was also seen during the initial assessment, which lasted 82 days.[6]

Figure 14 - Percentage of New York City ACS Cases Closed Pre-Pilot and During Pilot



Another important indicator of a positive productivity trend is the change in the period when the laptops were taken from caseworkers for 76 days within the test period (for technical maintenance). Figure 14 above shows the percentage of timely closing of cases (in 60 days or less) out of total cases slightly decreased during the no laptop period, from 75% down to 67%. The percentage of cases closed in over 60 days old slightly increased from 25% to 33% during the test period.

Safety Submission Analysis

The rate of completing safety assessments is another way to assess any changes in efficiency and productivity. Figure 15 below shows the volume of timely (in seven days or less) submission of safety assessments increased during the test period, from 1,259 in the pre-test period to 1,440 during the test period. The number of safety assessments submitted that were over seven days old increased slightly from 443 to 483 during the test period.

[6] The initial assessment was based on 82 days of CONNECTIONS. The findings revealed: (1) the volume of timely closing of cases (in 60 days or less) decreased during the test period, down from 647 in the pre-test period to 518 during the test period; (2) the percentage of timely closing of cases (in 60 days or less) out of total cases almost increased from 59% to 67% during the test period; and (3) overall, there was a 30% decrease in number cases closed during the test period.

Figure 15 - Number of New York City ACS Safety Assessments Submitted Pre-Pilot and During Pilot

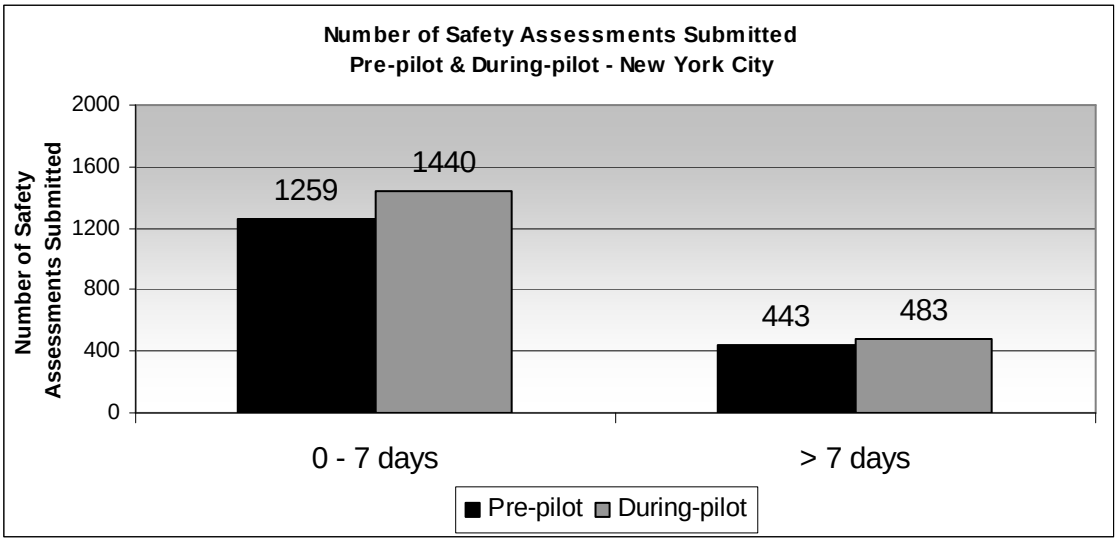
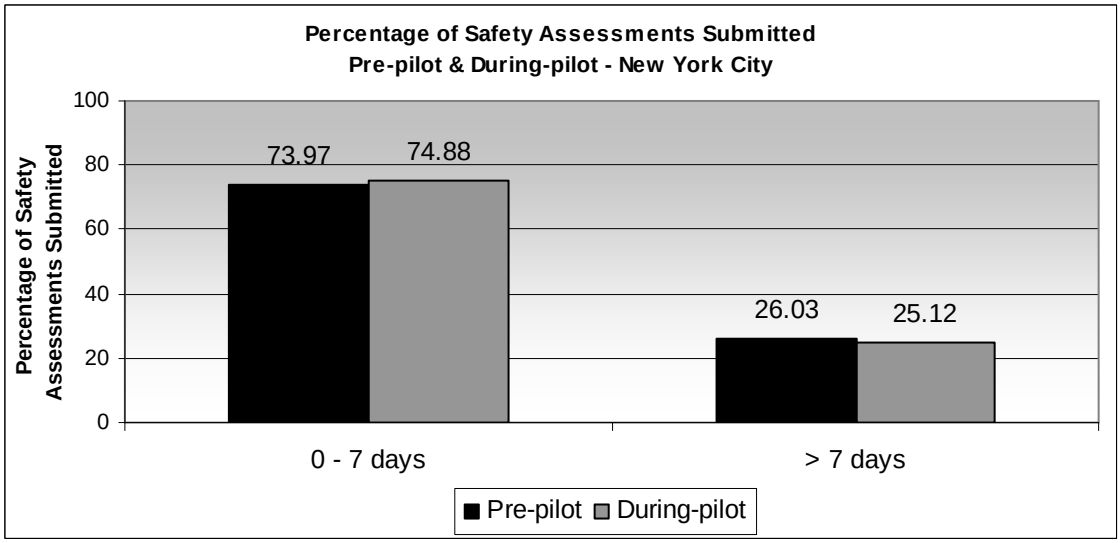


Figure 16 below shows that the percentage of timely (in seven days or less) submission of safety assessments as a percent of total cases changed little during the test period. In the second data collection, caseworkers maintained their already-high level of safety submission (approximately 75 percent) despite a 28% increase in caseload. Seventy-five percent of safety assessments submitted within 7 days leaves only 25% where improvements can be made. Therefore, the overall timely submission of safety assessments is already relatively high.

Figure 16 - Percentage of New York City LDSS Safety Assessments Submitted Pre-Pilot and During Pilot



Progress Notes Analysis

An indicator of timeliness is elapsed time, defined as the number of days between an event and the posting of documentation regarding that event in the central database system. Figure 17 and Figure 18 below show trends in the elapsed time between progress note entry and the related event. During the pre-test period, the majority of all progress notes were entered by the fifth day following the event. Figure 17 shows that the number of progress notes entered (i.e., volume) rose significantly during the test period from 33,738 in the pre-test period to 39,474 during the test period – a 17% increase. Figure

18 shows that the rate of progress note entry increased very little during the test period however, caseworkers were able to maintain that level of entry while increasing volume of notes by 17%. Therefore, productivity increased overall. This level of entry is consistent with findings from the initial assessment[7].

Figure 17 - Number of Progress Notes Entered by Days Following Event

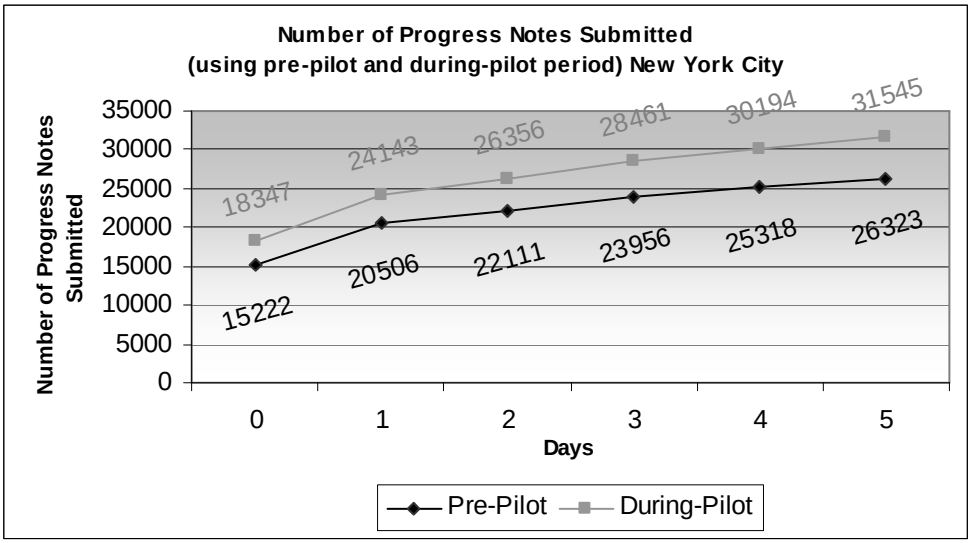
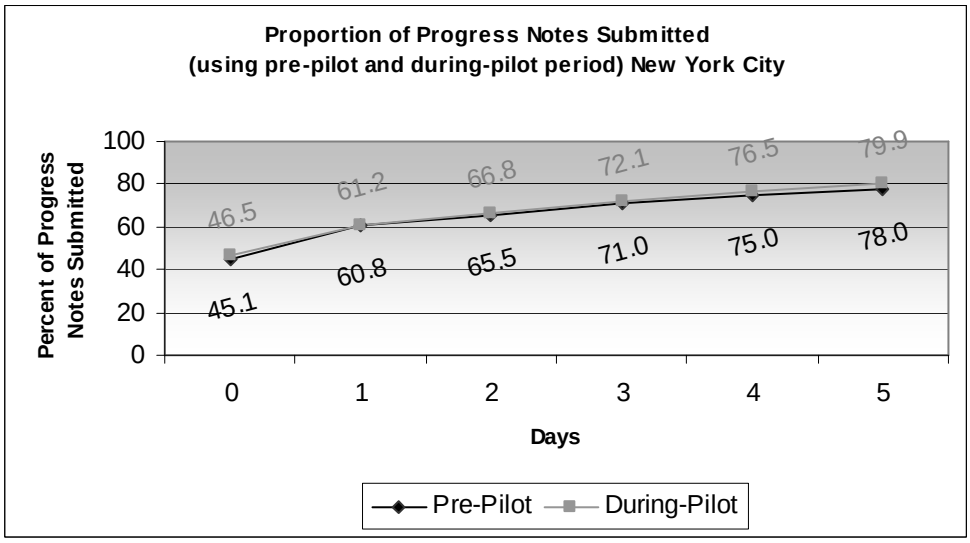


Figure 18 - Percentage of Progress Notes Entered by Days Following Event



Perceived Usefulness

During the first data collection period, participants were surveyed for their perceptions as to whether using a laptop made any difference in their CPS work. The survey included questions on five areas: timeliness of documentation, ability to work from court, ability to access case information, communication with supervisors, and services provided to clients. Survey respondents were asked to

[7] The initial assessment was based on 82 days of CONNECTIONS. The findings revealed that by the fifth day, around 82% of all notes were entered for both the pre-test period and the test period.

rate the difference on a five-point scale where "1" indicated "Much worse," "3" represented "About the same," and "5" was indicative of being "Much better."

Overall, respondents from NYC ACS reported some positive impacts on their work resulting from laptop use. A summary of the findings is shown in Table 7 below. As the table shows, 67% of the respondents reported improvements in timeliness of documentation, and 78% reported improved ability to access case information. Ability to work in court improved for 49% of the respondents, and 33% reported improvements in ability to communicate with supervisors. Lastly, 29% percent reported improvements in service to clients. Only a few caseworkers reported negative impacts as a result of using the laptop to conduct CPS work.

Table 7 - Perceived Change Timeliness and Work Impacts – New York City

	Much worse (n)	**Somewhat worse (n)**	**About the same (n)**	**Somewhat better (n)**	**Much better (n)**
Timeliness of documentation	1 % (1)	0 % (0)	32 % (30)	48 % (45)	19 % (18)
Ability to access case information	2 % (2)	1 % (1)	19 % (18)	45 % (42)	33 % (31)
Communication with supervisors	0 % (0)	1 % (1)	66 % (61)	20 % (19)	13 % (12)
Service to clients	2 % (2)	0 % (0)	69 % (65)	17 % (16)	12 % (11)
Ability to do work in court	3 % (3)	3 % (3)	44 % (40)	28 % (25)	21 % (19)

Data gathered from the videoconferences during the second data collection support the general findings from the first data collection. While few caseworkers reported changes in the quality of service they provide to their clients, one caseworker stressed that the benefit of the laptop is to directly assist the caseworkers, not families. Many of the interviewed caseworkers valued the ability to lookup case histories regardless of time of day and location. One caseworker described their ability to do so as "a luxury". Other caseworkers indicated the laptop is useful for catching up on progress notes and entering information in a timely manner. And one of the caseworkers from the first data collection period stated, "If I can't sleep at night because of all the stress that results from a build up of casework activities that are not completed, I can complete case documentation at home during the evening to reduce some of the work I will have to do the following day."

Personal preference was a consistent theme during the first data collection period. For example, some caseworkers preferred to use the laptop at home after normal business hours, while others preferred to use the laptop to enter notes immediately following a visit. Caseworkers interviewed during the second data collection period reported no change in the way they communicate with their supervisors.

In the second data collection, caseworkers reported the laptop was valuable for entering notes into CONNECTIONS, as well as accessing information from CONNECTIONS while out of the office. To highlight the benefits of the laptops, one of the interviewed caseworkers conveyed a story about preparing for a court appearance at home the night before, then going to the office the next morning, printing the court report, and being ready.

Satisfaction

In the first data collection period, survey respondents reported moderately high levels of satisfaction. The survey data showed that 67% of respondents reported being "Somewhat satisfied" or "Very

satisfied;" compared to 18% of respondents who reported being "Somewhat dissatisfied" or "Very dissatisfied." An additional 15% of respondents reported feeling "Neither satisfied nor dissatisfied."

Despite moderately high levels of satisfaction during the first data collection, caseworkers reported various barriers to use. During the second data collection, satisfaction was again high and some barriers to use remained including lack of comprehensive policies on acceptable use and compensation, and the technical challenges previously described (i.e., connectivity, boot up time, and privacy). Some caseworkers expressed their frustration about inconsistent policies, and several stated they may stop using the laptop altogether if policy issues are not addressed. Caseworkers added that defining what is considered acceptable use and specifically informing supervisors on what should be expected from caseworkers is an important step to using laptops.

During the second data collection period, CPS caseworkers reported several incentives associated with using the laptops, including a desire to increase self satisfaction and a need to reduce work-related stress. Despite not being compensated, many caseworkers reported self satisfaction and the desire to keep up on their progress notes as the main drivers behind using the laptops from home. Furthermore, caseworkers reported high satisfaction with the ability to shift work tasks around during the day. One caseworker reiterated that since having a laptop, they are able to go home at a reasonable time, care for their family, and catch-up on work as needed. A number of the interviewed caseworkers reported not wanting a laptop initially, however, after participating in the project, they are happy to have experimented with mobile technology. Almost all caseworkers said they would recommend using a laptop to colleagues, however, a few would caution their fellow colleagues about a potential work-life balance tension.

APPENDIX E: Workload measures

Figure 19. Cases available, cases closed, & progress note volume

	# of Cases Available to be Worked On		% Change	# of Employees		Average Cases per Employee		# of Days	Emp*Days		Indicator - Case per Emp. per Day	
	Pre-Test	Test		Pre-Test	Test	Pre-Test	Test		Pre-Test	Test	Pre-Test	Test
Onondaga	2,674	2,819	5.42%	45	47	59.42	59.98	256	11,520	12,032	0.23	0.23
New York City	2,090	2,671	27.80%	70	72	29.86	37.10	293	20,510	21,096	0.10	0.13
Wayne	975	1,060	8.72%	14	14	69.64	75.71	245	3,430	3,430	0.28	0.31

	# of Cases Closed (total 0-60 days and 61 + days)		% Change	# of Employees		Average Cases Closed per Employee		# of Days
	Pre-Test	Test		Pre-Test	Test	Pre-Test	Test	
Onondaga	2,030	2,376	17.04%	45	47	45.11	50.55	256
New York City	1,767	2,030	14.88%	70	72	25.24	28.19	293
Wayne	740	910	22.97%	14	14	52.86	65.00	245

	# of Progress Notes Entered		% Change	# of Employees		Average PNs per Employee		# of Days
	Pre-Test	Test		Pre-Test	Test	Pre-Test	Test	
Onondaga	40,876	42,858	4.85%	46	46	888.61	931.70	256
New York City	33,738	39,474	17.00%	72	72	468.58	548.25	293
Wayne	14,572	16,400	12.54%	14	14	1040.86	1171.43	245

Measure definition:

- # of Cases Available to be Worked On = cases with investigation stage end dates still open during each period (i.e., pre-test & test periods)
- # of Employees = number of caseworkers participating in the test of mobile technologies (i.e., laptops)
- Average Cases per Employee = the average number of cases available to be worked on by employees during the pre-test and test period (the ratio of # of Cases Available to be Worked On / # of Employees)
- Indicator – Case per Emp. per Day = the ratio of (# of Cases Available to be Worked On / Emp*Day) or the average number of cases worked on per day (i.e., .23 means on average caseworkers are dealing with more than 2 cases a day).
- Average Cases Closed per Employee = the average number of cases employees closed during the pre-test and test period (the ratio of # of Cases Available to be Worked On / # of Employees)
- Average PNs per Employee = the average number of progress notes entered per employee during the pre-test and test period (the ratio of # of Progress Notes Entered / # of Employees)

APPENDIX F: About 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. Corporate partners like Microsoft, Oracle, Hewlett Packard, Sun Microsystems and Meta Group, donate equipment, software, and services.

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.

For more information about CTG or this report please contact:

Meghan Cook,
Program Manager
Center for Technology in Government
University at Albany, State University of New York
187 Wolf Road, Suite 301 Albany, NY 12205
Phone 518-442-3892

Center for Technology in Government
187 Wolf Road, Suite 301
Albany, NY 12205
Phone: (518) 442-3892
Fax: (518) 442-3886
E-mail: info@ctg.albany.edu
www.ctg.albany.edu

UNIVERSITY AT ALBANY
State University of New York