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Abhay Nath Mishra

Georgia State University, amishra@gsu.edu

Patricia Ketsche

Georgia State University, pketsche@gsu.edu

James Marton

Georgia State University, marton@gsu.edu

Angela Snyder

Georgia State University, angiesnyder@gsu.edu

Susan McLaren

Georgia State University, smclaren@gsu.edu

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Examining the potential of information technology to improve public insurance application processes: enrollee assessments from a concurrent mixed method analysis

Abhay Nath Mishra,¹ Patricia Ketsche,¹ James Marton,² Angela Snyder,³ Susan McLaren³

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¹Institute of Health Administration, Georgia State University, Atlanta, Georgia, USA

²Department of Economics, Andrew Young School of Policy Studies, Georgia State University, Atlanta, Georgia, USA

³Georgia Health Policy Center, Andrew Young School of Policy Studies, Georgia State University, Atlanta, Georgia, USA

Correspondence to

Dr Abhay Nath Mishra, Institute of Health Administration, Georgia State University, PO Box 3988, Atlanta, GA 30302-3988, USA; amishra@gsu.edu

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ABSTRACT

Objective To assess the perceived readiness of Medicaid and Children's Health Insurance Program (CHIP) enrollees to use information technologies (IT) in order to facilitate improvements in the application processes for these public insurance programs.

Methods We conducted a concurrent mixed method study of Medicaid and CHIP enrollees in a southern state. We conducted focus groups to identify enrollee concerns regarding the current application process and their IT proficiency. Additionally, we surveyed beneficiaries via telephone about their access to and use of the Internet, and willingness to adopt IT-enabled processes. 2013 households completed the survey. We used χ^2 analysis for comparisons across different groups of respondents.

Results A majority of enrollees will embrace IT-enabled enrollment, but a small yet significant group continues to lack access to facilitating technologies. Moreover, a segment of beneficiaries in the two programs continues to place a high value on personal interactions with program caseworkers.

Discussion IT holds the promise of improving efficiency and reducing barriers for enrollees, but state and federal agencies managing public insurance programs need to ensure access to traditional processes and make caseworkers available to those who require and value such assistance, even after implementing IT-enabled processes.

Conclusions The use of IT-enabled processes is essential for effectively managing eligibility and enrollment determinations for public programs and private plans offered through state or federally operated exchanges. However, state and federal officials should be cognizant of the technological readiness of recipients and provide offline help to ensure broad participation in the insurance market.

BACKGROUND AND SIGNIFICANCE

The Affordable Care Act (ACA) of 2010 has mandated the establishment of online health insurance exchanges, allowing consumers to enjoy 'one stop shopping' for both public and private insurance coverage.¹ Several states have opted to create and run their own or partnership exchanges, and the federal exchange remains an option for citizens of other states. The use of electronic application processes within state or federal exchanges is expected to facilitate the routing of applicants to the appropriate health program and enable rapid and efficient processing of applications, as well as

electronic verification of income and citizenship. However, expanded insurance enrollment through online exchanges, as envisioned by the ACA, depends on the effective use of information technologies (IT) by families seeking coverage. Additionally, as all states are modernizing their Medicaid and Children's Health Insurance Program (CHIP) application processes,² consumers applying for coverage in these programs through traditional means will also need to be IT savvy in order to navigate the application process and enroll successfully. Thus, although health IT can facilitate patient empowerment and increase access to care and satisfaction,^{3–5} consumers need to have not only access to IT and the ability to use it effectively,⁶ but also a willingness to use it.

There are many reasons to believe that IT can improve the application process and programmatic satisfaction for Medicaid recipients in particular. It is well established that Medicaid participation rates are well below 100%.⁷ Enabling consumers to apply online may increase participation by reducing time and travel costs, decreasing the need to supply paper documentation, and accelerating the processing of applications post-submission. At the same time, online processes can also generate cost savings for states. For instance, Florida was able to reduce Medicaid application expenditures through increased use of IT.⁸ On the other hand, significant demographic differences in the use of IT related to race, age, education, and income suggest that IT may not be effective among the traditional Medicaid population.^{9–11} According to a recent report by Pew Internet & American Life Project, Internet adoption in the United States was 85% in 2011 among adults aged 18 and older.¹² Additionally, people have generally favorable opinions about health IT,¹³ and demographic differences in IT access and use are rapidly decreasing. Although these trends are encouraging, disparities in IT access and use remain significant.

One way in which minorities have reduced this gap is by the enhanced use of smart phones.¹² Recent health informatics research has suggested that mobile phones can provide a practical tool to collect research data,¹⁴ but there is a possibility that users provide less complete answers to free response questions when using smart phones than when using traditional computers.¹⁵ Due to small screen size and navigation issues, it remains challenging for people to use mobile phones to enter data

and complete online forms. This suggests that to obtain adequate and equitable uptake by the eligible population, it will be necessary to account for these limitations. The lack of mobile phone-ready enrollment applications and the difficulties associated with using them may explain why some states have not had as much success as Florida in transitioning towards online application processes.¹⁶ Although much has been written about consumer access to care using technology,^{17–20} there is relatively little research on IT-facilitated health insurance enrollment.

Beyond just access, the willingness of applicants to use technology to apply for public benefits is also consequential. For example, Heflin *et al*²¹ find that over half of survey respondents in Florida preferred face-to-face interactions with a caseworker rather than an Internet-based application for food assistance, predominantly because of a perception that the electronic application system was not adequately supported with respect to document processing or other customer assistance needs. If applicants rely on caseworkers to complete the application, even if using an electronic format, savings associated with electronic applications will be limited.

OBJECTIVES

Given this mixed evidence on the effectiveness of IT, we focus on a particularly vexing concern facing state and federal policy makers: to what extent do potential enrollees believe that IT can be used to improve the application process for public health insurance programs, and to what extent do they face access barriers to utilizing IT systems? Furthermore, how much and what type of enrollment assistance will these future enrollees need? These issues are particularly critical for state governments because they will play a significant role in implementing the ACA, and hence need to make decisions regarding consumer health IT use. We answer these questions through an analysis of Medicaid and CHIP enrollees in one southern state considering the implementation of a more IT-enabled application process for public insurance coverage.

MATERIALS AND METHODS

The authors were commissioned in the summer of 2012 to examine the perceptions of current Medicaid and CHIP enrollees about their access to and comfort with IT, and their views about utilizing IT to apply for coverage. We employed a concurrent mixed method study approach to include both qualitative and quantitative methods to examine our study questions.²² We chose this approach because of the short window of time available to collect data and the urgency of need for recommendations based on our study. Qualitative methods—focus groups—were used to gain a deeper understanding of the challenges and

concerns of current participants regarding the use of IT in the application process. Quantitative methods—questionnaire surveys—were used to quantify beneficiary access and willingness to adopt IT-enabled processes. We followed the fixed mixed methods design, that is, we prospectively decided to use both qualitative and quantitative methods in order to obtain comprehensive insights.²² We had multiple reasons for conducting a mixed method study: we were interested in triangulation; we aspired to present a more comprehensive account of consumer perceptions; we intended to present the process aspects of an online application; and we intended to enhance the credibility of our results.²³ Both quantitative and qualitative methods played important roles in the study. The qualitative and quantitative strands of the study were integrated during the interpretation phase, after the two sets of data were analyzed.

There are significant differences in eligibility requirements and the application processes themselves across Medicaid and CHIP, as shown in table 1. These differences, along with demographic differences between the cohorts, likely influence enrollee perceptions of the current processes and their willingness and ability to adopt IT enabled processes. We considered these differences carefully while conducting qualitative and quantitative analyses for those with Medicaid and CHIP experience. We include families with children because such families represent the largest number of Medicaid enrollees and those most burdened by the current processes. We exclude the aged, blind, and disabled Medicaid participants and those whose eligibility is tied to pregnancy because these individuals typically have different enrollment processes. For the survey, we stratified the sample to ensure statistical significance by program and for three distinct geographic regions in the State: A major metropolitan statistical area (MSA), mid to small metropolitan statistical areas (combined), and rural areas. Geographic diversity was sought because the research team had found attitudes and experiences with public programs to vary in previous mixed methods studies.

Participants for both studies were recruited using a list of phone numbers provided to the researchers by the state. These contact phone numbers come from the application data to the respective programs (Medicaid and CHIP). Many families have one or more participants in both programs simultaneously and, because of income instability, there is significant movement of children between programs. Therefore, the contact numbers at the level of the enrollee were de-duplicated and, where found in both programs were assigned to the CHIP stratum. The numbers included both cell- and land-lines, and were selected at random after stratification by program and geographic location. Focus groups were conducted separately for Medicaid and CHIP enrollees and locations were intentionally selected for

Table 1 Differences in eligibility and application processes

Medicaid	Children’s Health Insurance Program (CHIP)
Eligibility for children up to 133% of the Federal Poverty Level (FPL) to age 6 or to 100% of the FPL to age 19. Eligibility for parents qualified for Temporary Assistance for Needy Families (TANF).	Eligibility for children above the Medicaid family income limit up to 235% of FPL.
Medicaid eligibility is contracted to the State’s Division of Family and Children Services (DFCS).	CHIP enrollment is contracted to a third party administrator.
Applicants enroll in Medicaid by completing an application at their county DFCS office, via mail, through an outreach worker, or by phone.	Applicants enroll in CHIP online, or by phone, fax, or mail. No in-person options exist for enrollment in CHIP.
Children who are ineligible for Medicaid because their family income is too high are referred to CHIP and required to complete a new CHIP application.	Automatic screening and direct referrals for Medicaid eligibility when income is too low. This includes transfer of the documentation supplied by the family, to a Medicaid outreach worker who either processes the Medicaid application or follows up with the family for additional information.

geographic diversity. Once focus group sites were determined, phone numbers were provided for program participants living within certain zip codes in the state. Recruiters still screened family members to ensure that someone in the household had coverage through Medicaid or CHIP. If no family member reported coverage, they were excluded from the study. Recruiters also asked how long the family member had been enrolled to make sure that each focus group had participants with different lengths of program experience.

Focus group participants signed a written informed consent prior to their participation in the 2 h sessions. Participants in the survey provided oral consent after being informed about the purpose and length (20 min) of the survey. The institutional review board at the researchers' home institution approved the survey and interview guide, sample selection criteria, and informed consent processes.

Focus group methods

We conducted six Medicaid focus groups (56 participants) and two CHIP focus groups (17 participants). We aimed for theme saturation and studies were discontinued once our goal was achieved. Saturation was achieved sooner among CHIP participants as the application process is uniform across the State. In contrast, the Medicaid application process can be perceived to vary in its implementation by county depending on local staffing levels and applicant volume as the process often includes face-to-face interactions with caseworkers. Additionally, Medicaid applicants may also submit their applications by mail or fax. Thus, we needed more Medicaid focus groups to reach theme saturation.

The research team prepared an interview guide after reviewing prior literature and considering the goals of the study. The team deemed it necessary to explore participants' attitudes and experiences with current eligibility and enrollment processes, level of knowledge and use of technology, and potential suggestions for changes to the current eligibility processes. The lead qualitative researcher drafted questions for each section of the interview guide and received edits and feedback from the research team and the Medicaid/CHIP Eligibility Director. All focus groups were conducted by experienced facilitators.

The discussions were audio recorded and transcribed verbatim by experienced professionals. The lead researcher carefully read the transcripts and used a generalized inductive approach to identify emergent themes expressed by participants. The lead researcher shared a preliminary coding scheme with two additional researchers, who reviewed it and independently coded the transcripts. Subsequently, the team met to discuss and resolve minor differences in the classification of comments into those themes and the labels with which they were identified. The preliminary themes did not change significantly and a consensus was reached regarding the key emergent themes in the focus groups. The process used in this study is consistent with the ones used in the medical informatics literature.^{24–27}

Survey methods

We developed a preliminary survey questionnaire after reviewing the prior literature in health informatics and information systems, and discussing the application processes with state policy makers. The survey underwent several rounds of modifications and improvement. We then consulted researchers with domain expertise in Medicaid and CHIP enrollment, who suggested that we ensure that survey questions would not place undue burdens on respondents. We further refined our survey instrument based on these discussions. These steps ensured face

and content validity of the survey. The modified questionnaire was pilot-tested among recent Medicaid and CHIP recipients and improved iteratively four times, before being used in the actual survey. Medicaid and CHIP recipients answered up to 44 and 45 questions, respectively. The average duration was 20 min. The survey instrument is reported in the online appendix, a web only file.

We surveyed those responsible for enrolling family members in the State's Medicaid and CHIP programs via telephone about their access to the Internet, their use of IT to facilitate enrollment, and their preferences for a face-to-face encounter with an application assister versus completing the entire application process online. In total 4300 beneficiary phone numbers (split evenly between Medicaid and CHIP) were randomly selected and a total of 2013 families (with valid telephone numbers) completed the survey, representing an overall response rate of 47%. Multiple attempts were made to reach households which could not be reached in the first attempt. There was no significant difference in response rates by region or program (CHIP vs Medicaid). Phone numbers are associated with cases (family units), and sometimes a single phone number is associated with multiple cases, given that multiple families or sub-family units may live in a single household. Moreover, some families have enrollees in more than one program. In order to protect the identity of individuals and provide those surveyed with confidence that their information would be kept confidential, names associated with a particular phone number were not identified. Instead, the respondent provided information about the most recent enrollment/renewal process experience. Therefore, a small number of respondents answered questions about the program that was different from their pre-survey stratification cell. More of these individuals responded to questions relating to their prior CHIP experience although they were originally included in the Medicaid sample. Therefore, the number of CHIP respondents overall is slightly higher than the number of Medicaid respondents.

The survey was weighted to be reflective of the total number of unique telephone numbers (584 918) associated with Medicaid or CHIP enrollees at the start of the summer of 2012. This weighting takes into account the likelihood that a family was surveyed based on its original survey stratum, and uses post-stratification weighting adjustments based on the program identified by the respondent and the race and geographical location of the respondent. Data presented here utilize survey weights and statistical analyses of differences by population group, and are adjusted for the stratified sample design underlying the survey. The descriptive statistical analysis of the survey is straightforward and any comparisons of responses by groups (eg, CHIP vs Medicaid) uses standard χ^2 tests.

RESULTS

We provide qualitative and quantitative evidence that most, but not all, applicants are ready and able to utilize an IT-based application process. The focus group results identify the greatest frustrations participants have about the current processes and underscore the potential for IT-based processes to minimize those frustrations. Focus groups provide valuable qualitative and anecdotal evidence that set the context for understanding survey results. Accordingly, we first provide a synopsis of the focus group findings and then discuss survey results.

Focus group results

Our analysis of the qualitative data obtained from focus groups revealed three prominent themes. First, although participants

concluded that documentation was necessary to qualify for benefits, many were concerned about the onerous and repetitive documentation requirements. Participants expressed frustrations about resubmitting documents when the information content, such as birth certificates and social security numbers, does not change over time. One Medicaid participant noted, “The birth certificates are \$25 a piece (for my two children). Now \$50 for some people may not be much, but for our family, it is. They won’t accept a copy. You have to have a certified birth certificate.” A CHIP participant mentioned, “That’s my child’s birth certificate. I just feel like that is important and should not be mailed to anybody.” Another Medicaid participant commented about the strict formatting requirements of the documents, “It is just hard to get them what they want in the form that they want it... They didn’t like the format my pay stubs were in... You know it is kind of embarrassing to go to your job and ask for those sorts of things.”

The lack of an electronic process for submitting Medicaid applications and the required documentation leads to a substantial volume of paperwork being submitted to different locations at different times for the same application. The volume of paperwork combined with the number of people involved in application processing leads to a ‘black hole’ of lost documentation, which causes concerns of identity theft and lost health benefits. One participant mentioned, “They will suspend your Medicaid because they were wrong. You have done everything you are supposed to do, and they delay doing what they are supposed to do and lose your paperwork. Then you and your family suffer.” Because applicants and beneficiaries have experienced lost paperwork, they are inclined to submit the paperwork in-person in order to receive a receipt. This is aptly captured by this participant, “The person that takes your paperwork does not always turn it in. My son got cancelled... so when I had to redo my stuff this past month...I made them stamp my stuff to make sure that it was going back there.”

Difficulties accessing relevant workers for assistance constitute the second major theme from our analysis. When participants visited local offices to submit applications or get clarifications on Medicaid questions, they often became frustrated over the inaccessibility of staff. Respondents also complained about long wait times once in the office, difficulty in getting questions answered, and the inability to reach staff on the phone. One participant noted, “You go there as soon as they are open, and there are so many people in there that you may not get out until lunchtime. If they are not finished with you by lunch, you just sit there until they come back. Then, you have totally wasted a whole day.” Participants made some concessions for workers. They realized that due to budget cuts, there are now fewer caseworkers, who are overloaded, stressed, and responsible for a large number of public welfare programs, including food stamps. Furthermore, although Medicaid enrollees recognize the potential value in using IT in the application process, they also believe that some may still need access to, and benefit from, interaction with a caseworker. CHIP participants did not seem enthusiastic about personal interactions with caseworkers, describing such steps as ‘too time consuming’, ‘going backwards’, and ‘not needed’. A participant suggested, “The same things I can say over the phone, I can type into the computer.”

Finally, a third theme arose with respect to IT use to apply for coverage. When given an option to complete the benefits application online, most participants suggested that they would rather complete the process electronically than use the traditional paper-based method. The CHIP focus groups suggested that the online process works smoothly and beneficiaries do not

want it to change. Even though the online method was preferred by a vast majority, these participants cautioned that such a system could only be successful if accommodations were made for those who have neither the skills nor equipment to complete the process on their own. They do not feel that access to computers in such places as libraries and community centers would be sufficient because these facilities do not have staff to demonstrate the use of the computer or answer questions about the online application.

Survey results

Table 2 provides demographic comparisons for Medicaid and CHIP respondents. Medicaid respondents are generally younger, less likely to be employed, and more likely to be non-white and female. In addition, Medicaid respondents are less likely to have graduated from college and more likely to live in an urban location.

Table 3 reports survey results regarding Internet access. Most respondents have access to the Internet, but Medicaid

Table 2 Survey respondent demographics

	Medicaid		CHIP	
	Number	Share (%)	Number	Share (%)
Age				
16–24	78 765	17	11 361	9
25–34	168 848	37	52 681	41
35–44	109 860	24	36 866	28
>45	35 486	21	129 624	22
p Value (χ^2)	<0.0004			
Currently employed				
Yes	174 617	38	70 622	54
No	276 164	61	55 236	43
DK/refused	4513	1	3766	3
p Value (χ^2)	<0.0001			
Ethnicity				
Hispanic	62 674	14	19 812	15
p Value (χ^2)	=0.2747			
Race				
White	202 970	45	62 582	48
African American	216 837	48	50 735	39
All others	35 487	8	16 307	13
p Value (χ^2)	<0.0015			
Gender				
Female	416 362	91	111 539	86
Male	38 932	9	18 084	14
p Value (χ^2)	<0.0019			
Education				
Less than high school	59 829	13	13 876	11
High school	160 001	35	46 618	36
Some college or vocation	184 143	40	43 597	34
College graduate or higher	48 752	11	23 107	18
DK/refused	2569	1	2066	2
p Value (χ^2)	=0.0004			
Geography				
Rural	179 729	39	48 464	37
Urban	275 565	61	81 160	63
p Value (χ^2)	<0.09			
Survey population (weighted)	455 294		129 624	
Sample size (N)		846		1167

CHIP, Children’s Health Insurance Program.

Table 3 Internet access

	Access at home		Access via mobile		No or limited access*	
	N	%	N	%	N	%
All Respondents	371 555	65.3	33 342	5.7	180 021	30.8
Program						
Medicaid	284 233	62.4	26 219	5.8	144 842	31.8
CHIP	87 322	67.4	7 123	5.5	35 179	27.1
p Value (χ^2) =0.1752						
Currently employed						
Yes	163 641	66.7	11 703	4.8	69 896	28.5
No	204 612	61.7	21 533	6.5	105 254	31.8
DK/refused	3301	39.9	106	1.3	4871	58.8
p Value (χ^2) <0.02						
Ethnicity						
Hispanic	195 901	66.5	15 925	5.3	87 173	29.2
Non-Hispanic	175 654	61.4	17 417	6.1	92 848	32.5
p Value (χ^2) =0.4070						
Race						
White	172 553	65.0	14 161	5.3	78 839	29.7
African American	161 344	60.3	18 635	6.9	87 593	32.7
All others	37 658	72.7	547	1.1	13 589	26.2
p Value (χ^2) <0.0389						
Gender						
Female	340 124	64.4	29 468	5.6	158 309	30.0
Male	31 460	55.1	3874	6.8	21 712	38.1
p Value (χ^2) =0.1903						
Education						
Less than high school graduation	30 472	41.3	4429	6.0	38 805	52.7
High school graduation	111 729	54.1	13 229	6.4	81 661	39.5
Some college or vocation	166 437	73.0	12 020	5.3	49 641	21.8
College graduate or higher	60 220	83.8	3539	4.9	8100	11.3
p Value (χ^2) <0.0001						
Geography						
Rural	132 787	58.2	12 559	5.6	82 848	36.3
Urban	238 768	66.9	20 784	5.8	97 174	27.2
p Value (χ^2) <0.009						

*Limited access is defined as access outside the home (work, school, public library, or other computer not in the home of the respondent).
CHIP, Children's Health Insurance Program.

respondents are more likely than CHIP respondents to have no access or access that is limited to reliance on a work computer, a computer in a library, a computer in the home of a friend or family member, or some other location (32% vs 27%, difference not significant). Despite beliefs to the contrary among many policy makers and researchers, a majority of people benefitting from the two programs have access to the Internet. The majority across both groups have access through a home computer (65%), with a small but significant group having access through a mobile device (6%). Additional analysis of Internet access, shown in table 3, suggests that enrollees with more education, who are white, who are working, or who are living in urban areas are more likely to have private access to the Internet.

Table 4 provides survey responses by program enrollment (correlated with income group) for questions regarding the respondents' most recent application experience and IT skills and preferences. We note that the majority, in both the Medicaid and CHIP programs, are satisfied with the current

enrollment processes, with CHIP enrollees slightly more satisfied. Only a small minority of survey respondents enrolled in either program answered in a manner that suggests that the application is difficult to complete (6% for Medicaid and 3% for CHIP). This result is somewhat inconsistent with the findings noted in theme one from the focus groups and points to the value of a mixed method study. It is likely that those who have strong feelings about the experience of enrolling in Medicaid participate more readily in a focus group and voice their opinions strongly in the session.

While greater than 80% of respondents felt comfortable with computers, only slightly more than half the respondents felt comfortable using computers to send scanned or photographed documents. Just over half the respondents (53% of Medicaid and 59% of CHIP) agreed that online help is as useful as talking to a knowledgeable person.

Medicaid respondents were asked to think about selected steps in the application process and indicate their preference for use of the Internet rather than face-to-face interaction on a scale of 1 to 5, with 5 meaning a complete preference. CHIP respondents were given the inverse questions and asked to indicate their preference for face-to-face interactions, with 5 meaning complete preference. Table 5 reports the percentage of respondents in Medicaid with a 'weak' preference for IT, meaning they evaluated their preference for IT as a 1 or a 2, and CHIP respondents with a strong preference for face-to-face, meaning they evaluated their preference for face-to-face a 4 or 5. Despite their different prior experiences, the share reporting a weak preference for IT-enabled or a strong preference for face-to-face processes is not much different between CHIP and Medicaid respondents across these potential steps in the process. A majority of respondents in both groups would prefer to use the Internet to complete their application, consistent with the third theme from the focus groups. Across both groups the weakest preference for IT enabled processes was reported for income and identity verification. While we do not report differences in IT preferences across demographic groups, we observed that across most responses, rural residents were significantly less likely to prefer Internet over face-to-face interactions (see figure 1).

DISCUSSION

Online, rather than face-to-face, interactions are increasingly becoming the dominant medium of communication between the government and its citizens.⁹ The vast majority of Medicaid and CHIP participants in our study state have access to the Internet, with the largest proportion enjoying this access at home. This is consistent with a recent national survey of Internet use which included respondents of all ages and demographic groups.¹² Our survey results are also consistent with their finding that increased access is associated with higher income and education levels and lower levels of access with rural residents and the unemployed.

The CHIP program in the state surveyed has always had an online application and as of 2012, approximately 30% of applications are taken electronically, 60% are through electronic referrals from other public benefit programs, and less than 6–7% are submitted on paper. The difference in the percentage of applicants with access to the Internet and our survey results suggests that additional factors play a role in an applicant's decision to use the Internet in the application process. Thus, while Internet access is necessary for Medicaid applicants to use online systems, if the state's CHIP program is any indication, it

Table 4 Experience with the current application process and IT preferences

	Medicaid		CHIP		χ^2 (p value)
	N	%	N	%	
Respondents who					
Are dissatisfied with current application processes	45 044	9.9	5703	4.4	0.0012
Disagree that current application process is easy	27 113	6.0	3430	2.6	0.0029
Agree that lost paperwork is a barrier to administrative processes	417 821	91.8	114 966	88.7	0.1877
Report contacting the program for assistance	96 153	21.1	28 375	21.9	0.4127
Of those contacting program					
Contact via phone	72 463	15.9	25 921	20.0	0.0001
Satisfied with call center experience	40 253	8.8	22 185	17.1	0.0001
Personal visit	19 555	4.3	710	0.5	n/a*
Satisfied with personal visit	14 471	3.2	n/a	n/a	n/a*
Respondents who					
Feel comfortable working with computers	371 544	81.6	108 701	83.9	0.6642
Feel comfortable sending scanned paperwork to people	249 658	54.8	85 806	66.2	0.0014
Feel comfortable sending pictures of paperwork to people	242 380	53.2	69 974	54.0	0.4127
Agree that online help is as useful as talking to a knowledgeable person	239 476	52.6	76 105	58.7	0.0275
Agree that IT allows for application for benefits at their convenience	365 718	80.3	112 058	86.4	0.0031
Share needing someone trustworthy to guide them through the process	273 580	60.1	69 971	54.0	0.0263

*n/a means a formal statistical comparison could not be made because too few CHIP respondents made a visit to the office and none of these reported satisfaction with the visit. CHIP, Children’s Health Insurance Program; IT, information technologies.

is not sufficient; applicants may not completely prefer this mode of application for two reasons.

First, although the manual document submission process for Medicaid can be cumbersome, the alternative presents its own set of challenges. For instance, our results indicated that while greater than 80% of respondents feel comfortable working with computers, a much lower percentage—53–66% depending on the program—feel comfortable sending scanned or photographed paperwork electronically. Additionally, applicants’ access to the necessary hardware and software, their skill at uploading scanned documents, and their willingness to use such technology may differ significantly. An effective remedy to this problem could be increased use of electronic income and citizenship verification by states through state vital records databases and the federal data hubs that support ACA marketplace enrollment. The state considered in this paper uses its vital records to verify citizenship for Medicaid and CHIP applicants, but manual intervention is still necessary when there is a discrepancy or to verify citizenship of those who have moved across state lines.

Second, applicants may perceive a need to talk with eligibility workers or other enrollment assistors to understand the requirements and intricacies of various programs. About 20% of our survey respondents reported contacting the programs for application assistance. However, both the focus group results (theme 2) and the survey (table 4) suggest some level of dissatisfaction with those interactions. A potential solution to the above issues is to leverage the technology to provide help to applicants. Recent advances in IT, such as online chats, videos, audios, and text, enable easy access to program and eligibility information, while also providing the necessary interactivity that some users may require. Industries such as online travel, insurance, and retail use such communication channels extensively and also offer tracking systems to ensure customers that their applications or orders are being processed. According to our survey results (table 4), about 53% of the Medicaid respondents and 59% of CHIP respondents agree that online help is as useful as talking to someone knowledgeable in-person. Though online help and call centers can provide some relief to overburdened

Table 5 Preferences in the application process

	Medicaid; reporting weak preferences for IT		CHIP; reporting strong preference for face-to-face	
	N	Share (%)	N	Share (%)
Access to application forms	136 750	30.0	38 627	29.8
Completing the application	141 272	31.0	37 680	29.7
Sending supporting paperwork	176 502	38.8	45 382	35.0
Eligibility determination	149 650	32.9	43 196	33.3
Verifying identity and income	188 961	41.5	52 359	40.4
Answering customer questions	171 962	37.7	51 597	39.8
Renewal process	140 285	30.8	40 289	31.1
Entire application process	146 735	32.2	41 082	31.7

CHIP, Children’s Health Insurance Program; IT, information technologies.

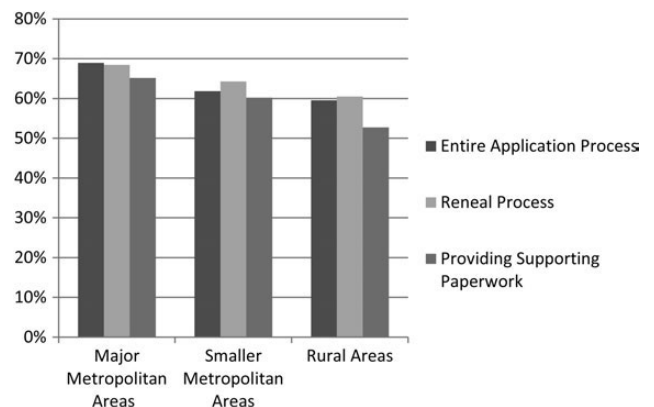


Figure 1 Respondents’ preferences for Internet versus face-to-face interaction by region.

caseworkers, our results are also consistent with Heflin *et al.*,²¹ who find that more than half of survey respondents still prefer face-to-face interactions with a caseworker rather than an Internet-based application for food assistance. Despite long-standing options for online enrollment in CHIP, about one third report a preference for face-to-face options for enrollment. Guidance provided by the United States Department of Health and Human Services also underscore that caseworkers may be necessary to support complex cases and specific applicant needs.²⁸

When asked about their preferences, a third indicated a weak preference for using IT in the entire application process or a strong preference for face-to-face interaction. This theme was reiterated in the focus groups. One Medicaid focus group participant said: "I just go and get the paper and fill it out. That way I know it gets submitted." Figure 1 suggests that rural applicants, who would potentially benefit the most in terms of saving on travel time and expenses through the use of an online application, had lower preferences for IT enabled application processes than those in a metropolitan area. Hence from a policy perspective, it is prudent to offer help via both online and offline channels. This may be particularly important for potential enrollees who have routine questions about the program or who have technical issues while completing the application. This may also serve to address overburdened staff members who have difficulty meeting current demand for assistance.

The success of the ACA will, in part, be based on take up of plans through the state and federal exchanges and, in states where applicable, through expanded Medicaid eligibility. Our findings suggest a small but significant group of potentially eligible consumers will be unable to access plans sold only online because of limited or no ability to access the web. It is important to consider the prevalence of mobile devices for some as the primary access point for the Internet. The design of such websites should consider the potential limitations in providing text responses and be designed to accommodate these users. As an example, Washington DC's health insurance exchange has developed DC Health Link App 1.0, which allows users to find an insurance broker or an assister. The 2.0 release of the app will allow consumers to shop and enroll.²⁹

Our findings speak more generally to the importance of having well-trained navigators assist consumers in the online insurance exchanges and well-trained enrollment assisters who continue to support public insurance applicants. In particular, we find that respondents most likely to experience issues with an Internet-based application are those with a high school degree or less, those who are African American, rural residents, and those not currently working. This group of recipients would make an apt target for navigators and enrollment assisters who will need to find ways to make IT-enabled processes accessible to those most at risk for not enrolling in coverage for which they are eligible.

Researchers and policy makers should be cautious while generalizing our results to a broader population, as only families that enrolled in coverage were included in our survey and focus groups; their preferences may not be similar to those who have been denied or not enrolled in a public insurance program. Second, this study reports the demographic characteristics of the survey respondent, who may not be the actual enrollee of the program. This was done to protect the identities of the recipients, but leaves open the possibility of biased or inaccurate responses. Finally, 47% of contacted households completed the survey, which may raise concerns of non-response bias. Considering our surveys were uncompensated and long, a 47%

completion rate represents a satisfactory response rate, especially because respondents were chosen randomly and do not differ significantly from the broader Medicaid and CHIP population in the state. This completion rate also compares favorably with a recent analysis by the Pew Research Center, which found that telephone survey response rates in 2012 fell to 9% from 25% in 2003.³⁰ Future research may consider incentivizing Medicaid and CHIP survey respondents.

CONCLUSION

This paper contributes to both technology-enabled healthcare access and empowerment literature and health policy literature by evaluating efficiency and adaptation issues in the context of potential IT-related changes in the Medicaid and CHIP application processes. Some policy makers and advocates have expressed reservations about moving away from a paper-based, in-person application system towards an online application system for Medicaid coverage. There is concern about access barriers to technology as well as a potential disparity in IT familiarity among the Medicaid population. In contrast, proponents of increased IT use emphasize that an online application system can potentially expand access to those who face transportation challenges or may have difficulty taking leave from work to visit a state office during regular business hours. In addition, such an online system offers the possibility of cost savings through increases in efficiency.

While our results provide support for increasing the role of IT in the Medicaid application process, we also found that a significant percentage of respondents place value on paper-based applications and the assistance they receive through face-to-face interactions with caseworkers. Thus, although the use of IT-enabled processes is essential for effectively managing eligibility and enrollment for public programs and private plans offered through state and federal exchanges, policy makers should be cognizant of the technological readiness of recipients and strive to provide offline help to those who may need it to ensure broad participation in the insurance market.

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REFERENCES

- 1 Eibner C, Hussey PS, Girosi F. The effects of the Affordable Care Act on workers' health insurance coverage. *N Engl J Med* 2010;363:1393–5.
- 2 Medicaid.gov. *State Medicaid & CHIP policies for 2014*. Baltimore, MD: Centers for Medicare & Medicaid Services. <http://medicaid.gov/Medicaid-CHIP-Program-Information/By-State/By-State.html> (accessed 20 Apr 2014).

- 3 Ancker JS, Barrón Y, Rockoff ML, *et al.* Use of an electronic patient portal among disadvantaged populations. *J Gen Intern Med* 2011;26:1117–23.
- 4 Goel MS, Brown TL, Williams A, *et al.* Patient reported barriers to enrolling in a patient portal. *J Am Med Inform Assoc* 2011;18(Suppl 1):i8–i12.
- 5 Schnipper JL, Gandhi TK, Wald JS, *et al.* Effects of an online personal health record on medication accuracy and safety: a cluster-randomized trial. *J Am Med Inform Assoc* 2012;19:728–34.
- 6 Bitton A, Flier LA, Jha AK. Health information technology in the era of care delivery reform: to what end? *J Am Med Assoc* 2012;307:2593–4.
- 7 Sommers B, Kronick R, Finegold K, *et al.* *Understanding participation rates in Medicaid: implications for the affordable care act.* Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, 2012. <http://aspe.hhs.gov/health/reports/2012/medicaidtakeup/ib.pdf> (accessed 6 Feb 2014).
- 8 Cody S, Reed D, Basson D, *et al.* *Simplification of health and social services enrollment and eligibility: lessons for California from interviews in four states.* Washington, DC: Mathematica Policy Research, 2010. http://www.mathematica-mpr.com/publications/PDFs/family_support/socialservices_CA.pdf (accessed 20 Apr 2014).
- 9 Czaja S, Sharit J, Lee CC, *et al.* Factors influencing use of an e-health website in a community sample of older adults. *J Am Med Inform Assoc* 2013;20:277–84.
- 10 Goel MS, Brown TL, Williams A, *et al.* Disparities in enrollment and use of an electronic patient portal. *J Gen Intern Med* 2011;26:1112–16.
- 11 Weingart SN, Rind D, Tofias Z, *et al.* Who uses the patient Internet portal? The PatientSite experience. *J Am Med Inform Assoc* 2006;13:91–5.
- 12 Zickuhr K, Smith A. *Home Broadband 2013.* Washington, DC: Pew Research Center's Internet & American Life Project, 2013. <http://www.pewinternet.org/2013/08/26/home-broadband-2013/> (accessed 20 Apr 2014).
- 13 Ancker JS, Silver M, Miller MC, *et al.* Consumer experience with and attitudes toward health information technology: a nationwide survey. *J Am Med Inform Assoc* 2013;20:152–6.
- 14 Whitford HM, Donnan PT, Symon AG, *et al.* Evaluating the reliability, validity, acceptability, and practicality of SMS text messaging as a tool to collect research data: results from the Feeding Your Baby project. *J Am Med Inform Assoc* 2012;19:744–9.
- 15 Mavletova A. Data quality in PC and mobile web surveys. *Soc Sci Comput Rev* 2013;31:725–43.
- 16 Keel J. *An Audit Report on The Health and Human Services Commission's Texas Integrated Eligibility Redesign System (TIERS).* Austin, TX: State Auditor's Office, 2007. Report no. SA008-009. <http://www.sao.state.tx.us/reports/main/08-009.pdf> (accessed 6 Feb 2014).
- 17 Buntin MS, Jain SH, Blumenthal D. Health information technology: laying the infrastructure for national health reform. *Health Affairs* 2010;29:1214–19.
- 18 Chiasson M, Davidson E. Pushing the contextual envelope: developing and diffusing IS theory for health information systems research. *Inform Organ* 2004;14:155–83.
- 19 Ozkaynak M, Brennan PF, Hanauer DA, *et al.* Patient-centered care requires a patient-oriented workflow model. *J Am Med Inform Assoc* 2013;20:e14–16.
- 20 Singh R, Mathiassen L, Stachura ME, *et al.* Sustainable rural telehealth innovation: a public health case study. *Health Serv Res* 2010;45:985–1004.
- 21 Heflin CM, London AS, Mueser PR. Clients' perspective on a technology-based food assistance application system. *Am Rev Public Adm* 2013;43:656–73.
- 22 Creswell JW, Plano Clark V. *Designing and conducting mixed methods research.* Los Angeles, CA: SAGE Publications, 2011:53–106.
- 23 Bryman A. Integrating quantitative and qualitative research: how is it done? *Qual Res* 2006;6:97–113.
- 24 Ash JS, Gorman PN, Lavelle M, *et al.* A cross-site qualitative study of physician order entry. *J Am Med Inform Assoc* 2003;10:188–200.
- 25 Kim KK, Browe DK, Logan HC, *et al.* Data governance requirements for distributed clinical research networks: triangulation perspective of diverse stakeholders. *J Am Med Inform Assoc* 2014;21:714–19.
- 26 Sittig DF, Krall M, Kaalaas-Sittig J, *et al.* Emotional aspects of computer-based provider order entry: a qualitative study. *J Am Med Inform Assoc* 2005;12:561–67.
- 27 Veint TC, Campbell TR, Kruger DJ, *et al.* A question of trust: user-centered design requirements for an informatics intervention to promote the sexual health of African-American youth. *J Am Med Inform Assoc* 2013;20:758–65.
- 28 Department of Health and Human Services. *Guidance for exchange and Medicaid information technology (IT) systems, version 2.0.* <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Data-and-Systems/downloads/exchangemedicaiditguidance.pdf> (accessed 20 Apr 2014).
- 29 DC Health Link. *DC Health Link New Mobile App 1.0 Brings Health Insurance Resources to Consumers' Smartphones.* <https://dchealthlink.com/node/1165> (accessed 20 Apr 2014).
- 30 Pew Research Center for the People & the Press. *Assessing the representativeness of public opinion surveys.* <http://www.people-press.org/2012/05/15/assessing-the-representativeness-of-public-opinion-surveys/> (accessed 20 Apr 2014).