



Center for
Technology in Government

Assessing Mobile Technologies in Child Protective Services:

An Extended Pilot in New York City's Administration for Children Services



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Administration for Children's Services**

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Executive Summary

Purpose

This assessment is intended to help inform decision-making about the use and possible further deployment of wirelessly connected laptop computers for child protective service (CPS) field work. The report covers the pilot of approximately 135 laptops used by child protective workers and supervisors during a 12-week period during July-October 2007. The assessment is part of the New York City Administration for Children's Services (ACS) initiative to test mobile technologies in child protective services, in response to Mayor Bloomberg's "Safeguarding our Children 2006 Action Plan" and the New York State Portable Information Technology Pilot initiative.

ACS's Division of Child Protection (DCP) worked with ACS Management Information Services to develop a pilot test for the use of the laptops by child protective service caseworkers. The Center for Technology in Government (CTG) conducted this assessment under the auspices of the New York State Office of Children and Family Services (OCFS). This report presents the results of an assessment of the technology in the extended pilot project.

The Pilot Test

One hundred and ninety ACS managers, supervisors, and caseworkers volunteered to use the laptops in the pilot test. Of those 190, 135 caseworkers and supervisors from the William Street and Staten Island field offices participated in the assessment. All participants received training prior to deployment and all received the same model and configuration of laptop. Prior to receiving the laptops, the volunteers also received a survey to establish a baseline concerning their attitudes and work practices against which to compare a similar post test survey's results. They did not, however, receive special instructions on how to employ the devices in their work.

Assessment data came from CPS workers and supervisors in workshops, interviews, baseline and follow-up surveys of laptop users, and from the CONNECTIONS system. Entries into the CONNECTIONS database were collected from the twelve week period prior to and during the test period. In addition, the CTG project team participated in meetings and conference calls with ACS and OCFS staff to discuss the deployment and use of the laptops. Taken together, the data provide a detailed picture of how the laptops were used, the attitudes of the users toward this way of working, and evidence of impacts on the productivity of the work done during the test period.

Deploying Mobile Technology

Laptop procurement and deployment for the test period illustrated the complex and challenging nature of enabling mobile technology for CPS work. In order to put the laptops into use, it was necessary to coordinate a diverse mix of activities: hardware and software procurement, device configuring, linking multiple networks across organizations to provide wireless connectivity, preparing training, resolving work practice and policy issues, and resolving a long list of technical problems characteristic of ramp-up processes. Most of the coordination and implementation issues were resolved during the test period, such that the basic functionality of the laptops could be employed in the field. Remaining issues include lack of full wireless access in court facilities and considerable variation in the strength of the wireless signal in some areas, leading to less reliable connection. In addition, some issues concerning policies and supervisory practices for work outside normal hours and locations remain unresolved. Overall, however, the collaboration and lessons

learned during the deployment provide a solid foundation for further refinement of practices and policies to exploit the potential of the technology.

Patterns of Use

The primary conclusion from the usage data is that the field workers put the laptops to use in a variety of ways that reflect both their work situation and the capabilities of the devices. The dominant place of use was at home; over 80% of the users in both field offices reported using the laptop at home, on average over four hours per week. The interviews and workshops provided some explanation of this pattern, namely that there are limited places and opportunities to use the laptops in the field, due to limited or slow connections, lack of privacy, concern for personal safety, and unwillingness to use the device in the presence of clients. Almost all the caseworkers stated that it is not appropriate to use a laptop in client's home when trying to establish a rapport and pay attention to the surroundings. Over 40% reported two plus hours on average of both field and court use, with somewhat high levels of field use in Staten Island, possibly due in part to greater use of personal cars for transport there.

Though they could use the laptops in court, testers reported connectivity problems in that environment. Over 75% of the Staten Island field office group reported connectivity problems in court, compared to less than 40% from Manhattan.

The testers found many uses for the devices in addition to documentation of cases. Overall, over 70% report using the laptop to access information while in the field at least once a week. Other uses included email and map directions at least once a day or more. The use of laptops reduced travel to the office from the field as well, with over 40% reporting not having to return to the office to access information during the test, compared to 15% before. By contrast, work during commuting decreased during the test compared to the prior period, perhaps due to more work done at home.

Productivity Gains

Evidence of productivity gains came from the impressions of the users and from work recorded in the CONNECTIONS system. About two-thirds of participants reported improved timeliness of documentation using the laptop, although prior to laptop use, over 50% of the caseworkers were documenting events within the same day. In addition, over three-fourths reported improved ability to access case information from the field with the laptop, but they did not report highly improved communication with supervisors or service to clients. Some participants during workshops expressed that they did receive new case assignments while in the field by checking their email and CONNECTIONS accounts.

Work records from the CONNECTIONS system reveal a mixed pattern. The pace of case closings increased moderately with laptop use; the number closed in the first seven days increased from 10 to 20%, with that differential remaining for the full 60-day period for closing cases. The number of cases closed within the first 60 days increased moderately in both offices—between five and seven percent. The volume of other work—progress note entry and safety assessments—remained unchanged.

Using the laptops had an overall positive impact on satisfaction and attitudes toward the work. Over 65% of the users reported being satisfied with the laptops, with slightly higher proportions in

Manhattan. Perceptions of having adequate resources and feeling valued increased as well. The proportion of users willing to recommend laptop use to a colleague were very high (77 % of testers). Over half of the users reported lowered job stress with laptop use as well.

Recommendations

The overall deployment process, while successful in terms of putting the laptops into use, did not provide a sufficient time for a full test of the laptop's potential. A deployment of this type requires high levels of cross agency cooperation, adjustments to policy and management practice, and much learning. A full test of the technology can only come when these adjustments have been made and the machines are fully integrated into the field work context. A longer test period would allow greater confidence in the conclusions reached.

Maintaining support for laptop deployment could provide CPS caseworkers in other districts the opportunity to see how mobile technologies can impact their work. The proportion of caseworkers stating that they would recommend laptop use to their colleagues was high and survey data show that they now feel like they have adequate resources to do their job. This increased satisfaction is harder to measure but worth capitalizing on when realized. Therefore, continuing to maintain support for this work is recommended.

Full integration should also include adjustments to policies and work schedules to support the flexible work flow enabled by the laptops. The assessment shows that CPS workers are willing to adapt their work times and places to exploit the technology. Agency policies and practices should be as flexible as well. This assessment highlighted three policies particularly in need of attention: 1) office/field scheduling and 2) working from home and 3) overtime and compensatory time. The laptops were deployed to increase mobility and allow more time for work with children and families. Specifying work location in specific days restricts this potential. Flexibility in this regard and in compensation for overtime appear crucial to achieving the promise of a mobile workforce.

Efforts should continue to invest in infrastructure and connectivity and streamline the network access path and remove layers and ACS must continue to work closely with the Office of Court Administration on connectivity to maximize time spent in court.

Finally, it is significant that caseworkers did not typically report connectivity or performance issues. Encouraging caseworkers to share feedback about using the laptop on a regular basis, whether it be through face to face meetings or email, may bring to light additional issues and improve performance.

Chapter 1: Introduction and Project Overview

Extended Mobile Technology Pilot

The NYC Administration for Children's Services (ACS) initiative to test mobile technologies in child protective services was originally developed in response to Mayor Bloomberg's "Safeguarding our Children 2006 Action Plan." The Plan instructed ACS to "deploy handheld computers or tablet PCs to field office workers." In response to this, ACS's Division of Child Protection (DCP) worked in conjunction with ACS Management Information Services (MIS) to develop a plan for piloting testing the use of portable wireless technologies for child protective service (CPS) caseworkers. The first phase of the pilot took place in spring of 2006 and lasted for three months. This report presents the results of an assessment of the technology in the second, larger, extended pilot project

The original portable information technology pilot project was a direct result of the NYS Legislature's Laws of 2006 where in Chapter 58 was a requirement to "conduct a pilot program in New York City, Westchester County, and Monroe County to test best practices in portable for child protective caseworkers...[to] allow such caseworkers to complete effectively tasks necessary for their investigations of allegations of child abuse and maltreatment from field locations." In December 2006 OCFS submitted a report to the Governor, detailing the impact of the pilot program on caseworker efficiency, productivity and caseload and a recommendation for continued testing.

Based on this report, and in order to learn more about the use of connected laptops within CPS, New York City's Administration for Children's Services (NYC/ACS) decided to undertake an extended pilot test of wirelessly connected laptops deployed to caseworkers and supervisors in two NYC field offices. This extended pilot, utilizing funds remaining from the NYS Portable Information Technology Pilot project as well as city finds, begun in July 2007 with data collection concluding in October 2007.

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 to allow them to accomplish their reporting activities while outside of the office. Specifically, the program was to enable caseworkers to use time spent waiting for appointments or court appearances, which often involve several hours of waiting time, to complete their required case documentation. Overall, ACS has approximately 1,310 CPS staff in five boroughs which investigates approximately 70,000 reports of suspected child abuse and neglect a year.

Understanding Technology in the CPS work setting

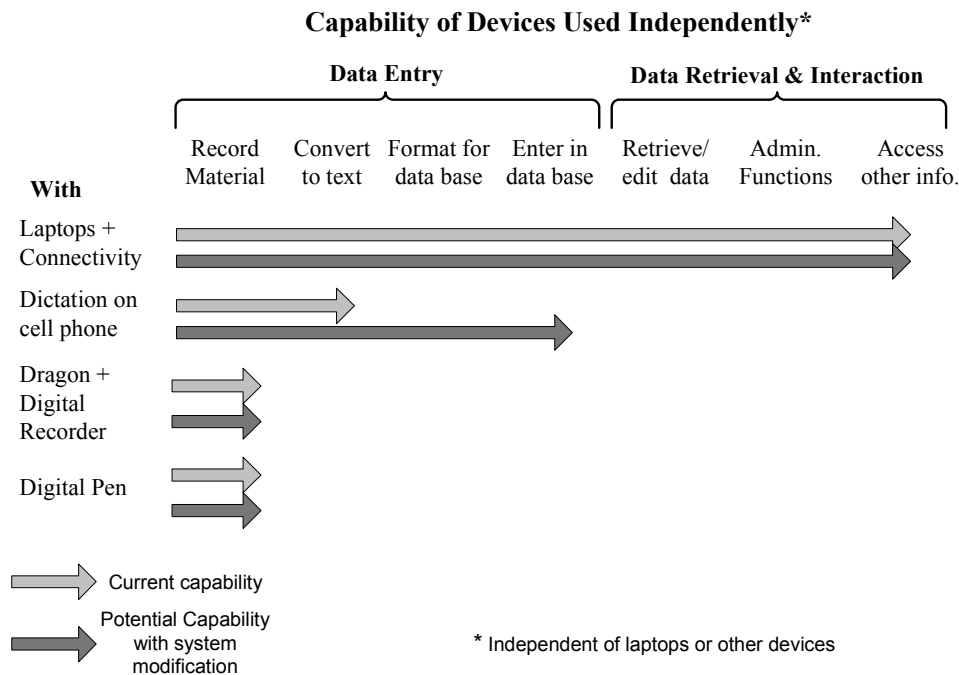
The approach used in this assessment is based on results from the first mobile technology pilot in 2006, which showed that any technology use depends on the following main factors:

- The overall capabilities of the device
- How well the device fits in with the users' normal work practices
- How well the device fits in with personal work preferences
- Nature of environment (physical and organizational) in which work is performed

Device capabilities

Results from the first phase showed the perceived benefits of a laptop computer in reporting and documentation. Unlike the other technologies tested, laptop computers offered direct connectivity to the central database providing the potential for increased opportunities for where and when work is done, and access to information from the central database and other online sources while in the field. In comparison, the use of a dictation service with a cell phone has the potential to have data automatically entered into a central database. Figure 1 below describes two main tasks in which various technologies differ in their capabilities (1) when converting the users’ words into digital text and (2) when entering the text into the central CONNECTIONS database.

Figure 1 - What Can be Done In the Field



It was also found that to derive the most value from a mobile device, the following is required (1) mobile devices with access that provides real time entry into the central database application and (2) connectivity with ubiquitous access. If the two components are not present, the potential value of the mobile technology will not be obtained.

Overall fit with existing work practices

The first phase results indicated that requiring caseworkers to adopt a new technology and change the way they do their work proved to be a significant obstacle for many. Any technology must fit well with individual work practices to produce value. The advantage of laptop computers was that it required relatively small adjustments in work practices, being similar to an office PC, except for connection and logon procedures. But not all caseworkers are comfortable working in the same way and these individual skills and preferences, therefore shape the use. Some caseworkers avoided using technology during a home visit, preferring to focus on the family and rely on handwritten notes, which can limit the potential value of the technology.

Nature of work environment

Mobile technology's effectiveness can be strongly influenced by that environment, as well as by organizational support and the goals for work to be done in the field. The work environment of CPS workers presents any potential challenges to an effective use of mobile technologies such as privacy concerns, timing issues, and personal security. The extent to which these potential challenges become obstacles to use depends on the personal circumstances of each CPS worker. Thus workers who rely on public transportation may use technology differently than those who have a dedicated car. For some, time between visits may be too short to complete work, whereas large blocks of time waiting in court can be very productive. Some individuals may need a quiet work space to enter notes; others may be more adept at working in public spaces. The constraints of the workers' environment and the organizational support from superiors can shape use of the technology and the costs and benefits that result from that use.

Project Assessment

The Center for Technology in Government (CTG) was asked to conduct the independent assessment of laptop use in the CPS work setting and the impact on CPS work. These four categories of investigation emerged from preliminary discussions with OCFS, ACS-MIS, and ACS-DCP:

- *Efficiency/ Productivity* - measured by factors such as changes in number and timeliness of documentation (i.e. progress notes, safety assessments), change in the number of cases closed and reports of ability to use time differently and/or more effectively.
- *Types and Locations of Work* - the types of work activities the laptop computers were used for and where they were being used most frequently. It also contains investigation of barriers/issues encountered by CPS workers in specific locations.
- *Effect on Current Work Practices and Policies* - how work practices changed with the introduction of technology and how policies and management practices may impede or promote the use of laptops.
- *Overall Opinion and Satisfaction* - effect of laptop use on workers' overall job satisfaction, work-related stress levels, and satisfaction with using the laptop, including willingness to recommend the laptops to other CPS workers.

Technology

Device

The Panasonic Toughbook W5 was selected for the extended pilot, based on the recommendations from the first phase of testing in 2006. Its predecessor, Panasonic Toughbook W4, was rated by the first phase's participants most favorably on account of its weight, size, and battery life (see the appendix for a detailed device description). Per ACS request, each device was equipped with an internally mounted Verizon Wireless Wide Area Network (WWAN) card and the laptop memory was upgraded to 1GB of RAM.

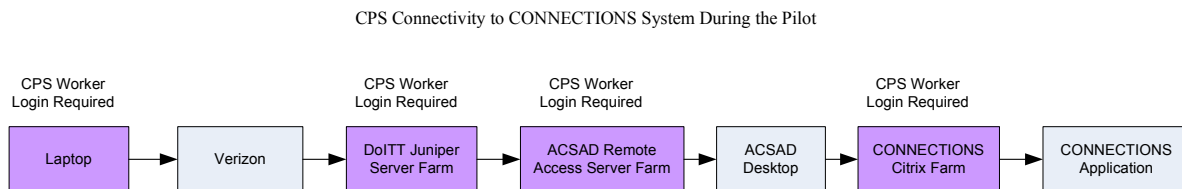
Connectivity

Each laptop connected remotely to the internet, the ACS network, and CONNECTIONS via the built-in Verizon WWAN card for access to the Verizon cellular network (where available). Although the Manhattan and Staten Island area coverage per Verizon information was 100%, the actual connectivity varied considerably. A typical session using ACS Remote Access to use the ACS network and CONNECTIONS would last between 30-60 minutes before the user needed to reestablish a connection to the system.

Security

Security provisions included deterring theft and ensuring data and network integrity. Locks were distributed to each pilot participant to secure the laptop to a fixed location. In addition, each laptop hard drive was encrypted using BeCrypt data security software. Finally, access to the ACS network and CONNECTIONS was protected by several layers of passwords designed to prevent unauthorized access to sensitive client data. No security-related problems or breaches were reported for the test period.

Figure 2 - CPS Connectivity to CONNECTIONS System During the Pilot



As shown in Figure 2, using the laptop required the user to execute four password-protected logons: the first provided access to the encrypted laptop itself; the second log-on provided access to the server at DOITT; the third log-on provided access to ACS' remote access server; and the fourth provided access to the CONNECTIONS database. Although ACS MIS staff recognized that a multi-layer password protection would present usability problems for the pilot participants, they were unable to eliminate any of these layers prior to the beginning of the pilot due to requirements imposed by NYC's Department of Information Technology and Telecommunications.

Data Collection Methods and Timeline

The assessment covered a four month period from mid June 2007 to late October 2007. There were four streams of data collection throughout this project. Surveys of pilot participants and data from the central OCFS CONNECTIONS database were used to assess productivity, user satisfaction and timeliness, and patterns and locations of laptop use. This data was supplemented by material from workshops with CPS workers in both field offices and telephone interviews with CPS supervisors and managers from both boroughs (a more detailed description of the methodology is in Appendix B). A baseline survey was distributed in June 2007 to all participating caseworkers. All participants underwent training and were given laptops by the end of July. Five workshops with Manhattan and Staten Island caseworkers were conducted at the end of August, approximately four weeks after the beginning of the pilot. In October, the research team conducted teleconferences with supervisors and managers from both boroughs and distributed the post survey to all participating caseworkers.

CONNECTIONS data collection occurred in the pre-pilot period from April 29, 2007 – July 21, 2007 and during-pilot period July 29, 2007 to October 19, 2007.

Field Tester Selection and Deployment strategy

One hundred and ninety ACS managers, supervisors, and caseworkers volunteered to use the laptops in the pilot test. Of those 190, 135 caseworkers and supervisors from the William Street and Staten Island field offices participated in the assessment. All part received training prior to deployment and all received the same model and configuration of laptop. Prior to receiving the laptops, the volunteers also received a survey to establish a baseline concerning their attitudes and work practices against which to compare a similar post test survey's results. They did not, however, receive special instructions on how to employ the devices in their work.

The pilot design included two boroughs, with the expectation that different geographical and transportation characteristics might result in different use patterns. Manhattan field workers would face different obstacles when trying to use the laptop among high-rise buildings. In addition, population density and prevalence of public transportation for CPS work in Manhattan were likely to present different problems, compared to Staten Island's more suburban landscape and more common use of cars by CPS staff.

The pilot participants in both field offices all volunteered and were assigned their laptops for the duration of the pilot period. 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 the ACS and CONNECTIONS networks (copies of training manuals can be obtained by contacting ACS). In addition to the practical training, caseworkers were encouraged to contact the ACS help desk in case they experienced any problems with their device. To ensure comparability of data and work conditions, supervisors and managers whose caseworkers were issued a laptop were instructed not to modify any policies or work practices during the pilot period.

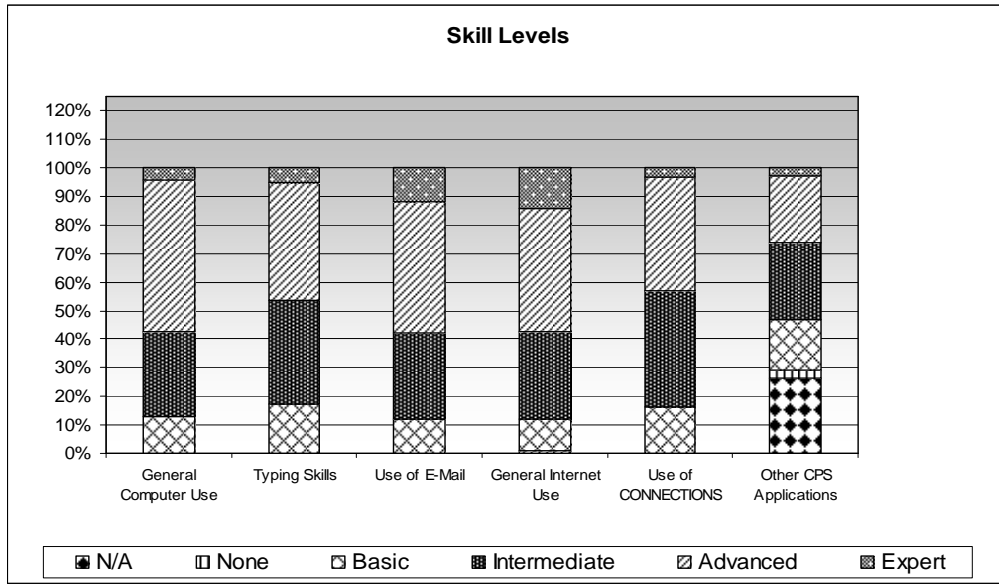
Caseworker Population and Demographic Information

Of the laptop computers, 135 were deployed to caseworkers and supervisors from two ACS field offices: Manhattan (70) and Staten Island (65).¹ Of these 135 participants, 95 replied to both, the base and post pilot survey, creating a total population of 42 caseworkers and four supervisors for Manhattan and 46 caseworkers and three supervisors for Staten Island. Overall, the participant populations in both field offices exhibited a lot of similarities in terms of their CPS experience and general computer skills, while displaying noteworthy differences in the length of time spent working overtime and waiting in court. Also, as expected, the two field offices reported significantly different patterns of transportation use.

The pilot test group had a generally low level of CPS experience, averaging just under 4 years, with 57% of all caseworkers reporting CPS experience of two years or less. The participants also rated themselves relatively high on technology skills; the majority rated their skills as intermediate or higher in all surveyed categories ranging from general computer use to the use of CONNECTIONS. Most respondents did not report a need for future training, with the exception of about 39% needing training in CONNECTIONS.

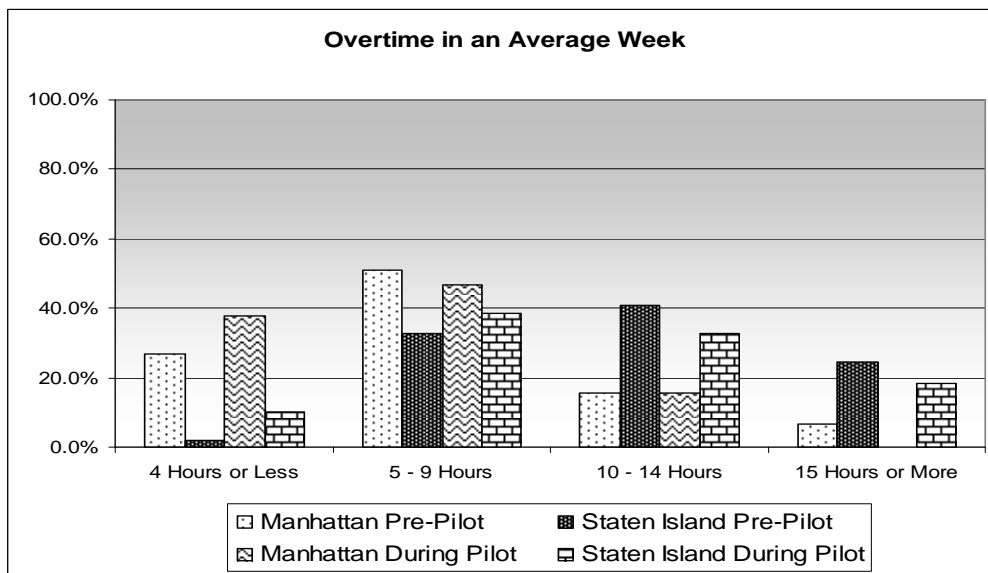
¹ DCP provides two levels of field work supervision: Supervisor I and Supervisor II. Supervisor I responsibilities include both case work and supervision of other case workers. Only Supervisor I users are included in this assessment.

Graph 1 - Level of Skills Within Assessment Population



Two noteworthy areas where Staten Island and Manhattan reported significant differences were in (1) the average length of weekly overtime and (2) the average length of court wait time. In both, the pre-pilot and pilot periods, Manhattan caseworkers reported using nine hours of overtime a week or less (average of 5.32 hours). At the same time, the majority of Staten Island caseworkers in both time periods reported the average length of overtime to be ten hours and more (average of 9.37 hours). Interestingly, the amount of reported overtime use decreased for both boroughs during the pilot period, which is consistent with caseworkers' testimony during our workshops in which they indicated that the timing of the pilot coincided with a seasonal slow-down in incoming cases.

Graph 2 - Overtime Averages for Manhattan and Staten Island Field Offices



The average court waiting time reported and the number of court appearances showed a similar pattern: Staten Island had significantly more wait time in court compared to Manhattan and slightly more frequent appearances. Almost 70% of Manhattan caseworkers reported waiting in court five hours or less per typical court appearance, compared to 60% in Staten Island, who reported waiting five hours or more per typical court appearance.

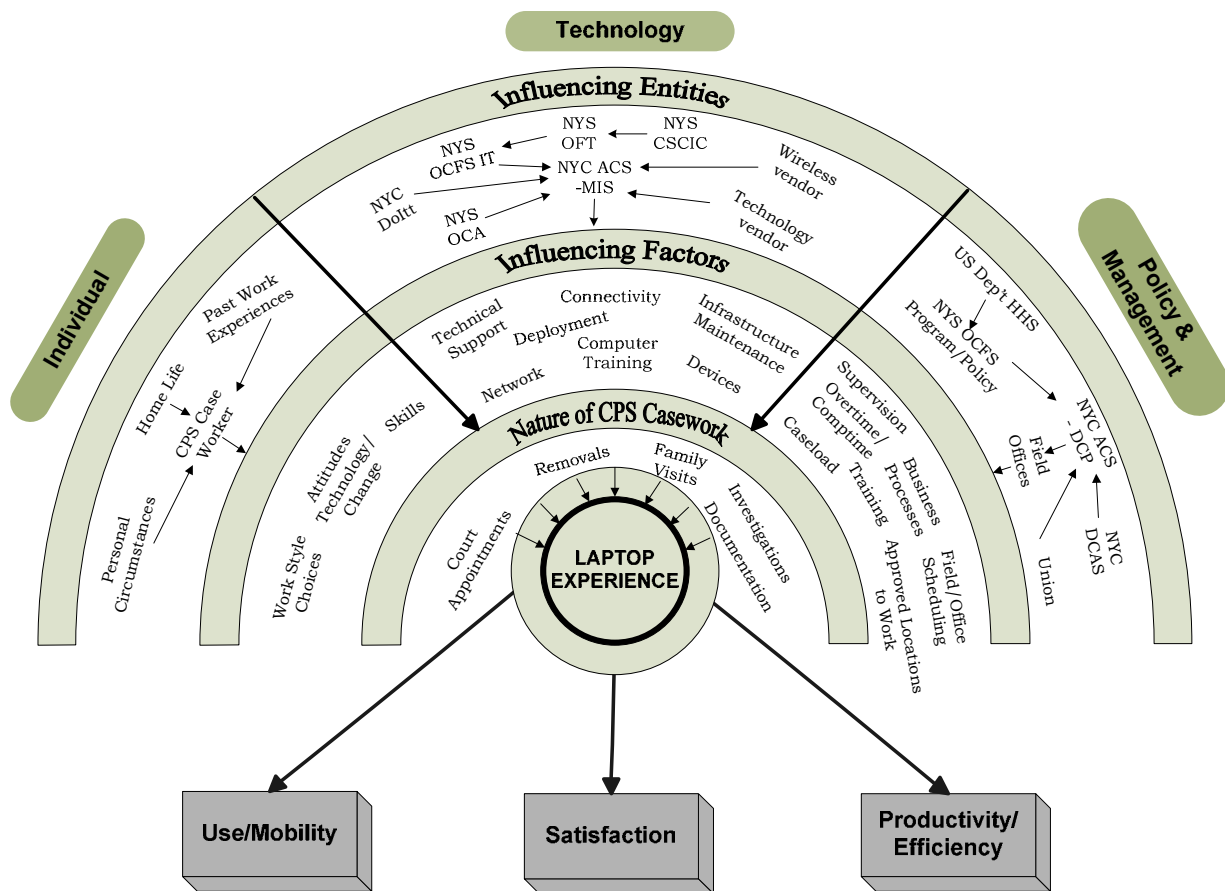
Chapter 2: Factors that Shape the Laptop Experience

Successfully introducing new technology into a workplace requires extensive planning, coordination, and buy-in. Added complexity comes from the presence of multiple organizations developing policy and providing technical services. The result is a myriad of interdependent factors ultimately affecting the overall results. Such is the case with this pilot test.

The large number of participants involved in coordinating and implementing mobile technology in child protective service work make it very difficult to pinpoint any *one* factor or even *one* entity that shapes the entire laptop experience. Thus, the major results of the assessment, in terms of mobility, productivity, and user satisfaction, cannot be attributed to any single cause, but are the result of a mixture of user, organizational, technology, policy, and managerial factors.

This combination of factors is represented in Figure 3, which shows the complexity of the CPS environment and the influencing factors on the overall caseworker laptop experience.

Figure 3 – Influencing Entities and Factors on the Overall Laptop Experience



Technology

Technology factors strongly influence the laptop experience. In this pilot project, the delivery of the technology experience is distributed across four organizations: ACS MIS, DOITT, Verizon Wireless, and OCFS. ACS MIS is responsible for delivering the overall technology service but does not control all the necessary pieces. This can be shown in the network path that was set forth for caseworkers to connect from the laptops to the CONNECTIONS application. NYC DOITT requires that all external access to city agency systems come through DOITT servers. As shown in Figure 2, caseworkers logon first to the laptop, then DOITT's server, then to ACS' Terminal Server, and then to the CONNECTIONS Citrix servers. To gain access to local ACS applications, which caseworkers also need, the path must channel through ACS servers. But this path of getting to the CONNECTIONS application negatively impacts performance by requiring an additional logon and using a Citrix session thus slowing overall system response.

While in the field, connectivity is a very large contributor to the overall experience. Access to wireless networks is critical to mobility when out in the field or working from home. Wireless signal strength varies from place to place, affecting performance. The NYS Office of Court Administration (OCA) also influences connectivity in the City's courts. Since caseworkers spend a considerable amount of time waiting for court appearances, court connectivity is important. Applications and network technology are also influenced by the NY State agency with overall responsibility for CPS work: OCFS. OCFS in turn must follow technical and security guidelines set by two other NY state agencies: the Office for Technology (OFT) and Office of Cyber Security and Critical Infrastructure Coordination (CSCIC).

To add to the complexity, within ACS MIS, there are separate divisions for technology procurement, support, deployment training, and infrastructure maintenance. ACS MIS drew on these resources for developing the deployment handbook and providing technical support for mobile caseworkers. ACS MIS also relies on other departments for maintenance of servers that affect laptop performance.

Finally, device and accessory characteristics play an important role in the experience. Devices that are light, yet durable, with a long battery life usually improve the experience. Smaller laptops that fit in work bags may be used more. Not every caseworker will like all the characteristics of the laptops, but the number positive features increases the quality of the overall experience.

Policy and Management

Policy and management influences on the laptop experience were also important, and involve similar complexity. Figure 3 shows how ACS DCP must develop and carry out policies that originate in or are shaped by several organizations: NY State OCFS, NY City Department of Citywide Administrative Services (DCAS), and the contract and relationships with Social Services Employee Union Local 371 (SSEU).

Three policy areas that are most pressing on the laptop experience:

1. *Working at Home Policy.* The NYC DCAS maintains a strict no-working from home policy for all NYC employees. This policy is for both regular work hours and after-hours work, meaning no NYC employee can work from home at any time. This policy restricts the full potential of using the laptop for CPS work. Working from home on the laptop during regular work hours could

potentially alleviate having to travel to the office before making field visits, cutting down on commute time and time between field visits. After regular work hours, it allows caseworkers to catch up on documentation in the evening or weekends. Although ACS may want to encourage caseworkers to work from home, they cannot because they do not oversee the prevailing policies.

2. Field/Office Scheduling. ACS DCP currently has policies that prescribe the days the caseworker is in the field and the days they are in the office. This work model was developed so that caseworkers can leave the office for family visits and court appointments and return to the office for supervision and documentation. The laptop offers a new model for how caseworkers and supervisors can interact. While in the field, caseworkers currently communicate with the office primarily by cell phone. The laptop offers new possibilities of receiving case information in the field and communicating via email. In order to experience the laptop's full potential, management and supervisory practices may need to change so that office time and field time is not prescribed.

3. Overtime and Compensatory Time. The policies for overtime and compensatory time present a couple of concerns including the daily cap for overtime and the inconsistent implementation of approvals. Since there is a cap on time, caseworkers are sometimes faced with the fact they will not get compensated for the amount of work they have done using the laptop. In some cases establishing a connection, maintaining a connection and completing the work takes longer than the time they are allowed for overtime. Subsequently, they risk not getting paid for the full amount of time they worked which can impact the overall laptop experience. Additionally, field offices do not uniformly implement the policy. Some offices require preapproval and others do not, and the inconsistency leads to confusion about using the laptop after work hours.

Finally, other policy and management factors shaped how the laptops were used in the pilot: existing caseload, consistency in management practices across field offices, and training. Overtime and compensatory time policies for work completed in the field or at home were particularly important. Although ACS may develop much of its own policies and management practices, it is still subject to NYSOCFS policies and oversight by NYC's DCAS.

Individual

Caseworkers bring a range of attitudes and skills toward technology and change to laptop use. How to get information into a digital format can be the caseworker's personal work style choice. Many caseworkers prefer typing notes into a word processing document, while others may prefer hand writing all their notes first. Some caseworkers may prefer dictating to writing or typing, or using software to convert spoken language into digital text. These preferences and general attitudes towards technology can be significant in determining the laptop experience. Some people are naturally curious and willing to try new tools, while others resist change.

Personal circumstances and home life also play a role in shaping laptop use. Factors such as where the caseworker lives and modes of available transportation affect the laptop experience. Caseworkers who use public transportation to commute may find opportunities to work then, while caseworkers who drive will miss those opportunities. In addition, caseworkers who live farther away from cell service may experience a harder time staying connected.

Nature of Casework

One of the most direct influence on the laptop experience is the nature of casework itself. Within this profession, there are a host of responsibilities and competing priorities. While it is necessary to investigate child protective cases by being physically present with the family, it is just as important to document all findings in CONNECTIONS. This creates a tension between spending time working with families versus documenting. Caseworkers must also devote time to court appearances, follow ups, and removals. Introducing a tool that changes where work can be done, can impact the overall experience.

Chapter 3: Mobility and Use

The laptops provided caseworkers opportunities to work outside the office environment in new ways. This chapter reports on how the testers used those opportunities in terms of the type of work done and the locations, including attention to issues influencing that use. The results include attention to three locations: at home, in court houses, and in the field. Issues examined in relation to using the laptop outside of the office environment include: (1) difficulty establishing connection, (2) loss of connection, (3) the speed of connection, (4) level of privacy (or personal work space and ability to ensure confidentiality of information), (5) personal safety, and (6) amount of time available to use the laptop. How information was accessed and entered by testers was also examined.

Extent of use

The results illustrate two main benefits of mobility: 1) increased flexibility in where and when all types of CPS work is done, and 2) increased access to information while out of the office. The laptop was used in case investigation and interventions, documentation and reporting, and court-related activities while in the field, at court houses, and at home. Testers used the laptop during normal work hours, after work hours, during commute times, and when working overtime. About 60% of caseworkers from both districts reported using the laptop while working overtime.

Case documentation was the most frequently 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. One caseworker stated, "I have used the laptop to complete safety assessments, enter interviews, complete RAP's, and other case related work," while another recounted "I once used it at a 30 Day Conference to do a clearance and access my email to look up a court document." Another said, "I mainly use the laptop to update my notes and submit cases. I also use it to check and return e-mails and for directions. When I am in the field and get a new case, I use it to read supervisory directives and case history."

The extent to which caseworkers can access or enter information while out of the office has a big influence on how mobile the testers can be. There appears to be a shift from the pre-test period to the during test period in access to and the ability to enter information. Overall, approximately 72% of testers report using the laptop to access information while in the field at least once a week. Similarly, approximately 68% of testers accessed email at least once a day or more while 54% of testers reported using their laptop at least once a day or more to access map directions. Laptop use significantly reduced the need to return to the office during the work day. Over one-quarter of the testers reported never returning to the office to enter information, compared to 6% before the test. Similarly, 42% reported never returning to the office to access case information while in the field, compared to 15% before the test. Cell phone use decreased somewhat as well. Before the test, about 80% of testers reported calling their supervisors one to three times a week to access information, down to 57% after the test. There was a similar decrease in the number of people calling colleagues for assistance with accessing information while out of the office, although not as dramatic a shift as with the supervisors. One caseworker stated, "It increases caseworkers opportunities to access services while in the field and affords the CPS worker more independence in acquiring clearances."

Thus laptop use may increase the productivity of non-users who would otherwise be on the receiving end of phone calls from caseworkers in the field.

The testers reported several obstacles to mobile use: inability to establish a connection in all locations, not having a dedicated space to work in court houses, overtime policies that discourage work at home, and differences in individual workers preferences about using the laptop during non-working hours.

Table 1 below details the percentage of testers using the laptop at different locations, as well as the average length of time the laptop was used. Testers reported using the laptop most frequently at home, 86% use the laptop at home compared to other locations (44% using it in the court house and 42% using it in the field). In addition, caseworkers use the laptop at home on average for four and half hours per week, compared to using it in court house or the field an average of just over two hours per week. One caseworker stated, “If documentation of the notes cannot be completed at the office, they can be completed at home on the laptop. Notes can also be done while waiting in court.”

Table 1- 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)

Although it has been hypothesized that caseworkers will be able to use their laptops during their commute to and from work, it seems 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.

Approximately 91% of testers in Manhattan and 68% of testers Staten Island have commute times between 30 and 90 minutes. The majority of caseworkers do not do work on their commute. Those that did, used cell phones to make contacts. Interestingly, the number of testers reporting that they work during their commutes went down during the pilot period. During the pre-pilot period, 33% of Manhattan testers and 27% of Staten Island testers reported working during commute times, however, after the test period, only 19% of Manhattan and 11 % of Staten Island testers reported working during their commute. Of those who do work during their commute time, a higher proportion of testers from Staten Island (83%) use the laptop than in Manhattan (58%).

Many caseworkers reported more flexibility in when and where work can be done and some changes in personal work styles were evident. One caseworker stated, “It serves to increase your level of flexibility and offers you greater independence.” Another commented, “When I am able to document sensitive information right away, I don’t have to stress about rushing to the office to document it before speaking to supervisors about the issue.”

More testers now feel that they do not have to wait to enter information in CONNECTIONS when activity happens at the end of the day, however, many still believe they will wait until the next morning. Before the test, about 20% of testers disagreed that they had to wait to enter information the next morning (and 78% agreed), after the test, 33% disagreed they had to wait until the next

morning (and 58 % agreed). While these are not huge shifts, some individuals did benefit. Several caseworkers stated, “With the laptop, I enter my daily progress notes on time. That means any visit that I did after work hours is entered before the next work day.” while another said, “I don't have to wait until the next day to input my notes after an initial visit or field visit. It is very helpful.” The introduction of the laptop made no changes to perceptions of caseworkers having control over their schedule during the day or being able to schedule their time more efficiently. Most already perceive that they have control over their schedules and can schedule time efficiently.

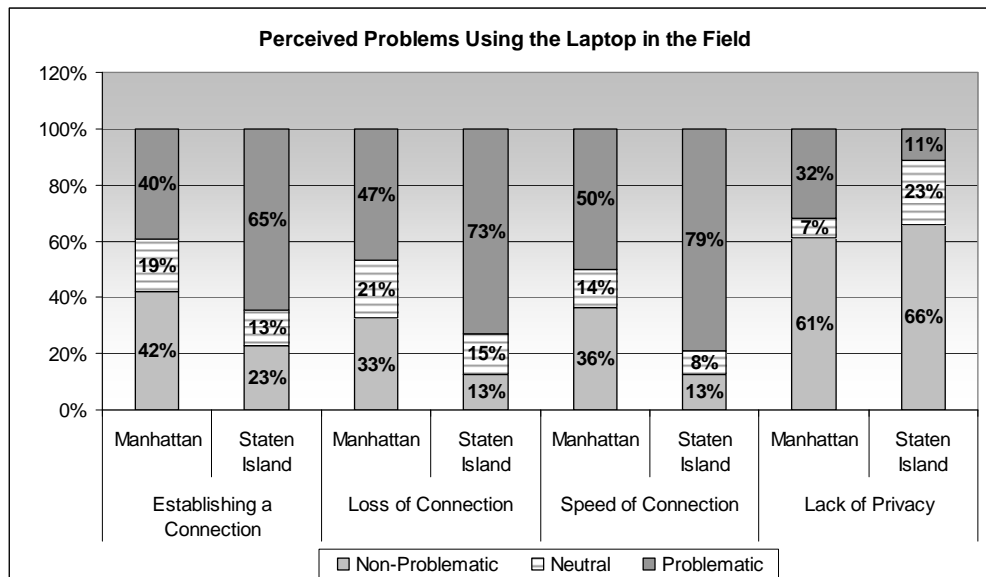
Overall, 48% of testers rated the log-on process as very difficult to extremely difficult, 28 % rated it as neither difficult nor easy and another 20% said it was easy. However, Staten Island testers reported greater log-on difficulty than Manhattan testers (61% of Staten Island and 35% of Manhattan testers reported logging on to be very difficult to extremely difficult). Many testers also experienced problems with connectivity. Staten Island testers consistently reported establishing a connection, losing a connection and the speed of connection as more problematic in all locations than testers in Manhattan. This difference is especially evident in perceptions of problems occurring at court houses and in the field.

Use in the field

About half of Staten Island testers (49%) reported using the laptop in the field on average for 2.74 hours a week compared to roughly 35% of Manhattan testers using it on average for 1.88 hours a week. Caseworkers reported using the laptop when taking public transportation, outside of a clients home, in a hospital, and at coffee shops in between appointments.

In terms of issues that affect the use of the laptop in the field, technical difficulties with establishing and maintaining the connection as well as the speed of connection were important. Approximately 65 % of testers in Staten Island reported establishing a connection problematic, 74% reported loss of connection as problematic, and about 80% reported speed of connection as problematic.

Graph 3 - Problems Using the Laptop in the Field



In Manhattan, 40 % of caseworkers reported establishing a connection as a problem (but a similar proportion, 42 % perceive it as not a problem). Likewise, 47 % reported loss of connection as problematic (but almost 50 % do not see it as a problem or are neutral). About half of Manhattan testers reported speed of connection as problematic.

Work environment factors such as privacy and physical danger are perceived differently than technical issues. Almost two-thirds of the workers in both field offices did not perceive lack of privacy as a problem in the field. However, perceptions of personal safety did differ. In Manhattan, a larger proportion of testers (20 %) felt like they were in danger using the laptop in the field compared to 6 % of testers in Staten Island. Unlike Staten Island where fear for personal safety did not seem to come up almost at all during the workshops, nearly every caseworker in Manhattan stated that fearing for personal safety was one of the main reasons why they did not carry their laptop in the field. They felt that having an expensive piece of equipment would make them even a bigger target, in addition to being CPS caseworkers. One caseworker recalled being asked by a client how much would her computer cost and she reported that it made her feel very uncomfortable and she never brought the laptop again.

The perception of having small blocks of time out in the field to use the laptop was split among testers. About half in both field offices reported that having small blocks of time was not a problem in using the laptop, while the others were unsure or considered it problematic.

Manhattan testers noted during workshops and interviews on several occasions that “the field” was not conducive to working on a laptop. Several mentioned the lack of suitable locations in which one feels comfortable. Some stated they try to schedule their appointments back-to-back to minimize the time they have to spend in some parts of the city due to security concerns, and thus do not have time to stop to use the laptop in between appointments. Several caseworkers reported during the workshop that they kept the laptop at home unless they knew that they were going to court that day. In addition, many reported that they will not use the laptop in a client’s home. They said that during this time they try to establish a rapport and make a connection with the family. Although some did say that for appointments with professionals at schools, hospitals and police stations, they would consider using the laptop during the meeting.

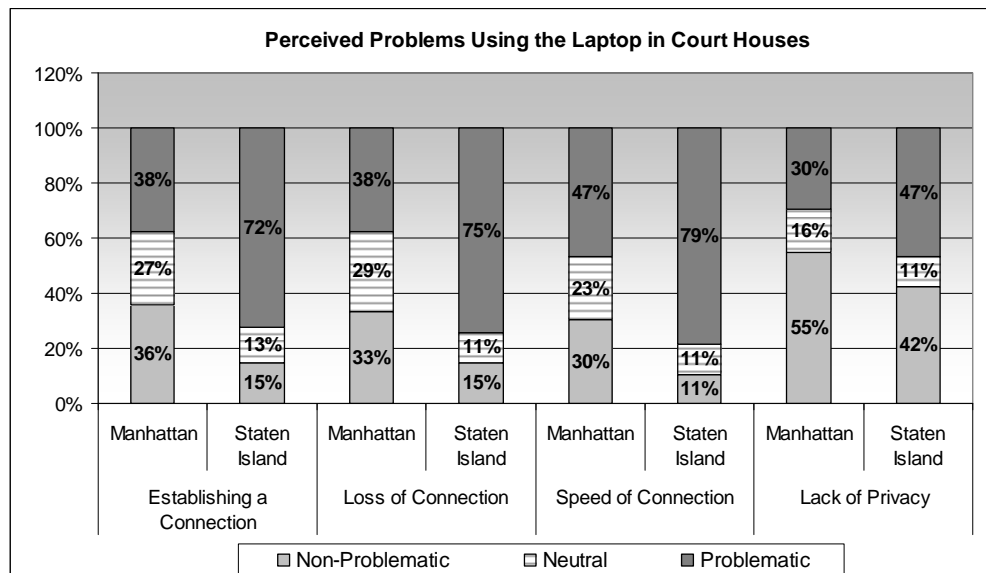
Use at the court house

The amount of time caseworkers spend in court suggests that is an important location for mobile work. Testers in Staten Island and Manhattan reported spending on average four days a month at court (4.12 and 3.95 days respectively). Approximately 60% of testers in Staten Island reported waiting in court more than five hours for a typical court appointment, whereas only 31% of Manhattan testers reported waiting in court more than five hours for a typical appointment. The average length of time spent waiting in court houses was higher in Staten Island (5.60 hours) than in Manhattan (4.36 hours).

These differences relate to the total number of hours testers use the laptop in court houses. Approximately 45% of testers in both field offices reported using their laptops while at the court house. Staten Island testers used the laptop on average for 2.77 hours a week, similarly, Manhattan caseworkers reported on average 1.86 hours of use a week. Manhattan has a higher proportion of workers using the laptop for one to three hours a week (52%), as compared to Staten Island testers (35%).

Overall, Graph 4 below shows that more Manhattan than Staten Island testers reported favorable conditions for working on the laptop while at court. A smaller proportion of Manhattan testers reported technical difficulties or lack of privacy as a very big problem. The proportion of Staten Island reporting court problems was approximately 73% for establishing a connection, 75 % for loss of connection, almost 80% for slow speed, and about half (48%) for lack of privacy. Interviews with Staten Island testers revealed that there is no private room to wait in the court house and caseworkers are mixed in with the general population and so are unable to work on any confidential information. They said that if they had a place to work privately, they would use it more frequently even with the technical challenges.

Graph 4 - Problems Using the Laptop in the Court Houses



In terms of technical difficulties, it seems that the overall experience of Manhattan testers was again more divided. For example, 36 % of testers reported establishing connection as not a problem, and almost the same proportion (38 %) reported it as problematic. Similar patterns are present for loss of connection, although speed of connection seemed to be a more of a problem for testers (47 % reported it as problematic versus 30 % perceiving it as not a problem). In interviews, it was noted that Manhattan family courts offer a private room for caseworkers that provides privacy conditions to complete CPS work.

It is uncertain why Staten Island used the laptops more in court houses given the reported problems using it there. Several case workers stated that they simply do not bring the laptop to court with them any more, given the technical difficulties. However, the survey information clearly shows that use in court is important. Both field office testers mentioned that the laptop would bring the greatest benefits if it could be used reliably in court – the long wait times mentioned provide the worker with the ability to work on documentation while waiting to be called.

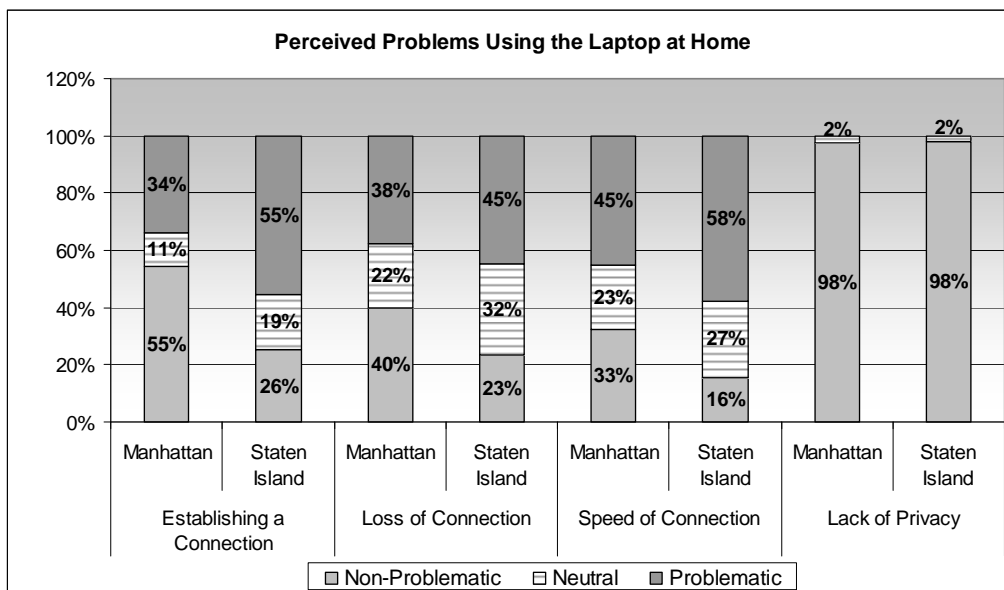
Use at home

During the workshops, many participants stated that they used the laptop at home, mostly during after hours. Testers reported increased capability to catch-up on documentation at home. Several stated they were more productive at home due to less 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. Although, the majority of caseworkers used the computer at home, attitudes and preferences varied. Some caseworkers expressed positive attitudes toward having increased flexibility to do CPS work from home, while others expressed negative attitudes citing the laptop created an intrusion in their personal life.

Testers did not agree on how the current compensation policies for overtime work at home impacted their propensity to use the device. Some caseworkers expressed a preference or willingness to use the laptop at home regardless of compensation, suggesting that “peace of mind” and “being caught-up” motivated their use. One testers said, “When I have time at home I will sometimes enter notes so that I don’t feel so overwhelmed at work. I do this on my own time to keep myself from being so stressed out about notes not being entered in a timely manner.” Those testers less willing to use the laptop at home simply stated that they should not work at all unless they are compensated, and some just wanted to make sure that if they did do work at home, that they would be fairly compensated. One caseworker stated, “The process of getting overtime approved to work on the laptop is too complicated.”

Most caseworkers experienced some problems with connectivity at home. Staten Island testers reported connectivity issues more frequently than Manhattan testers. More than half (56 %) of Staten Island caseworkers reported establishing a connection and the speed of connection as problematic, while 46 % also reported losing a connection as problematic. Understandably, the lack of privacy, physical danger, and small time blocks did not seem to present an obstacle to most Staten Island testers when using the laptop at home.

Graph 5 - Problems Using the Laptop at Home



Manhattan testers overall see technical problems at home as less problematic than their Staten Island counterparts. While about 35 % of testers reported establishing a connection as problematic, about the same proportion (36 %) perceive it as non-problematic. Similarly, 29 % of Manhattan testers reported the loss of connection as problematic, but another 22 % reported it as non-problematic. More testers in Manhattan viewed the speed of the connection to be more problematic than other technical issues, about 45 % reported it as problematic, but again, a comparable proportion (33 %) reported it as not a problem. Lack of privacy, physical danger, and small blocks of time posed no problem for most of the caseworkers when using the laptop at home.

Similarly to Staten Island, the issue of overtime compensation was mentioned frequently in connection with using the laptop at home. Caseworkers expressed concern about pay for their work at home. They also stated that although the policy of having to get a prior approval has not changed, the level of scrutiny and expectations for work at home seems to be higher. One tester stated, “The general expectation is that you have your laptop so you could take your work with you wherever you go even if you are off the clock.” Another said, “While I believe that the laptop is extremely useful, I am concerned about management's expectations for those who have them. I am a mother of two children and I sort of felt compelled to use my laptop at odd times, just so my manager would not use the phrase ‘but you have a laptop’.” Some of the caseworkers also mentioned the fact that because of the relatively small number of cases coming in during the pilot period, they could not truly evaluate the usefulness of the tool for work at home because they were caught up and did not need to use it. This perception did not match the actual number of cases during the test period, which actually increased slightly.

Experiences from managers and supervisors

Overall, managers and supervisors II seemed more enthusiastic and positive than caseworkers as to how helpful the laptops are in their everyday work. Home was viewed as the location where laptops were the most valuable to the manager and supervisors interviewed. They liked the flexibility for when and where they did their work. One manager stated that she took her laptop to all out-of-office meetings and after the meeting she would check on her cases so when she returned to the office she was caught up and was not surprised by anything. Another manager stated that it was great having it at home because if a caseworker calls late at night or on the weekend with an emergency she can go onto the system and look up whatever she needs to advise the caseworker from home, instead of having to go to the office. However, one supervisor expressed that the laptop's slow connection speed reduced the likelihood of using it at home and instead, preferred to continue to do work at home through the existing remote access.

Conclusion

Although the laptop did provide a certain degree of flexibility of location and time, it did not truly enable “full mobile capability” of the CPS staff. This result was partially expected since Phase I of the mobile technology project demonstrated that CPS work does not lend itself to full mobilizing due to nature of the work itself. The need to establish close contact with the client and the family prevents use of a laptop in the client's home, so the need for hand-written notes cannot be fully eliminated. Additionally, the highly confidential nature of information that CPS caseworkers deal with dictates a need for privacy that is not always available outside of one's office or home. Lastly, the need for frequent contact with supervisors and the need for close oversight of caseworkers' decisions and actions dictates continual need for spending significant amount of time in the office.

Despite these limitations and despite some of the problems and issues encountered in the pilot, the laptop computer was used in a variety of locations and allowed caseworkers the flexibility of doing work on their own timetable and without the need to return to office. The degree to which this flexibility has been utilized varied from person to person depending on their personal preferences, their experience with the device, as well as their work practices and work ethic.

Chapter 4: Productivity and Efficiency

Productivity and efficiency

We used CONNECTIONS system data and survey responses to examine three core questions about possible technology impacts: (1) Are workers more productive with respect to progress notes and reporting? (2) Does timeliness of reporting change? and (3) Does technology use affect the kinds of reporting activities undertaken or the type of work done? The goal is to trace possible technology impacts on the productivity, timeliness and work flow for documentation.

The evidence presented in this section suggest modest improvements in productivity attributable to laptop use, and less noticeable improvements in timeliness of documentation and work product changes. The small improvements in timeliness may be simply a consequence of limited room for improvement, since overall timeliness of documentation by these testers prior to laptop deployment was good. Also, some factors affecting timeliness, may not be amenable to technology impacts (e.g., overtime policy, management practices).

What we measured

The data extracted from the central CONNECTIONS database included information on cases (investigation begin date and end date), progress notes (related event date, the date a note is entered into the system, and the type of note), and safety assessments (safety assessment submission date). Safety assessment submission date is used because that is the time frame within which the CPS worker has control over entering safety assessment information. Safety assessment approvals require supervisor action and other factors outside the caseworker's control.

The surveys gathered participants' perceptions of timeliness, productivity, and changes in work activities. Our findings on timeliness and work flow impacts include analysis of these data.

Also note that data and findings are based on the data collected from the testers in each of the field offices, not the entire field office.

Limitations of the Data

The central database records the timing and types of progress notes entered, but not their length or quality. The number of cases per tester and the notes per case varied widely, as did the types of notes entered. The participants were working on a mix of cases, some open for long periods prior to the pilot test, some started and closed during the pilot, and others remaining open at the end of the test period. Therefore, the notes entered during the pilot test period applied to both new and older cases, ranging from as little as a day to over several weeks old. We used only those cases that had an actual investigation close date. Approximately 20 % of all cases (471 cases) started within 60 days of our pilot data collection date (10/24/07) and were not included in the analysis. Moreover, the data does not include the ultimate disposition of the case or any rating of the quality of outcomes obtained.

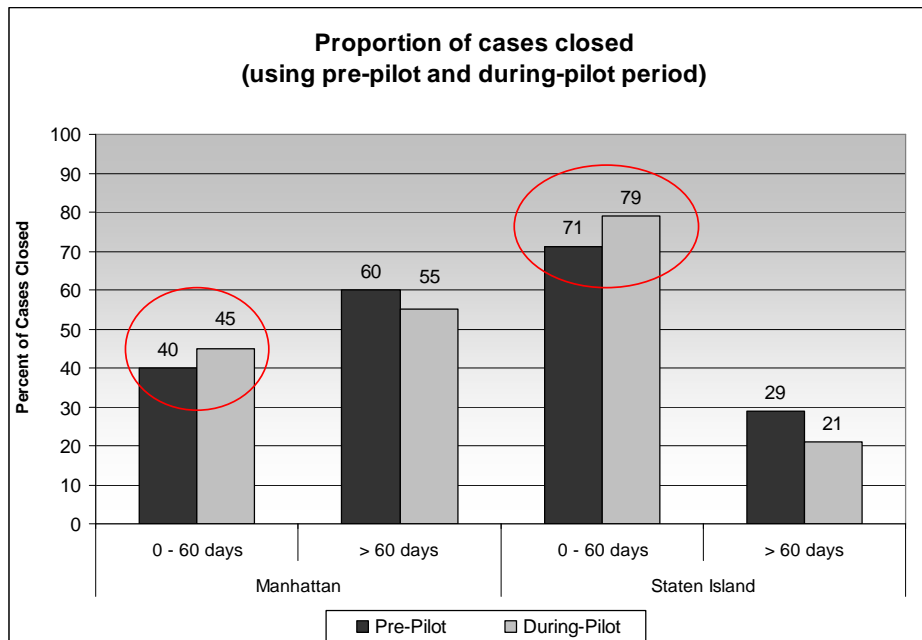
In addition, by law there are specific timeframes that must be followed. For example, the "clock starts" for two important processes when a call is made to the central registry. The date the call is made is recorded in CONNECTIONS and a caseworker has seven days from that point to do a safety assessment and 60 days to complete a full investigation. Progress notes are required to be

entered contemporaneously, but the definition of contemporaneous is interpreted differently in each field office.

Efficiency and productivity

We examined the changes in efficiency and productivity in terms of the pace of case closings and safety assessments submitted. It appears the rate of timely closing of cases between zero and 60 days increased for both field offices during the test period and can be seen as evidence of productivity increases.

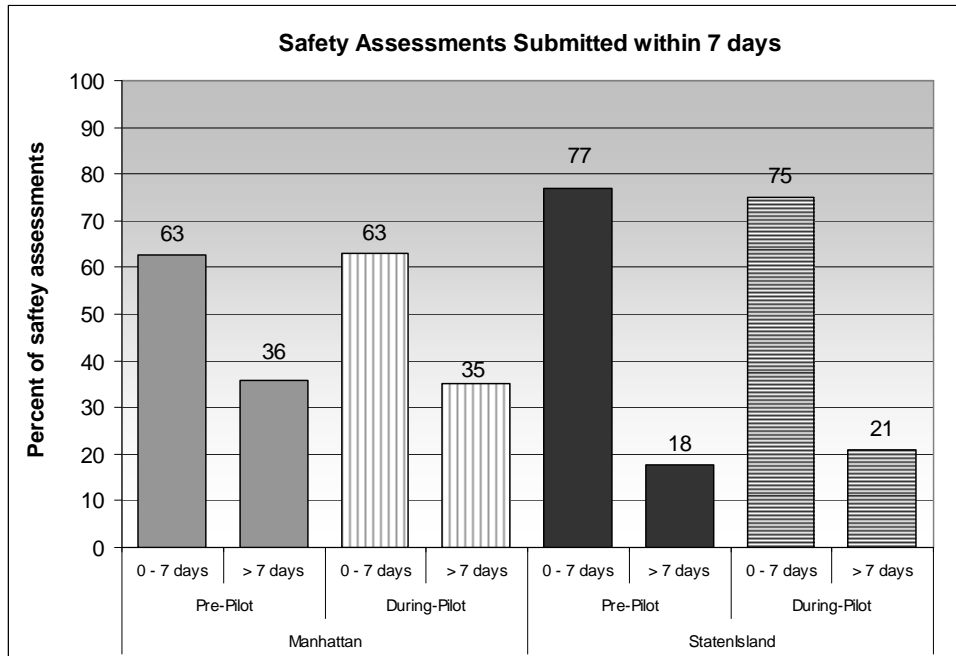
Graph 6 - Proportion of Cases Closed Pre-Pilot and During Pilot



Manhattan testers increased the rate of case closings within 60 days (40 % pre-; 45 % during pilot), despite a 32 % increase in the number cases between pre- and during-pilot test periods (440 cases; 579 cases respectively). Similarly, Staten Island testers increased their rate of case closings within 60 days (71 % pre-; and 79 % during-pilot); while experiencing a smaller case number increase of 8%. Within this population of testers, the Staten Island participants have a larger number of cases overall than Manhattan participants (1383 cases; 1019 cases respectively).

The proportion of safety assessments submitted in the pre-pilot and during-pilot periods was also examined. By law, a safety assessment needs to be submitted within seven days.

Graph 7 - Safety Assessments Submitted Within Seven Days



The submission rate of safety assessments within seven days stayed about the same for each field office pre- and during-pilot test periods; however, Manhattan maintained the same rate of submission with a 32 % increase in the number of safety assessments submitted (which corresponds to the case increase mentioned above – each case should have a safety assessment submitted although some cases close without submitting a safety assessment). This can be seen as evidence of productivity increases in Manhattan. Staten Island did not have a substantial increase in case numbers or safety assessments during this period, but maintained a similar submission rate.

Timeliness

One indicator of timeliness used is elapsed time – or the number of days between an event and the posting of documentation in the CONNETIONS system regarding that event, or the length of time necessary to close a case. If we look at the age of cases, for only those cases that opened and closed within the pre-pilot period (April 28, 2007 – July 20, 2007) and the during-pilot period (July 30, 2007 – October 19, 2007), we see a picture which demonstrates timeliness increases. The trend line during the pilot shows a marked increase in cases closed within approximately the first seven days and the percentage of cases closed is higher overall by approximately 10 % over the pre-pilot figures. The pre-pilot trend line also shows a steep increase as it nears 60 days and this may represent CPS workers playing “catch-up” in order to meet the required time frames. With the technology, the days approaching 60 days is much smoother and reflects less of an accelerated “catching-up” process.

Graph 8 - Age of Cases When Closed

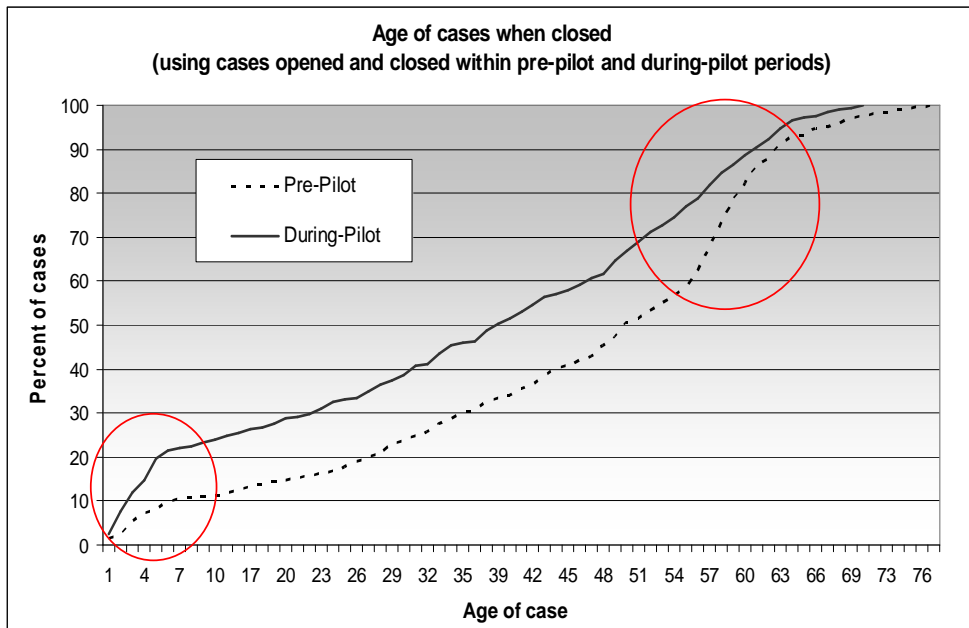


Table 2 below represents the percentage of safety assessments submitted over a seven day period. Very few safety assessments are submitted on the same day the cases investigation opens. This is as expected given that completing a safety assessment requires multiple tasks to be completed, such as visiting the home and contacting individuals. Three-quarters of the safety assessments (74 % pre- and 74 % during) are submitted by day seven for both the pre- and during-pilot periods.

Table 2- Percentage of Safety Assessments Submitted Within 7 Days

	Same day		1 day		2 days		3 days	
	Pre	During	Pre	During	Pre	During	Pre	During
Percent of all safety assessments submitted	.09	.14	3.	2	8	9	15	17
Number of safety assessments	1	1	31	17	55	45	76	63
	4 days		5 days		6 days		7 days	
	Pre	During	Pre	During	Pre	During	Pre	During
Percent of all safety assessments submitted	24	27	35	38	52	53	74	74
Number of safety assessments	95	67	116	86	182	109	230	152

With 75 % of safety assessments submitted by day seven, that leaves 25 % for improvement and a chance for some technological impact. However, 95 % of all safety assessments are submitted by day 14 after the start of a case (95.2 % pre-pilot period; 95.6 % during-pilot period). Too many factors may be at play here to expect the technology alone to improve timeliness, including tracking down clients or waiting for information from other parties.

We also looked at the elapsed time between progress note entry and the related event. During both periods, approximately half of all progress notes are entered on the same day as the event, and approximately two-thirds are entered within one day after the event. In addition, three-quarters of all progress notes are entered by three-days after the event. We would have expected the proportion of notes on the same day, next day, and second day to increase from the pre-pilot periods. However, there were not overall increases in the proportion, indicating no productivity gains in the reporting process. In addition, if three-days is considered contemporaneous, that leaves only 25 % of all notes where technology impacts may help to improve timeliness.

Table 3- Percentage of Notes Submitted Within 5 Days

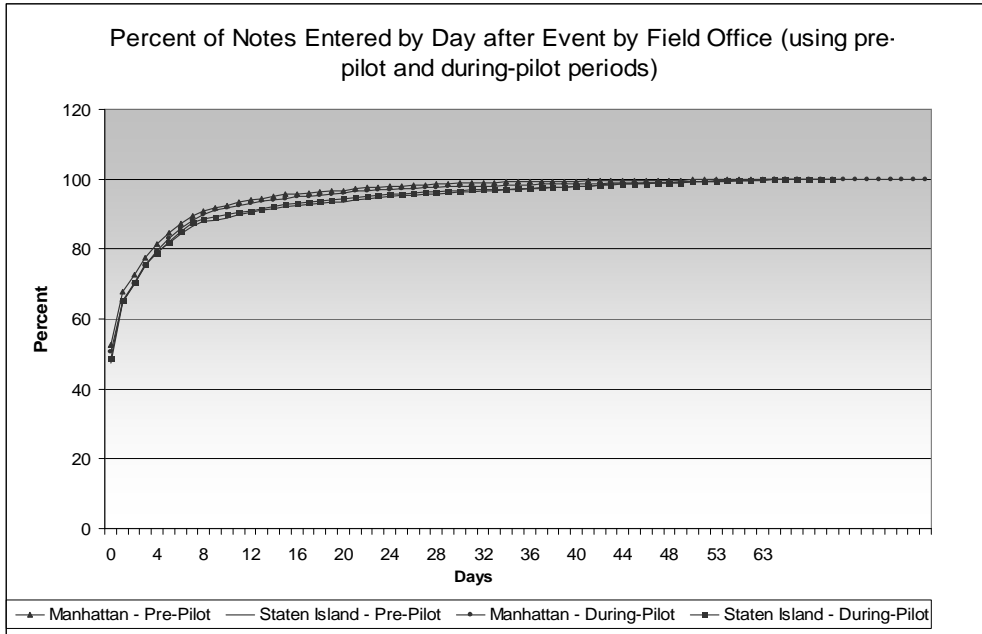
	Same day		1 day		2 days	
	Pre	During	Pre	During	Pre	During
% of all notes entered	50	50	66	65	71	70
Number of notes entered	10348	8608	3469	2713	1047	890
	3 days		4 days		5 days	
	Pre	During	Pre	During	Pre	During
% of all notes entered	76	75	80.	79	83	83
Number of notes entered	1085	884	792	657	591	586

There are some slight differences between field offices with Manhattan more able to get progress notes in by the first day, but Staten Island testers catch up by day two. In Manhattan, about half of all progress notes were entered on the same day before and during the pilot (52 % pre-pilot; 51 % during-pilot) and about two-thirds were entered one day after the event (68 % pre-pilot; 65 % during-pilot). In Staten Island, about half of all progress notes were entered on the same day (47 % pre-pilot; 49 % during-pilot) and almost two-thirds were entered one day after the event (69 % pre-pilot; 65 % during-pilot).

Graph 9 focuses on elapsed time and plots the percentage of all notes entered by days from the note entry to related event for each field office. Overall, the same pattern is present as above – no substantial technology impacts on timeliness of progress notes is apparent for each field office.

The information we gathered from surveys and workshops may shed some light on these patterns. First, timeliness is impacted by individual work styles and caseloads. Some individuals were very timely before the introduction of technology, and some were not. Some supervisors reported seeing substantial improvements in productivity in some testers. The introduction of technology appears to affect individuals differently and the aggregate results are that modest gains by one person is adjusted by modest losses for another person. One caseworker stated, “Even though the laptop makes case notes entry a lot easier, because I am able to access CONNECTIONS from anywhere, as long as a signal is available, there is still the issue of the caseload size as well as some of the individual cases and the type of family and their issues that we have to deal with.”

Graph 9 - Percent of Notes Entered by Day After Event by Field Office

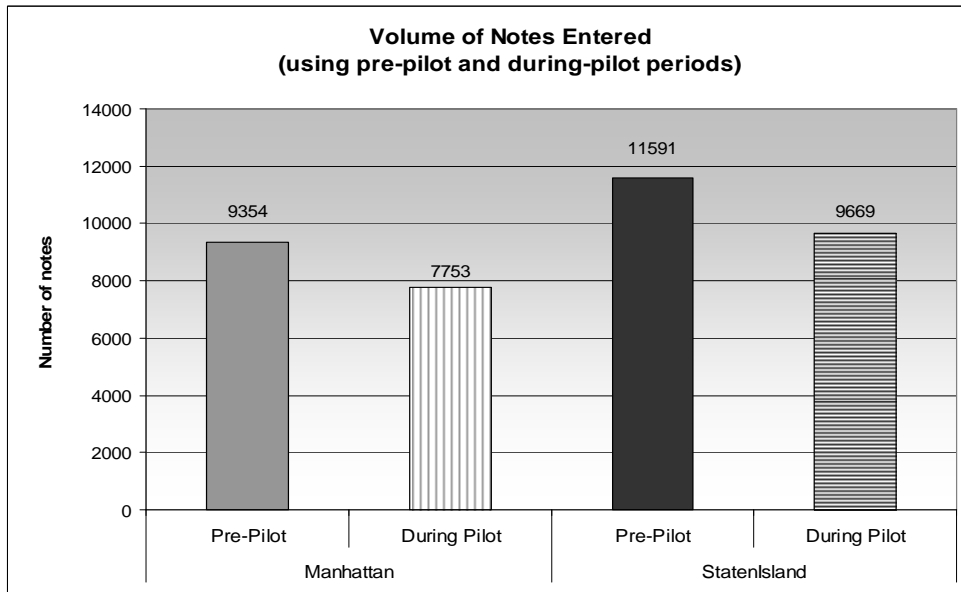


CPS workers in the workshops described working with their supervisors to close a case while the worker was in the field, and being able to enter the information the supervisor needed to close the case. While, changing overall work habits may not happen in a 12-week pilot test, these experiences represent positive work changes.

Work activity changes

The volume of progress notes is another indicator we used to detect possible work flow effects. Overall, the number of progress notes entered decreased for both field offices during the pilot test period.

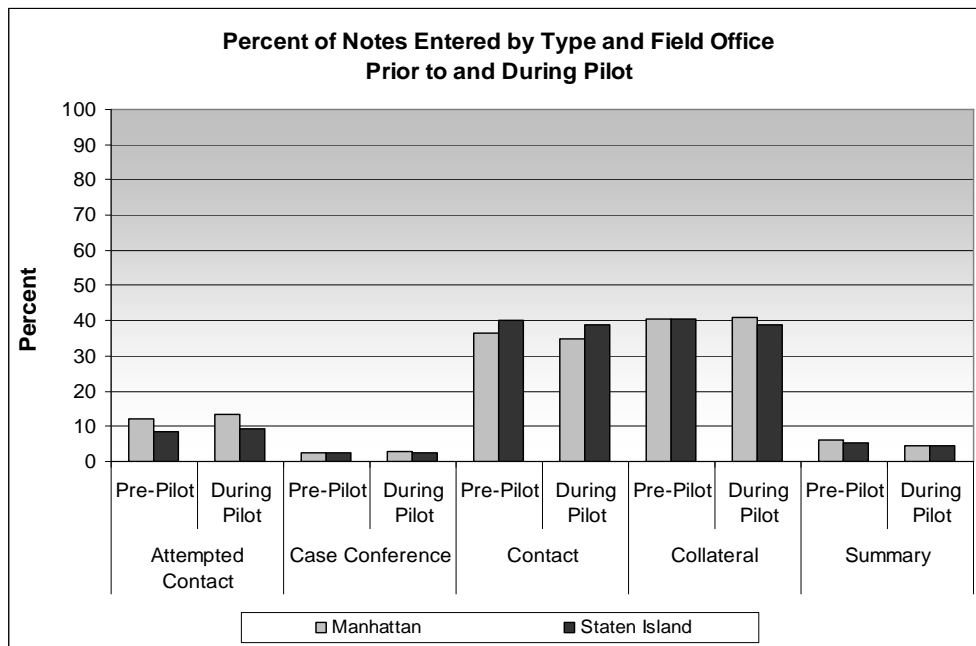
Graph 10 - Volume of Notes Entered



There is a decrease in the notes entered per month during the pilot test periods for each field office. Both districts decline in July and went up in August when the laptops were introduced, then declined again in September and October. This is interesting considering the total number of cases increased for Manhattan by 32 %. This demonstrates that the number of progress notes per case varies considerably, presumably by individual working style or other factors.

The changes in work practice were examined in terms of possible variation in the types of notes entered. The introduction of new technologies could result in changes in the kinds of work done, as well as the speed and quality. For this test, however, it appears that there were no discernable changes in the types of notes entered during the pilot period. The descriptions of the work impacts are discussed throughout this report, but we used the data from CONNECTIONS to show the proportion of four kinds of notes: (1) attempted contacts, (2) contacts, (3) collateral contacts, and (4) summary notes both prior to and during the pilot test periods. These are only a few of the many types of notes, but the numbers of other note types were too small for any meaningful comparisons.

Graph 11 - Percent of Notes Entered by Type and Field Office



Perceptions of timeliness and work impacts

Participants were issued a post-pilot survey at the end of the testing period. We asked participants to what extent using a laptop made a difference in CPS work compared to not having the laptop. Five different areas were examined: (1) timeliness of documentation, (2) ability to do work in court, (3) ability to access case information, (4) communication with supervisors, and (5) service to clients. Respondents were asked to rate the difference on a five-point scale 1 being much worse, 3 being about the same, and 5 being much better.

Overall, most caseworkers reported the use of laptops improved their work in terms of timeliness and accessing information, with a very few reporting it as negative. A smaller proportion reported no difference. Tables 4 and 5 below show the percentages.

Table 4 - Perceived Change Timeliness and Work Impacts

	Much worse (n)	Somewhat worse (n)	About the same (n)	Somewhat better (n)	Much better (n)
Overall (both field offices)					
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)

About two-thirds of participants in both field offices reported their timeliness of documentation to have been somewhat better to much better using the laptop. Over three-fourths of participants in both field offices reported the ability to access case information as being somewhat to much better using the laptop. Conversely, participants did not perceive having the laptop made much of a difference in communicating with supervisors and service to clients (66 % and 69 % respectively). Some participants during workshops said that they did receive new case assignments while in the field by checking their email and CONNECTIONS accounts. Supervisors would put all information in CONNECTIONS that was needed to continue the investigation. However, many caseworkers said that they would still get cell phone calls from their supervisors about new cases in the field, and they would use the cell phone more frequently for this.

The ability to do work in court received mixed ratings. With an almost equal percentage thinking it was about the same (44 %) as those perceiving having a laptop was better (49 %). We decided to break this down by field office (see Table 5 below).

Table 5 - Perceived Ability to Do Work in Court by Field Office

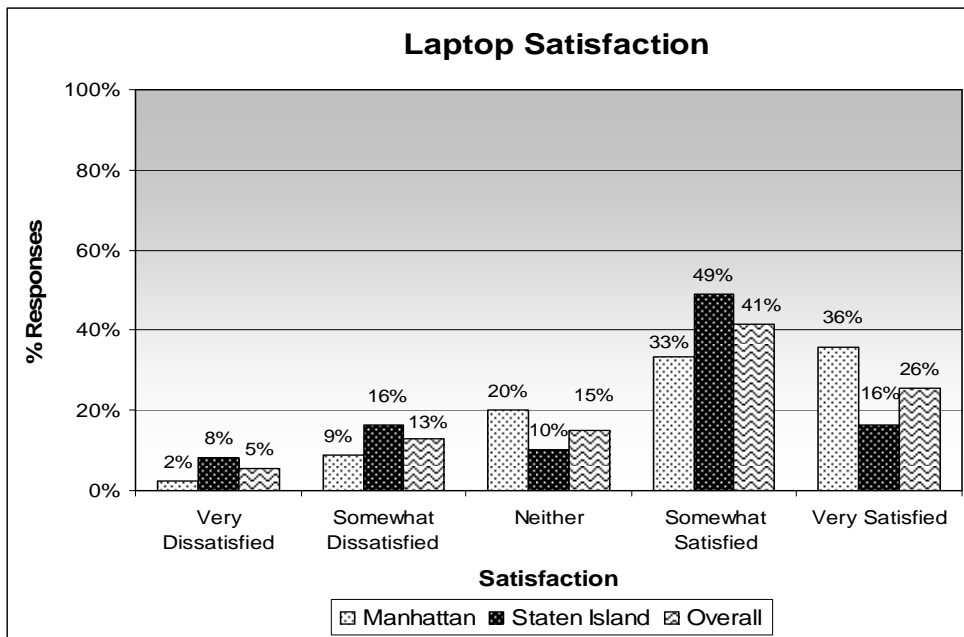
	Much worse (n)	Somewhat worse (n)	About the same (n)	Somewhat better (n)	Much better (n)
Manhattan					
Ability to do work in court	2 % (1)	0 % (0)	40 % (17)	28 % (12)	30 % (13)
	Staten Island				
	4 % (2)	6 % (3)	49 % (23)	28 % (13)	13 % (6)

Staten Island testers reported less of a positive impact in doing work at court than did Manhattan. In our workshops, we heard that the court houses in Staten Island did not receive a good signal, that cases workers “just need a place to go” emphasizing that the caseworkers wait in the same room as the families and needed a private space to do work on the laptop.

Chapter 5: User 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 overall level of satisfaction with the laptops is high. Graph 12 below shows more than 65% of all testers expressed being somewhat or very satisfied, compared to less than 20% being somewhat or very dissatisfied. In general, Manhattan testers express a higher general satisfaction with using the laptops (69%). While Staten Island also expressed satisfaction, a greater proportion of testers were somewhat to very dissatisfied compared to Manhattan testers (24% in Staten Island compared to 11 % for Manhattan).

Graph 12 - Overall User Satisfaction With the Laptops

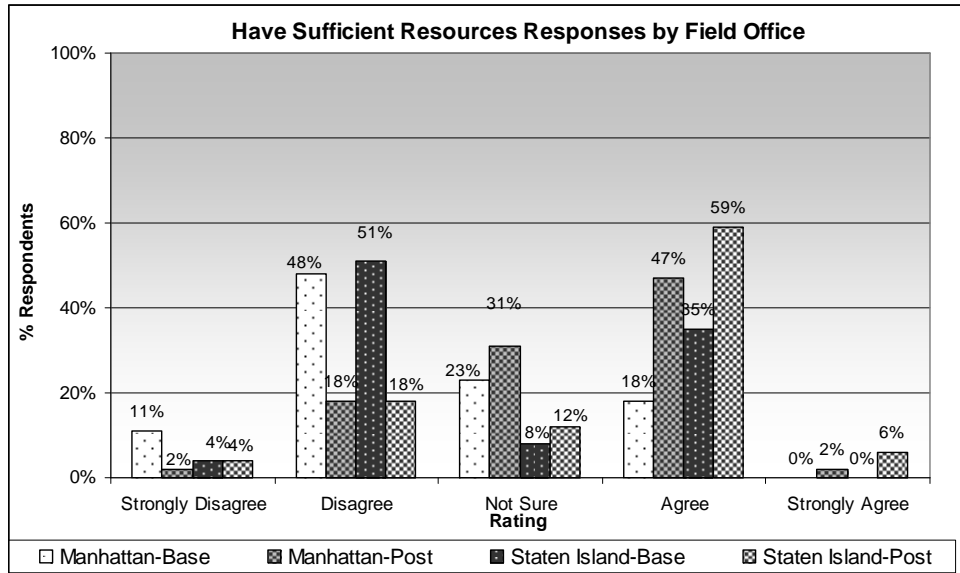


Through workshops and survey responses, Staten Island participants reported more technical difficulties, such as loss of connection, trouble establishing a connection, and connection in court as more problematic, compared to Manhattan. Other organizational or managerial factors may be influencing these overall satisfaction levels. It could also be the case that having a laptop produced higher expectations for use at court and in the field, expectations that were not wholly met.

Use of the laptops does not appear to have much of an impact on the attitudes of the testers toward their work, except on the question of resources. Both field office testers fairly consistently reported liking their job and feeling they work in a supportive environment. Both of these attitudes appear to have improved slightly from the pre-pilot period to the during-pilot period. There was also little change overall in the testers' feelings of being valued by their organization. However, having the laptop does appear to have substantially increased the overall feeling of having adequate resources to do the job. The baseline survey showed 57% of testers in both field offices disagreed or strongly disagreed that they had sufficient resources to do their job and only 28% agreed or strongly agreed. The proportions reversed after using the laptops, with 57% of testers now agreed or strongly agreed that they had sufficient resources to do their job well, and only 21% disagreed or strongly disagreed.

There are some differences worth noting between the two field offices in testers' attitudes toward their work. Staten Island testers were slightly more positive than Manhattan testers concerning liking the job and working in a supportive environment. Graph 13 below shows that Staten

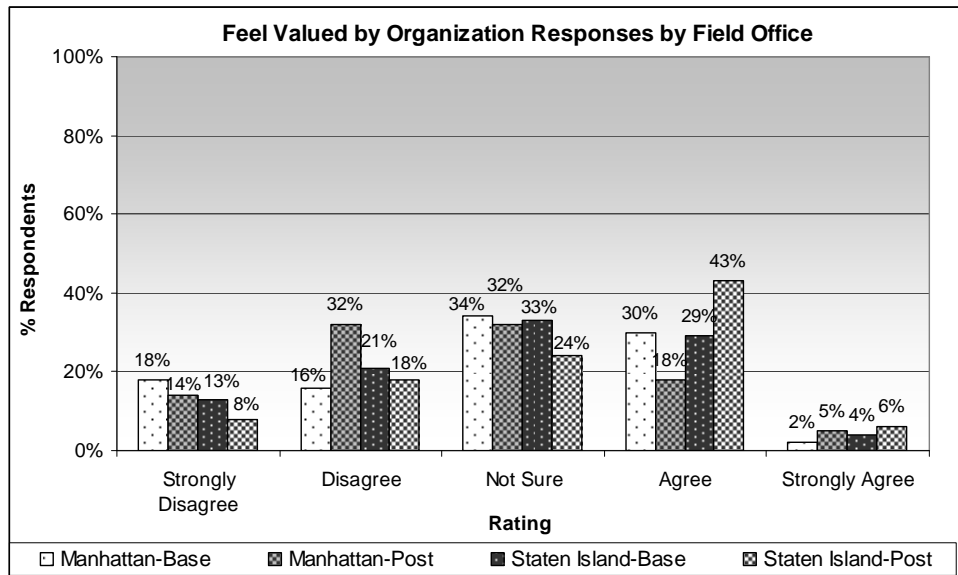
Graph 13 - Perceived Sufficiency of Resources by Field Office



Island testers are somewhat more positive than the Manhattan group with respect to the sufficiency of resources, but overall, as mentioned above, both groups became much more positive in this regard during the pilot.

The difference between responses for the two field offices are the most noticeable in feeling valued by the organization. Graph 14 below shows that Manhattan testers' responses are more negative after the test period than in the baseline survey. At the outset of the test, over 32 % reported feeling valued, but that rating dropped to 22 % in the post-pilot survey (conversely, the negative responses rose from 34 % to 46 %). In Staten Island, by contrast, the positive responses increased from approximately 33 % to 49 % over the test period. We did not uncover any possible intervening factors through the surveys or workshops that would account for this negative trend.

Graph 14 - Perceptions of Feeling Valued by Field Office



Overall, many testers feel their jobs are stressful. There appears to be a slight overall reduction in perceptions of job-related stress from the baseline to the post survey (66 % high to very high pre-pilot ratings; 57 % high to very high post-pilot ratings). The top three situations that testers say caused them stress before the pilot were the amount of documentation (78 %), insufficient technical tools to do their work well (70 %), and documentation deadlines (63 %).

After the test period, there was a considerable reduction in testers’ reporting that insufficient technological tools to do their jobs was major cause of job-related stress (23 % compared to 70 % prior to the test). In addition, 60 % of testers in the pre-pilot period reported that inflexibility in places to do their documentation caused them stress; that stress factor substantially reduced to only 35 % in the post-pilot survey.

Laptop use generally was seen as contributing to lower job-related stress; almost two-thirds said that it did and 35 % said it did not. Those who reported a reduction in stress said that their ability to catch up on their work, being able to submit reports on time, just knowing the laptop is available and having the flexibility of working on documentation outside of the office were reasons for stress reduction. One caseworker said, “If I can’t sleep at night because of all the stress that results from a build up of casework activities 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.” Several others expressed this similar sentiment, “Knowing that I have it [the laptop] helps me relax when I feel I don’t have enough time to complete work while in the office.”

Those whose stress levels were not reduced by having a laptop varied more in the reasons why. The most frequently mentioned were the problems they experienced while working with the laptop including poor or intermittent connectivity, and slow speed. One caseworker said, “The laptop requires too much time to connect and therefore sometimes creates additional stress when I am striving to meet deadlines and cannot stay connected. The laptop also locks up at times and offers me more frustration, I’ve since stopped using it as much.” However, many others expressed that the nature of CPS work in general, such as difficulty dealing with increased pressure for timely

documentation, not getting paid for work at home, and changes in work/life balance are issues. One caseworker stated, “Technology only helps us to have flexibility in where and when we do the documentation but does not lessen the complexity and tension in each case.”

Overall, 77% of testers’ recommend the continued use of the laptops (84 % positive recommendations in Manhattan and 69 % in Staten Island). The reasons mentioned for this included perceptions that it increases one’s ability to use time more efficiently, it enables you to do your work outside of office and on your own timetable, and it increases access to information and timeliness of your documentation.

Although all managers and supervisors II, who were interviewed recommended that a laptop computer be provided for CPS workers, they also stated that the degree of benefit each worker derives from such a tool is directly dependent on the work ethic of the individual.

Chapter 6: Recommendations and Future Considerations

Introducing technology into a well established field of work is never easy. With continuous feedback in the process, however, implementers can close gaps between what is working and what is not. These recommendations present that kind of feedback to inform the experience and improve the process.

In the first phase of the pilot project, there were several policy and management recommendations that remain valid. These include taking a broader look at caseload, focusing on change management and overall support, dedicating resources to training, and developing additional measures of improvement. Additional recommendations from the extended pilot assessment are presented here.

Recommendations

1. Allow More Time for Entire Process

One year does not appear to be enough time to test a project of this complexity, which requires procuring, deploying, assessing, and reporting on the effects of laptop use in twelve months. As seen in Figure 2 (above), there are many organizations and factors that shape the laptop experience. The interdependencies created with several organizations setting policy and providing services adds complexity and slows processes on the front end of the project. For more reliable conclusions, data should come from longer periods of CPS caseworkers use of the laptop, allowing for integration into their work to observe the full effects. The first few months of use are likely to be strongly affected by difficulties in learning how to exploit the new technology as well as working out initial set-up, connectivity, and management issues.

An 18 to 24 month period may be better for work of this type. Deploying laptops in the original pilot and in the extended pilot show that it has taken approximately six to seven months from legislative mandate to deployment. This includes budget development, procurement, receiving, imaging, deploying, and setting up connectivity for the devices. In addition, three months of data collection is not enough time for the caseworker to fully integrate the laptop into their work. A longer data collection period of six to seven months is preferable. Then analyzing data and report generation from several hundred caseworkers adds another two to three months. The full cycle can thus take longer than one year to accomplish.

2. Maintain Support for Laptop Deployment

When CPS caseworkers were asked about recommending a laptop to their colleagues, a large proportion of them say they would highly recommend it. The high overall satisfaction appears to result from increased flexibility, a higher level of feeling valued by the organization, and having enhanced resources to do their job. These positive impacts are often hard to quantify, but can be very important parts of the overall laptop experience. Continuing to support laptops can provide CPS caseworkers in other districts the opportunity to see how mobile technologies can impact their work.

3. Revisit Longstanding Policies and Management Practices

Maximizing the value of laptop use in child protective services depends as much on attention to areas of policy and management as it does to technology. Policies and procedures to implement the policies are developed for a certain set of conditions within a specific environment. When the conditions change and the environment is modified, the existing policies, practices, and regulations may need revision. Revisiting the policies to make certain that they are still valid and appropriate for the new environment is critical. Throughout this assessment three policy areas emerged as needing review: no working from home, office/field scheduling, and compensation for work outside normal hours.

Working From Home

In this study we found that caseworkers used the laptops primarily at home after regular work hours to catch up on documentation. Since NYC policies state that no one can be paid for working at home, caseworkers cannot get paid for doing work in the one location they most frequently use. Thus we recommend ACS approach DCAS for discussions about revisiting or changing this policy so the caseworkers can maximize the potential value of the laptop and attain increased flexibility in where and when work is completed.

Office and Field Scheduling

Field offices and even units within field offices manage work by designating office days and field work days. Caseworkers are assigned certain days of the week to make visit appointments. Other days are scheduled for case workers to be in the office for documentation, supervision, and other administrative tasks. Court appointments are not included in those field visits and occur when scheduled by the court system.

This policy should be revisited because the laptop was implemented to increase mobility and thus allow more time for caseworkers to work in the field with children and families. When a policy specifies when and where a caseworker must work, it can limit the potential value of laptop use. Continuing to designate office days is counter to encouraging more time out of the office. In addition, to fully understand how the laptop affects a caseworker's mobility, there should be as little restrictions (on work location) as possible.

Overtime and Compensatory Time

The procedures and management practices that accompany overtime policy state that some offices have a daily cap for all overtime work, although some caseworkers stated that this isn't true for all offices. In addition, policies are not consistently implemented across all CPS departments. Some field offices have different procedures for overtime and compensatory time approvals. Some offices require caseworkers to submit a request, which then must go through a several layer review process to allow for the overtime to be approved after it has occurred. Ensuring overtime consistency across field offices may increase the effectiveness of laptop use.

4. Continue to Address Infrastructure and Connectivity Concerns

Since first reported, the technology issues (such as poor system performance) are being addressed by ACS's MIS department. ACS MIS reports that improved performance while entering data in CONNECTIONS will result from reconciling the network path and configuration so that caseworkers can access the CONNECTIONS application through either a NYC or NYS SSL Virtual Private Network (VPN) connection. Additionally, simplification of the security requirements should improve users' experience. By streamlining the network path and removing some layers, the performance problems should be alleviated.

Problems with connectivity coverage and speed are not directly within the control of MIS, although MIS has contacted Verizon and discussed the problems extensively. From these exchanges, ACS MIS stated that it has begun an upgrade of the laptop's wireless capabilities. The improved speed and reduced latency associated with this upgrade should improve connectivity and stability. Connectivity in fixed locations such as courthouses also continue to be of concern. While ACS MIS indicated a desire to make Wi-Fi connectivity available in the courthouses, it was not completed in time for this pilot. All connectivity within the courts is approved and coordinated by the NYS Office of Court Administration. Working closely with OCA on connectivity concerns and then sharing information with caseworkers will help keep everyone "on the same page."

Finally, it is important to note that caseworkers did not report all connectivity or performance issues to MIS. Instead, caseworkers only called the help desk when they could not establish connection or their laptop was not working at all. Caseworkers only shared their frustration when asked about any technical problem while in the workshop. One caseworker stated: "I would highly recommend the laptop because despite its flaws it helps minimize the task of doing all notes in the office. I wish the computer glitches were fixed because the laptop would be even more desirable. If it was designed to be faster getting on to CONNECTIONS, allowing more time to type without being logged off, and there was no delay in the words typed appearing on the screen." Encouraging caseworkers to share feedback about using the laptop on a regular basis, whether it be through face to face meetings or email, may bring to light issues that may have not otherwise surfaced.

Future Considerations

This report is only one step in a longer term effort to improve caseworker's ability to meet the needs of children and families in NYS. This study recommends maintaining support for laptop deployment, but it also suggests several factors to consider before making more investments.

The larger question is: "How much mobility is desired?" If a highly mobile caseworker is the ideal, then several policies must be revisited, such as working from home, overtime, and field and office day scheduling. Restricting where and when a caseworker can work, limits their ability to be mobile.

On the technical side, optimizing infrastructure and connectivity is also critical. This includes considering swapping laptops for traditional desktops. Aside from the concerns of supporting multiple platforms, caseworkers may be more apt to use the laptop outside the office when they are accustomed to using it in the office as well. Planning for connectivity should be addressed in the beginning and continually assessed for effectiveness.

Finally, any technology deployment rests on a strong foundation of training and support. In many cases when there are no dedicated resources for this steps, such initiatives flounder. A strong predictor of successful deployment of technology is the overall effort for training and ongoing support.

APPENDIX A: 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:

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APPENDIX B: Methods

There were four streams of data collection throughout this project. Online surveys of pilot participants and data from the central OCFS CONNECTIONS database provided quantitative data that were used to assess questions concerning productivity, satisfaction, and timeliness, along with patterns and locations of use of the mobile device. This data was supplemented by qualitative data gathered via workshops with CPS workers in both participating boroughs and telephone interviews with CPS supervisors and managers. Each method is described in greater detail below.

Workshops

Facilitated workshops with CPS staff from both Manhattan and Staten Island, were conducted on August 27th and August 28th, approximately four weeks after the start of the pilot. Specifically, CTG conducted two three-hour workshops with CPS caseworkers from Manhattan and three one-and-a-half-hour workshops with CPS caseworkers from Staten Island. Supervisors II and managers were purposely excluded to allow for an open discussion with the CPS caseworkers. The difference in length of time and the number of workshops was driven by limitations of physical space at the Staten Island offices, which allowed only for 10-12 interviewees per session. In total, 59 caseworkers attended the workshops representing approximately 42% of all caseworkers testing the laptops in both locations. The workshops in Manhattan were attended by 28 participants, Staten Island workshops were attended by 31 participants. Each workshop was facilitated by two CTG investigators and was designed to elicit information about participants' experience with the laptop, as well as general information about the overall fit of mobile technology into CPS work.

Supervisor Interviews

In order to capture experiences of supervisors II and managers whose work practices differ from CPS caseworkers and supervisors I, CTG conducted a series of telephone interviews with supervisors II and managers who participated in the mobile technology pilot and who were also supervising caseworkers who were assigned a laptop. The telephone interviews took place from October 11th through October 18 and ranged in length from 25 to 45 minutes. In total, CTG conducted five interviews with six people. Namely, we interviewed two supervisors II from Staten Island, 1 supervisor II from Manhattan, two managers from Manhattan and one manager from Staten Island. All interviews were conducted by 2 CTG investigators and were designed to gather information regarding the personal experience of each interviewee with the mobile device as well as their observations of the effects of the laptop computer on the work practices of their subordinates.

CONNECTIONS Data

The overall objective for using the CONX data was to measure the effect of the use of mobile technologies on CPS work practices by using data from the central database. The CONNECTIONS dataset (i.e., the central database) contained information on case records and caseworkers' progress notes. The information contained within each of these records include: Stage ID, time-related information 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 (Person ID), and districts (District Name). The CONNECTIONS data included progress notes entered April 30th

2007 and October 19th 2007. The data used during this phase of the study included 38,392 entries within 2,402 unique Investigation Stages, from 135 caseworkers. The data was used to compare two time periods: a pre-pilot period (April 29th 2007 – July 21st 2007) and pilot period (July 29th 2007 – October 19th 2007).

A total of 91 cases that were closed between July 22nd 2007 and July 28th 2007 were excluded from the analyses. These cases fell into a period between the end of the pre-pilot and start of the pilot. In addition, there were 43 entries that took place after October 20th 2007 that were not included in the analyses. These entries were created after the end of the pilot period. Finally the data were checked for consistency, and only one entry was deleted as it was for an entry date prior to the actual event date.

Online Surveys

The primary objective for the use of surveys was to collect the perceptions and attitudes regarding testers experiences using the laptops. Two separate surveys, a baseline and post-pilot survey, were administered to assess the effect of mobile technology use in Child Protective Services. The surveys were developed over a period of a few months. During this time, the surveys were modified based on the project team's past-knowledge of the initial pilot study and its understanding of the objectives set forth in this extended pilot study. An online survey was developed using commercial software (Survey Monkey).

The surveys were administered to caseworkers and supervisor I. The names, email addresses, and titles of participating CPS caseworkers were collected from the two participating field offices (Williams Street in Manhattan, and Staten Island). Personalized survey invitations were emailed to participants. This measure was necessary to ensure that only the intended participants were in fact those taking the survey. Both surveys were sent to a total of 135 CPS caseworkers and supervisors I, of which 70 were from the Williams Street field office and 65 were from the Staten Island field office.

The baseline survey was administered prior to the test period and the deployment of laptops to CPS caseworkers and Supervisors I. The baseline survey was open for eight weeks; starting on June 25 2007 and ending on July 20 2007. The survey was designed to collect data from the following thematic categories: CPS work practice, CPS work time, demographic information, mobility, skill and stress levels, technology acceptance, training, and use of technology. The overall response rate for both field offices was 86% (n = 116). Williams Street's response rate was 83% (n = 58), whereas Staten Island's response rate was 89% (n = 58).

The post-pilot survey was administered three months following the deployment of laptops. The survey was open for one week; starting on October 15 2007 and ending on October 23, 2007. Data was collected from three new thematic categories, namely the impact of laptops on CPS Caseworkers and Level-I Supervisors' daily activities, mobility-related issues, and technical difficulties experienced during the pilot. The post-pilot survey also collected data to compare participants' pre- and post. The overall response rate for both field offices was 78% (n = 105). Williams Street response rate was 76% (n = 53), whereas Staten Island's response rate was 80% (n = 52). After both surveys were closed, participants' responses were downloaded and a data quality check was performed by choosing randomly-selected surveys. Following the data quality checks, the data variables and responses were relabeled and coded.

APPENDIX C: Data Collection Tools

Workshop Facilitation Plan

Assessing Mobile Technologies in Child Protective Services ACS – Manhattan & Staten Island 8/27/07 & 8/28/07				
Borough	Address	Location	Time	Participants
Manhattan	150 William St.	Conference Rm. 8A-1	9:30am – 12:30pm	About 14-16 CPS caseworkers
Manhattan	150 William St.	Conference Rm. 8A-1	1:30pm – 4:30pm	About 14- 16 CPS caseworkers
Staten Island	350 St. Marks Place	3 rd Fl Conference Rm.	9:30am – 11:00 am	About 9-10 CPS Caseworkers
Staten Island	350 St. Marks Place	3 rd Fl Conference Rm.	11:30 am – 1:00 noon	About 9- 10 CPS caseworkers
Staten Island	350 St. Marks Place	3 rd Fl Conference Rm.	2:00 pm – 3:30 pm	About 9- 10 CPS caseworkers

Facilitation Plan	
Time	Questions
5 min	Introduction/ Hello. Who we are, Who is CTG, What is the assessment about, what we hope to learn
20 min	Icebreaker <ul style="list-style-type: none"> ▪ If there was only ONE thing you could say about using laptops in CPS work or about your experience – what would it be?
20 min	Location – Based Use <ul style="list-style-type: none"> • Where do you keep your laptop throughout the day?- Explore why on each response. • What locations did you find were best for getting work done? • Where did you think you would be able to use your laptop that you didn't or tried to and it didn't work? • What prevented you from using your laptop? (technology, environment, connectivity)
35 min	Documentation and Productivity <ul style="list-style-type: none"> • What did the laptop enable you to do that you were not able to do before? • How did having a laptop make doing your work different? Better? Worse? • What work functions did you do the most while using the laptop? Why those functions? • How do you think using laptops in the field make you more efficient at documentation? Or if it doesn't – why not? • Did having a laptop computer allow you to catch up on your work? (i.e. progress notes, closing cases, etc.) How so? • Were able to spend more time in the field doing visits since working with the laptop?
15 min	Break
20 min	Job Stress and Satisfaction <ul style="list-style-type: none"> • How does using a laptop affect your level of job stress? Is the same, different than before? • What made it more stressful – what made it less stressful?

Facilitation Plan	
Time	Questions
	<ul style="list-style-type: none"> • Has satisfaction in doing your job changed since having the laptop? • Do you feel that having the laptop has given you increased flexibility in the way you do your job? • Have there been any barriers to using a laptop to do your work?
25 min	<p>Reaching Full Potential</p> <ul style="list-style-type: none"> • Are there any other technical tools that you feel would make your work easier (i.e. digital camera, dictation device)? • What will make using laptops better, more productive, easier? • Can you imagine circumstances under which having a laptop would be more useful (i.e. having a car, long commute)? • What impediments do you see to using this technology to its fullest potential? Prompts-policies, work practices, technologies, regulations, work style, capabilities, environment
15 min	<p>General Impressions</p> <ul style="list-style-type: none"> • Would you recommend a laptop to your co-workers? Why or why not? • If laptops were to be deployed to all CPS workers, would you change anything about their deployment (i.e. more or less training)? • Were there any technical issues that made it hard to use the laptop for your daily work (i.e. connectivity, hardware problems, number of log-ons)? • Were there any security risks that you noticed that you think should be addressed?
10 min	What else should we know that we didn't ask?
5	Wrap – up

You may download PDF versions of the [baseline survey](#) and [post survey](#).

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