This study describes results from a survey of organizations that deliver information to farmworkers and three semi-structured interviews related to mobile technology projects that address farmworker information needs. The survey was conducted to determine how organizations currently meet farmworker information needs and explore whether mobile technology is part of their information solutions. The interviews were conducted to provide examples of mobile solutions and offer considerations for organizations interested in exploring mobile options.

Headings:

- Farmworkers – United States
- Farmworkers – Information needs
- Farmworkers – Mobile technology
- Surveys – Nonprofit organizations
A SURVEY OF HOW ORGANIZATIONS ADDRESS THE INFORMATION NEEDS OF FARMWORKERS AND CONSIDERATIONS FOR MOBILE SOLUTIONS

by
Alison Blaine

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Approved by
Cliff Missen
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Introduction

Hired agricultural workers, commonly called farmworkers, are among the lowest paid workers in the United States and work in one of the top three most dangerous jobs (NC Farmworker Institute, 2012). Starting as young as twelve years old, farmworkers work long hours in the fields and are exposed to numerous health hazards, including pesticide exposure, heat exhaustion, tobacco sickness, tuberculosis and other infectious diseases (Hansen and Donohoe, 2003, pg. 155). Not only is the job hazardous to health, it pays poorly; half of all farmworkers earn less than $7,500 per year (NC Farmworker Institute, 2012).

Farmworkers are predominantly immigrants who come temporarily to the United States on H2-A guestworker visas or are undocumented. Among farmworkers surveyed in 2010 by the United States Department of Labor in the National Agricultural Workers Survey, 74% were from Mexico and 52% were undocumented. Many of these workers have little to no knowledge of their surroundings and often live in isolated work camps and have significant barriers to accessing transportation, legal or health services. Exploitation in the fields is a common problem (Robinson et al, 2011) for the workers, who may risk deportation if they make any complaints about their working conditions (Health Outreach Partners, 2010, pg. 45).

Workers are additionally isolated because they often come to the U.S. alone. According to a 2010 study by Health Outreach Partners, 78% of workers are males (pg.
12) and 60% are unaccompanied by their spouses, children or family members (NC Farmworker Institute, 2012).

To combat the isolation of farmworking life and to remain connected to friends and family across state and national borders, the vast majority of farmworkers are purchasing mobile phones (Sandberg, 2013), including low-cost smartphones. While Fisher et al (2004) have described farmworkers as information poor, the presence of mobile phones in farmworker communities may present new information sharing opportunities for farmworkers and for local agencies who desire to respond to workers’ information needs. It is possible, then that mobile information solutions geared to farmworkers may be worth developing, and some are already being developed. However, unfortunately for organizations who may be considering ways to use mobile technology to provide information to farmworkers, little has been written about the mobile projects that currently exist or how they have been evaluated.

Considerable investment is required in creating mobile information solutions such as text messaging campaigns, web applications and native phone apps. For many nonprofit organizations, the investment is costly and the risk is high: it is unclear whether the information solution will be useful to the workers, who may prefer other information delivery mechanisms, such as face-to-face interaction.

For organizations interested in exploring these options, a current survey is needed to determine how organizations are currently addressing farmworker information needs and to what extent mobile technology is part of these solutions. Also, examples of projects currently incorporating mobile technology are needed so that organizations can make better decisions about whether to pursue similar projects.
This paper is aimed at organizations that work with farmworkers and are interested exploring mobile technology in addressing farmworkers’ information needs and are looking for recommendations on what to consider when deciding on whether to develop a mobile solution.
Literature Review

It is helpful to consider the changing landscape of mobile technology and migrants to the U.S. to understand the current context of farmworkers using mobile phones. There are some studies that discuss how and why migrants use information communication technologies (ICTs), such as mobile phones, Internet, and radio. A major reason is that ICTs provide migrants to stay in touch with families back home as never before (Kandachar et al, 2008, Tenhunen, 2006), in addition to doing other activities such as conducting business and political organizing (Panagokos and Horst, 2006). Mobile phones also help poor, rural migrants become more able to get help in times of emergency, as well as provide evidence of identity or ownership (Kandachar et al, 2008).

Within migrant communities and communities with which migrants overlap (day laborers, construction workers, seasonal farmworkers, low-income rural communities), little research has been done on mobile phone usage, but a few studies are notable.

Muse-Orlinoff et al (2009) argue that while cost and literacy remain barriers to using communication technology, certain individuals within migrant communities who have access to technology and the ability to use it serve as “hubs” that both enable and control information flows between the United States and home. In cash-strapped rural contexts, these hub individuals are integral to maintaining migrant communication networks to Mexico and other countries.

Baron, Neils and Gomez (2013) find that among day laborers in Seattle, Washington, who share similar demographics with migrant farmworkers in terms of
ethnicity, socio-economic standing, and immigration status, 86% of men and 100% of women owned a cell phone, but only 25% used their phone to access the Internet, while 43% used text messaging. Additionally, computers were used less and owned less frequently than mobile phones (pg. 70). The high popularity of mobile phones versus computers and low popularity of using phones like computers may suggest that these phones are mostly used for making calls. In a low-literacy environment, this makes sense. As Tenhunen (2006) notes, “communication by [mobile] phone does not require literacy” (pg. 515).

*Latinos in the United States and Mobile Phones*

Because U.S. farmworkers are predominantly from Mexico and Central America, research into the use of mobile technology among Latinos in the United States is relevant to this project. Previous research shows that mobile phones are very important in the communication patterns of Latinos in the United States, although how the phones are being used and whether they are smartphones varies by income bracket and age.

Leite et al (2014) argue that cell phones are a feasible method of HIV information delivery to foreign-born Latinos in Baltimore, but that only 60% of the 209 individuals surveyed wanted information sent via text message (pg. 677).

According to the Pew Hispanic Center’s 2010 study, 48% of foreign-born Latinos use data applications on their cell phones, but only 10% of Latinos making less than $30,000 per year with no Internet connection at home use cell phones to connect to the Internet. As noted earlier, farmworkers are in the less than $30,000 a year category. While less than English-speaking Latinos, 44% of Spanish-language dominant Latinos “use their cell phones for something other than traditional calls” (pg. 21).
Farmworkers and Mobile Phones

On the topic of farmworkers and mobile phones, Price et al (2013) find that the vast majority of migrant farmworkers (80%) surveyed in South Carolina had mobile phones and among them, had positive attitudes (81%) about using mobile phones for mobile health interventions.

Sandberg (2013) finds that 85% of farmworkers surveyed owned mobile phones, but in contrast to Price et al’s study, that the majority of workers (60%) were opposed to receiving health information via text messaging, while almost all approved of receiving it in person. Additionally, workers’ phone numbers changed often. Two-thirds of workers had a different cell phone number than twelve months before. From this data, Sandberg finds that face-to-face information delivery is the best way to address the information needs of farmworkers, at least when it comes to health information.

Garcia (2013), however, argues that mobile phones enforce hierarchical power relations between male and female farmworkers in Ohio, especially among undocumented workers, and that phones do not necessarily empower women, but serve as another way for men to exert dominance over women and increase the power differential.

Farmworkers’ Information Behavior and Needs

While few studies examine the information behavior and information needs of farmworkers, what is clear is that farmworkers generally lack information on topics of healthcare and work-related illnesses. Trust is an issue when it comes to information seeking behavior. Fisher et al (2004) find that migrant farmworkers in Yakima, WA are more likely to use personal networks as sources of information over other established, or mainstream, sources.
Job-related information is not always accessible for farmworkers, even for the most common farmwork-related illnesses. R. Parrott et al (1999) evaluate migrant farmworkers’ access to health information about pesticides and conclude that while it is common that migrant farmworkers suffer from pesticide exposure and related-illnesses, the majority lack adequate information about pesticides, risks and illnesses (pg. 59).

Studies show farmworkers want more access to healthcare information. Meade et al (2003), in their study to design prostate cancer information for migrant workers, find that workers had a need and desire to learn more about cancer, and preferred information in non-textual format, such as video or discussion, but would accept text-based information with visuals and easy-to-read language (pg. 971). They also found that participants had a distrust of the medical system and doctors, and preferred getting cancer information from cancer survivors and patients over physicians (pg. 971).

The literature suggests that information needs of farmworkers are many and diverse, and that mobile technology might also worsen existing gender inequalities in the farmworker population. It also suggests that farmworkers want access to more information, and that low literacy is an issue of concern in designing that information. Research remains to be done, however, in terms of how organizations are addressing worker information needs and to what extent mobile and other ICTs are incorporated into those services.

This paper addresses the following questions:

- What are organizations that work directly with farmworkers doing to identify information needs?
- How are those organizations addressing workers’ information needs?
● What approaches do agencies currently take in sharing information to farmworkers?

● To what extent are information and ICTs being utilized in providing information services to farmworkers?

● Do mobile information solutions have the potential to be successful in addressing the information needs of farmworkers?

● What design considerations are organizations using in designing informational materials to farmworkers?
Methodology

Data was collected using a 13-question online survey (see Appendix A) and semi-structured interviews (Boyce and Neale, 2006). The online survey was administered between February 11 and March 16, 2015 at 12pm and included a combination of multiple selection and short answer questions. A survey link was sent to 69 organizations that deliver services to farmworkers by means of two member association listservs. These listservs are not public, and assistance was needed in sending the email requests out from listserv managers. The listservs are networks of organizations that provide services to farmworkers. One of the networks is in North Carolina and one is nationwide.

The contact pool included migrant health clinics, migrant head start organizations, legal aid agencies, unions, advocacy organizations, job assistance and vocational training programs, and ministries. Out of 69 organizations, 30 submitted responses. One follow-up reminder email was sent on February 23. All responses were complete and useful for the analysis.

Three semi-structured one-one-one interviews were also conducted by phone with professionals who currently or in the past have worked on projects addressing farmworker information needs using mobile technology. Mobile solutions were emphasized because of the increase in numbers of farmworkers with mobile phones, and these interviews may be helpful for other organizations considering developing mobile solutions. These individuals were identified through Internet research and snowball sampling.
Limitations

While this study hopes to provide a comprehensive review of the kinds of information services provided to farmworkers by agencies working directly with them, no workers were interviewed directly regarding those services. That information would offer more insight into whether farmworker information needs are being met by the organizations, and which types of information delivery are more effective. This study will not evaluate whether certain services or technologies are more effective than others, only that they are being done.

Approximately one-third of the data from the online survey comes from organizations North Carolina. It is possible that these results are biased to reflect the reality in North Carolina, where there are high numbers of farmworkers working as guest workers on H-2A visas (NC Farmworker Institute, 2012). While the survey pool included organizations from 49 states and Puerto Rico, it is not clear how many other areas of the country are represented from the survey data, except for California. Geographic information should have been requested in the survey to provide a clearer picture of this. It is possible that the findings are not generalizable to organizations in all areas of the country that provide information to farmworkers.
Findings of the Survey

Question One asked respondents if their organization provides information to farmworkers. All 30 organizations that took the online survey replied that they address farmworker information needs.

Question Two asked respondents to indicate what percentage of their client base are farmworkers. Most serve primarily farmworkers as their client base, but not all. The breakdown is as follows:

<table>
<thead>
<tr>
<th>Percentage range</th>
<th>Number of organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100%</td>
<td>21</td>
</tr>
<tr>
<td>50-75%</td>
<td>2</td>
</tr>
<tr>
<td>5-20%</td>
<td>6</td>
</tr>
<tr>
<td>N/A</td>
<td>1</td>
</tr>
</tbody>
</table>

While one organization replied “N/A” to the question, that respondent also that the organization provides information to farmworkers, mostly through face-to-face community outreach.

Question Three asked respondents about whether their farmworker clients are migrant and/or seasonal. The definitions of migrant and seasonal were not provided on the questionnaire, but the question assumed the following definitions: migrants have a permanent residence elsewhere and seasonal workers permanently reside in the same place where they do farm work. The breakdown of which organizations serve migrant and/or seasonal farmworkers is as follows in Table II. Few organizations serve only seasonal workers.
Table II. Are farmworker clientele migrant or seasonal? (N=30)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number of organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both</td>
<td>13</td>
</tr>
<tr>
<td>Mostly migrant</td>
<td>12</td>
</tr>
<tr>
<td>Mostly seasonal</td>
<td>5</td>
</tr>
</tbody>
</table>

Question Four asked respondents to indicate what types of information they provide to farmworkers. The majority of organizations provide multiple types of information to farmworkers, locational/community resources (63.3%), health and pesticide safety (63.3%), education (including ESL) (60%), legal (43.3%), job finding services (10%), vocational training (6.7%), child development (3.3%), DACA (Deferred Action for Childhood Arrivals) (3.3%), and academic assistance for dependents (3.3%). The breakdown is as follows (see Figure I):

Figure I. Types of information that organizations provide to farmworkers (N=30)

![Types of information provided to farmworkers](image)

Question Five asked how organizations deliver information to farmworkers. From the survey, fifteen ways were identified, including face-to-face (community outreach and individual meetings) (100%), paper handouts/brochures (93.3%), phone calls (66.6%), website (50%), radio (22%), emails (20%), Facebook/social media (16.7%), text (13.3%),
presentations and workshops (10%), TV (6.7%), YouTube (3.3%), DVD (3.3%), theatre (3.3%), documentary (3.3%), mural arts (3.3%), (see Figure II).

**Figure II. Ways organizations deliver information to farmworkers (N=30)**

<table>
<thead>
<tr>
<th>Method</th>
<th>Number of affirmative responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face</td>
<td>30</td>
</tr>
<tr>
<td>Paper handouts/brochures</td>
<td>3</td>
</tr>
<tr>
<td>Phone calls</td>
<td>2</td>
</tr>
<tr>
<td>Website</td>
<td>1</td>
</tr>
<tr>
<td>Radio</td>
<td>1</td>
</tr>
<tr>
<td>Emails</td>
<td>1</td>
</tr>
<tr>
<td>Facebook/social media</td>
<td>1</td>
</tr>
<tr>
<td>Text messaging</td>
<td>1</td>
</tr>
<tr>
<td>Presentations/Workshops</td>
<td>1</td>
</tr>
<tr>
<td>TV</td>
<td>1</td>
</tr>
<tr>
<td>YouTube videos</td>
<td>1</td>
</tr>
<tr>
<td>DVD</td>
<td>1</td>
</tr>
<tr>
<td>Theatre</td>
<td>1</td>
</tr>
<tr>
<td>Mural arts</td>
<td>1</td>
</tr>
<tr>
<td>Documentary</td>
<td>1</td>
</tr>
</tbody>
</table>

Question Six asked how the organization most frequently delivers information to farmworkers. The most frequent means of delivering information was face-to-face (83.3%), followed by paper handouts (10%) and phone calls (6.7%).

**Figure III. Primary ways to deliver information to farmworkers (N=30)**
In Question Seven, respondents were asked to briefly explain how their organization most frequently delivers information to farmworkers. Twenty-seven responses were received, and are listed in Appendix B. Almost all organizations discussed that a major part of their workflow in providing information to farmworkers is face-to-face interaction, and some discussed reasons for this. Some organizations indicated that their face-to-face services are accompanied by written information or other mediums either during or after visits. Examples of some common responses are listed below.

- “We set up mobile clinics at farmworker camps and teach farmworkers about a variety of health topics. Outreach workers deliver information with print materials and verbally. We also individualize topics depending on assessments and perceived needs. Outreach workers alert clinicians to topics they feel may be needed most and our clinical providers often expand on related health topics, such as nutrition, body mechanics, alcohol use, etc.”
- “Most of our information is given on outreach, where we talk to farmworkers face-to-face. Phone calls and paper handouts are mostly used as follow-up to reinforce face-to-face conversations.”

Some organizations cited an impression that farmworkers prefer face-to-face interaction and relationship-building:

- “We have found that farmworkers are most responsive to information when we go to where they live and converse with them or conduct small group presentations.”
- “Building personal rapport and using personal communication seem to be the most effective and trustworthy methods received by farmworkers.”
- “The majority of our population has limited education and linguistic skills. Vast majority have less than a ninth grade education and don't trust written materials. They need a face-to-face relationship in order to understand and access the services”

Some organizations noted that effective communication requires face-to-face interaction, mainly to make sure clients understand the information and can ask questions:

- “Because is easy to explained to them face-to-face so you can will be able to answer any questions or doubts that they may have”
- “Most of our patients come to the clinic. The info that is given to them mostly is face to face. It is important for us that, they understand and most of our
farmworkers can't read neither English or Spanish. That is the biggest reason why try to to face to face information.”

A few organizations mentioned other forms of information delivery, including flyers, phone calls and websites:

- “Farmworker outreach staff go out to all communities and post flyers and posters in stores, resource agencies, and schools. Partner staff…also distribute flyers to the farmworker communities.”
- “Through partners in Migrant Health and Migrant Ed and others we are able to distribute more written materials than we are to see workers face to face. We do know that our website gets quite a few hits from Mexico. We worked last year and will do so again this year to deliver more information via Facebook, now that more workers have smartphones.”

Question Eight asked respondents to indicate how they determine the information needs of farmworkers. Organizations listed multiple means for determining the information needs of workers (see Figure IV), including collecting data from workers (83.3%), anecdotal evidence (60%), using data from other surveys/sources (46.7%), partnering with agencies (6.7%), asking them (6.7%), hearing from farmworkers at community meetings/forums (6.7%), focus groups (3.3%) and needs assessments (3.3%). The first three choices were provided on the questionnaire, and the last five were written in by respondents.

**Figure IV. How organizations determine workers’ information needs (N=30)**
Question Nine asked respondents whether organizations have current or future projects using mobile phones and/or the Internet. The majority, 53.3%, responded no, while 42.7% responded yes. Organizations that responded yes were asked to elaborate about these projects in Question Ten (N=13) (If you answered yes to the above question, please explain the project(s) briefly.). For all responses, see Appendix C. The responses varied from concrete projects that have been planned and either are or will be implemented, to project ideas that may have been discussed but not planned. Examples of concrete projects that are active or are being planned include the following:

- “See above. We have had a Spanish/English website for some time. We are now expanded to 2 Facebook sites, one in Spanish and one in English. We use it to post news and hope that it will be particularly helpful for heat advisories and the like.”
- “Services for farm workers are available via our website in English and in Spanish. Clients may also register to receive text e-blasts on job placement or training events.”

Examples of projects that are hopeful, but perhaps not already active or planned include the following:

- “We have discussed the need to be able to communicate with workers via mass texting.”
- “Expand use of social media.”
- “We hope to improve our communication with customers via the Internet. Will work on making it more user friendly.”

In Question Eleven, respondents were asked to discuss design considerations that their organization uses in designing informational materials for farmworkers. Responses were coded according to the following categories: images, literacy level, language needs, brevity, images of farmworkers, quotes of farmworkers, culturally appropriate, entertaining/catchy, other media types, bilingual text evenly visible. After these responses
were coded, the results were graphed in Figure V. The responses (N=18) are listed in Appendix D.

As noted in Figure V, ten organizations (55.5%) out of those that responded mentioned using images and/or graphics in their informational materials. Many of these organizations mentioned literacy and language as reasons for using images in their materials. For example,

- “When developing written materials such as health brochures, we use illustrations and vocab for low literacy. For video and presentations, we try to make them entertaining and focusing on the key messages rather than the details. We recognize that farmworkers are often exhausted after working full days when our outreach staff visit them, and try to make the materials engaging for this reason.”
- “We attempt to reach a wider audience with graphics and materials designed for low level literacy and diverse language needs.”

Some organizations favored using images that depict farmworkers or using their quotes as a way of appealing to their audience.

- “Make it catchy to draw attention, use farmworkers in the pictures, use farmworker quotes and design and write at a educational level appropriate to farmworkers.”
- “Use of graphics depicting farm laborers to allow them to identify as the target audience. Information is produced in both English and Spanish. We also produce a resources directory addressing farmworker families' needs.”

Brevity was another design decision mentioned by a few organizations:

- “Information is brief and provided in English and Spanish.”
- “Make flyers simple without too much writing for the basic ideas, then talk about the issue in person.”

In Question Twelve, respondents were asked whether their organization has a website in Spanish. The majority (60%) did not, while 40% did.
In Question Thirteen, respondents were asked to indicate how their organizations evaluate the effectiveness of informational materials provided to farmworkers. Organizations could choose as many answers as necessary and write in their own responses. Twenty-eight organizations answered the question. Ten types of responses were identified (N=28): Anecdotal evidence (85.7%), Surveys (53.3%), Google analytics/software (23.3%), Do not evaluate (13.3%), Focus groups (6.7%), Ask clients how they heard about us (6.7%), Number of enrolled customers (6.7%), Use materials from other organizations (3.3%), Correlate calls for service and classroom enrollments (3.3%), and Don’t know (3.3%). These were graphed in Figure VI.
Interpreting the results of the survey

Organizations that provide information to farmworkers are using multiple means to communicate that information and have various ways of evaluating whether it is effective. One expected result from the survey is that face-to-face interaction is overwhelmingly preferred by organizations as the primary means of information delivery to farmworkers. Going where workers live is a common practice of the organizations. Developing relationships and answering questions were two main reasons for doing this; another reason cited was that written materials are less effective because of low literacy levels and language considerations, since Spanish is not the primary language of some farmworkers.

Face-to-face outreach was a primary delivery mechanism for organizations that provided information to mostly migrant as well as mostly seasonal farmworkers. Text-based information like paper handouts/brochures ranked much lower as a primary delivery mechanism, but were still used by most of the organizations as a secondary mechanism. A few organizations listed reasons for this, including low literacy levels among farmworkers and the view that written materials were not trusted by farmworkers.

While 50% of organizations cited websites as a means of delivering information to farmworkers, other forms of Internet and mobile communication were ranked much lower, such as email (20%), Facebook/social media (16.7%), texting (13.3%) and YouTube videos (3.3%). These were also ranked lower than radio (22%). This is an interesting finding that deserves more exploration.
Research suggests while that very few farmworkers have access to a computer with the Internet, the majority have mobile phones that are not smartphones (Sandberg 2013). Given this reality, a text messaging campaign would seem to be a better way to deliver information to farmworkers than a website. However, text messaging campaigns also require a significant investment on the part of the organization, in terms of planning the campaign, creating content, harvesting workers’ mobile numbers, paying for an SMS messaging service, advertising it and getting workers to sign up. Additionally, it may be the case that workers also have to pay for messages, which was a concern cited by one respondent. The costs and labor required may not be worthwhile enough yet for most organizations to invest in this approach, but two organizations are exploring this option.

While less than a fifth of the organizations surveyed cited the use of social media as a current means of delivering information to farmworkers, it is an expansion area, and was cited as a future project by six organizations. This suggests that these organizations are either assuming or know that workers are using social media. More research into whether farmworkers are using social media is needed to validate this finding. One respondent indicated Facebook as an expansion area “now that workers have smartphones.” Another respondent, however, indicated that measuring the impact of Facebook is difficult, saying “We have a Facebook feed that we update daily but I don’t know what sort of reach it has.”

Facebook may be a useful means of delivering information to workers if they are already using it to communicate. It could be integrated into established information flows and be no extra cost to workers than what they are already paying for access. More research, however, is needed on the demographics of farmworkers who are using social
media. One respondent indicated that younger workers are using the Internet, but not older workers. Facebook may also be a useful way for organizations to stay in touch with workers after the season is over, and does not rely on workers to have the same mobile phone numbers year after year, which Sandberg (2013) cites as a common issue.

While 42.7% of organizations indicated they had current or future information delivery projects that used mobile phones or the Internet, this number may be inflated because of the way the question was worded. Some of the responses indicated that the projects were not necessarily being actively planned by the organizations. Some were hopeful ideas for the future that might be in discussion but also may not happen in the future. More accurate data on what organizations are actively planning and/or implementing projects using mobile and/or the Internet could have been collected with a more specific survey question.

It makes sense that radio is a preferable means of information delivery by 22% of organizations surveyed. Reasons may include that radios can deliver information freely and do not require literacy. There is a history of using radio to disseminate information to the farmworker community. Radio Bilingüe, a national public radio station for Latinos in the United States that broadcasts over 13 stations in California, the Southwest, and online, was started by farmworkers in 1976 in the San Joaquin Valley (Radio Bilingüe website). Unlike social media, however, radio may require more logistical effort to create content and may be more difficult to evaluate in terms of effectiveness.

Notably, none of the organizations surveyed are currently using downloadable apps for smartphones to reach farmworkers. Considerable input into creating the app may
be one reason, as well as the data costs to workers and the issue that the majority of workers do not have smartphones.

No published research was found on farmworkers using native smartphone apps, but according to data collected by the nonprofit organization Student Action with Farmworkers in 2014 (N=56), 25.9% of the workers surveyed owned a smartphone but only 6.67% said they would prefer to receive information via a smartphone app. In the same survey, 25.8% said they would prefer to receive messages via text and 25.8% preferred a phone call (“Results from the Farmworker Survey”). These initial findings suggest that when offered other options, workers with smartphones may still prefer getting information in other ways over a downloadable app.

Another interesting result of the survey is the variety in how organizations determine information needs of farmworkers and then evaluate that information. Anecdotal evidence is popular both in determining worker information needs and evaluating the effectiveness of information provided, but more formal means of information needs gathering and evaluation were also mentioned, such as surveys, focus groups and web analytics. It would be interesting to explore further what the organizations mean by anecdotal evidence and to what extent this evidence is used in decision-making related to information delivery to farmworkers.
Semi-Structured Interviews

The interviews were semi-structured with open-ended questions (see Appendix E) aiming to learn more about current projects involving addressing the information needs of farmworkers using mobile technology and/or responsive web applications. Hopefully, this information will help other organizations considering implementing their own mobile information projects.

Interviewees were asked basic questions similar to the online survey questions about how the projects addressed information needs of farmworkers and how those information needs were identified. Additional questions were asked more specific to the projects themselves. The projects discussed in the interviews were two text-messaging projects and a multi-media web application.

Health Information Text Messaging Campaign

One example of using mobile phones in addressing farmworkers information needs is a health information text messaging campaign currently in progress in California. The mission of this project is to meet farmworker information needs specifically in the areas of workers’ rights and field-related health concerns, such as pesticide safety, sanitation and heat-related illnesses. This project will provide three months of health information to 3,000 farmworkers from the time they sign up.

Farmworkers are being enrolled by health promoters (promotores de salud), members of the farmworker community who provide health information to workers and
trainings. This is “influencer marketing,” meaning that the project is relying on trusted individuals in the community to help workers sign up using their phones. Signing up for the information requires sending a text to a short code, which may present challenges to people who either rarely use text messaging or are used to texting longer numbers. Face-to-face interaction is an important component of enabling more workers to sign up for the service.

While this particular project has not been evaluated because it is in progress, it is the second phase of a health text-messaging project that was pilot tested in 2010 with 40 farmworkers. That project lasted twelve weeks and workers received 44 messages during that time; of those 44 messages, 3 were evaluation messages. The rest of the messages were related to heat-related illness and pesticide safety information. The project was evaluated a second way through direct interviews with community health workers. Feedback from both workers and community health workers indicated that the project was successful, and this success led to more funding and the expansion of the project into its current phase.

One issue cited as a potential problem that had to be worked out is that many low-cost mobile carriers do not support texting to short codes. So, the project has other phone numbers that can be used in lieu of short codes for workers whose phones do not support this service. This project does not have the problem of needing to keep in touch with workers after the season is over, so the issue of workers not keeping the same phones year after year is not a problem.

While evaluative data will be needed to determine the success of this project, it may serve as a useful model for organizations who are interested in delivering
information to farmworkers during a season via mobile. When workers sign up, it geocodes their location so that organizations know where the service is being used. What it cannot do is keep track of phone numbers that no longer work. The project is grant funded and relies on word-of-mouth marketing by health promoters and community health workers, which help people sign up for it using face-to-face interaction. A challenge cited by the interviewee was getting funding for the project. While text messages have gotten cheaper on the user end, they have gotten more expensive on the provider end. The technology is readily available and services exist for nonprofit organizations to do texting campaigns, but figuring out how to fund it will be a significant issue.

**Text Messaging Channel for Traffic Stops**

Another example of an information delivery project using text messaging is a texting channel in which information is sent to groups of subscribers. The information is crowdsourced, meaning that the content is created by the subscribers and the majority of messages notify subscribers of police traffic stops and drivers’ license checkpoints. Other messages sent over the channel include job advertisements and immigration policy updates. The author subscribed to the service and has received two messages, one notification of a police traffic stop in her zip code area and another about a recent court case related to H-2B immigration policy. Subscribers can sign up for messages either in Spanish or English.

A text channel can be either one way or two ways. This is a two-way channel, in which subscribers can text messages over the channel. It established initially to provide
information to the Latino community in North Carolina and served as a sort of Craigslist for a while. However, the most popular information sent over the channel became police traffic stops, because of the interest to undocumented immigrants fearing deportation. Because of the high demand for this information, the subscriber base expanded through the Southeastern United States. The service offers free and paid options, and is owned by a company that has a text messaging platform available for nonprofits, churches and other organizations to use for their own content.

While not specifically directed at a farmworker base, the majority of the nearly 700,000 subscribers are Spanish-language speakers in the Carolinas, Georgia, Mississippi, Virginia and Tennessee. Zip codes are required for sign up and the interviewee indicated that the service is very popular in towns with large farmworker populations and agricultural economic base. Additionally, agricultural jobs have been advertised over the channel. While it is impossible to determine how many farmworkers are signed up for this service, the subscriber base overlaps with farmworker community demographics and was deemed of interest for this project.

This example of community created content shows that mobile phones can be very successful delivery mechanisms for information among communities that share demographic characteristics with farmworkers, such as Latino immigrants in the Southeast who live in communities with agricultural economic bases. With 700,000 subscribers, it is clear that the information provided by this channel is in high demand.

Notably, this channel is spread by word of mouth. Every text has information about how to subscribe by calling the number so that a subscriber can help a friend sign up. Similar to the health promoter in the previous example, this is spread by influencer
marketing. The subscribing process is designed to make it easy for individuals who have no experience with texting. All that is required is the ability to call a phone number. The interviewee said that having a service that requires texting a key to a short code to subscribe is not intuitive and may create barriers for some people to sign up. When a potential subscriber calls the phone number, the service then sends them a text message to complete the process. It asks them to text their zip code back to the service, then they are subscribed. The company also has call centers designed to help users if they have questions with the signup process or using the service. These call centers are available for Spanish-speaking users.

This example may also be useful for organizations considering texting campaigns because it shows that receiving information via text can be very popular in communities with similar demographics to farmworkers and which may include many undocumented immigrants and farmworkers. It’s also important to note that the channel morphed into something it was not originally intended for, and this change was driven by subscribers themselves. While the channel was intended the service to be more like a Spanish-language Craigslist for Latinos, what became most popular was information about police traffic stops. The success of the service points to the conclusion that this was an unmet information need in the community, specifically of interest to undocumented immigrants.

**Web Application to Prevent Recruitment Fraud**

A third example of a project that uses mobile and Internet technology in addressing farmworker information needs is a web application launched in 2014 by a nonprofit organization that aims to provide low-wage Mexican migrant workers to the
United States, many of whom are farmworkers on H-2A agricultural visas, with information about their legal rights and help them avoid being victims of recruitment fraud.

The project developed from the organization interviewing 200 migrant workers what the most pressing problem they face is when it comes to working in the United States. The most popular answer was recruitment fraud. The survey found that less than half of the workers had seen a contract before starting work and one in ten had been victims of recruitment fraud. Workers who had not seen a contract before beginning work were more vulnerable to abuses and not getting paid what they had been promised by recruiters. Workers who had experienced recruitment fraud often had paid a lot of money to a recruiter to help secure visas and other logistics for getting to the United States, only to have that recruiter vanish without following through on providing the services.

From the survey came an idea for a mobile-friendly web application that allows workers to post reviews of employers and job recruiters. Workers can post reviews using a computer or smartphone, or they can call in and leave a review as a message. They can also call in to listen to other reviews. According to the interviewee, workers who may not have access to the Internet in the United States may have access to Internet cafes in Mexico.

Workers can also leave their cell phone numbers and email addresses to receive news information by email or text. News information relates to immigration policy, and other news of relevance to migrant workers' rights and recruitment fraud.

The site design went through multiple iterative sessions in which feedback from workers was collected at various stages. Design considerations that went into the site
include limiting the amount of text, using icons for navigation to support text options and using images of workers (see Figure VII).

Figure VII. This figure shows part of the navigation menu, which includes an icon and picture in the background. Translation: “Learn about my rights” (Translated by the author of this paper.)

The interface for contributing reviews to the site also uses icons and allows for workers to contribute anonymously and by mobile. Workers can access the reviews by mobile in the United States and Mexico (see Figure VIII).

Figure VIII. Workers can contribute reviews anonymously via computer or mobile. Translation: “Contribute a review / Write a review anonymously / Write a review / Leave a review by telephone: 55 4741 1292 from Mexico or 1-888-451-2908 from the United States / Listen to reviews” (Translated by the author of this paper.)
This web application has only been live for a few months, which is not long enough to evaluate its success. In order to get more reviews, the organization has been advertising the service on Mexican radio as well as word-of-mouth marketing.
**Considerations**

Organizations that deliver information to farmworkers do so in multiple ways, but the majority surveyed underscored the importance of face-to-face interaction in information delivery. The responses demonstrated that organizations design informational materials with their users in mind, specifically in terms of literacy level, language needs, and cultural knowledge.

While face-to-face information delivery might be the most frequently used and effective means of information delivery for the organizations, there are a few projects currently active that leverage mobile phones as information delivery mechanisms and that give users some control over creating content. However, these projects are few and the resources required to start them may be greater than the benefits for some organizations. For organizations interested in developing mobile information solutions for farmworkers, some considerations are mentioned in the next few paragraphs.

The information solutions discussed in the interviews still used face-to-face interaction with trusted individuals as a means to get farmworkers signed up for the service. This could integrate with how organizations currently deliver information to farmworkers.

The solutions discussed in the interviews did not require mobile phone or Internet proficiency. According to respondents, this was a necessary component for success, given an audience with lower than average literacy levels and diverse language needs. Being able to call a phone number rather than texting to a short code, for example, were features
integrated into every project for the purpose of making the service accessible to more people. The solutions discussed in the interviews did not require workers to keep the same phone numbers over multiple seasons/years. Their success was not evaluated on whether workers kept using the service over multiple years or seasons. Given that many workers use pre-paid phones that do not work when they leave the United States, expecting that workers keep the same phones every year is impractical.

Two information solutions (text project and web application) relied on community-created content, which may be good for some types of information (employer reviews and traffic stops, for example) and not others.

Each solution discussed in the interviews considered both technological literacy and reading literacy in information design. Smartphone applications were used by none of the respondents. Locating, downloading and using native applications require costly data plans and smartphone literacy. Some organizations indicated that younger farmworkers are more likely to have smartphones and be proficient in using them. More research is needed to validate these findings, but the cost to invest in this kind of information solution may not yet be worth the trouble as the majority of workers do not yet have smartphones. Additionally, even if workers have smartphones, it they may not necessarily find an informational app useful.
Conclusion

Farmworkers in the United States are an isolated and vulnerable population of largely non-English speakers. While many barriers exist to their prosperity and good health, farmworkers’ access to information is changing with the rapidly increasing presence of mobile technology in farmworker communities. Whether mobile technology provides a viable means for providing useful information to significant numbers of farmworkers is still an open question.

The purpose of this paper was to survey what organizations are currently doing and planning to do to address information needs, and whether mobile information solutions are part of their work. Further research is needed to learn about farmworkers’ perspectives about the information provided by the organizations and whether their information needs are being met. More research is also needed into farmworkers’ feelings about mobile solutions to address information needs.

While mobile information solutions are still new to farmworker organizations, there is an indication that organizations are expanding how they deliver information to workers, specifically in the areas of the Internet and mobile technology, or are at least discussing expanding in this direction. However, these solutions may not be necessary or useful for all organizations, and it is up to each organization, in collaboration with clientele, to determine how best to meet farmworker information needs.
References


Appendix

Appendix A: Survey
Addressing Information Needs of Farmworkers: Organizational Survey
Principal Investigator: Alison Blaine, Master's candidate at UNC Chapel Hill's School of Information and Library Science. The data collected in this survey is for a Master's Paper surveying how organizations address the information needs of farmworkers.

* Required

Does your organization provide information to farmworkers? *
- Yes
- No
- Other: _______________________

Approximately what percentage of your clients are farmworkers? *

Are the farmworkers in your client base mostly seasonal or migrant? *
- Mostly seasonal
- Mostly migrant
- Both

What kinds of information does your organization provide to farmworkers? *
- Health
- Legal
- Education (including ESL)
- Locational/community resources
- Other:

How does your organization deliver this information to workers? Check all that apply. *
- Face-to-face
- Paper handouts/brochures
- Phone calls
- Radio
- Text messaging
- Emails
- Website
- YouTube videos
- Other:
What method of delivery is used most frequently by your organization? CHOOSE ONE *
  o Face-to-face
  o Paper handouts/brochures
  o Phone calls
  o Radio
  o Text messaging
  o Emails
  o Website
  o YouTube videos
  o Other:

Please briefly explain your answer to the previous question about what method of delivery is used most frequently by your organization.

How does your organization determine the information needs of farmworkers?
  o Collect data from workers
  o Use data from other surveys/sources
  o Anecdotal evidence
  o Other:

Does your organization have any current or future projects that involve meeting the information needs of workers using mobile phones and/or the Internet?
  o Yes
  o No

If you answered yes to the above question, please explain the project(s) briefly.

What design considerations does your organization use in designing informational materials for farmworkers? Please explain briefly.

Does your organization have a website in Spanish? *
  o Yes
  o No

How does your organization evaluate the effectiveness of your informational materials? Please check all that apply.
  o Collect feedback from surveys
  o Anecdotal evidence
  o Do not evaluate
  o Google analytics or other analytics software
  o Other:
Appendix B: Responses to Question Seven

Please briefly explain your answer to the previous question about what method of delivery is used most frequently by your organization.

- “During the season we do a lot of outreach to labor camps and talk face-to-face with workers about their rights and farm worker issues.”
- “We partner with another organization that does lots of face to face outreach and produce joint publications which that organization distributes.”
- “[Our organization] provides Head Start services to migrant farmworkers.”
- “We have found that farmworkers are most responsive to information when we go to where they live and converse with them or conduct small group presentations.”
- “Our outreach staff provide one-on-one and group education on health topics to farmworkers and their family members when they visit them in camps or homes.”
- “We use a popular education model to use interaction to do outreach and trainings with workers so we prioritize face to face encounters.”
- “Through partners in Migrant Health and Migrant Ed and others we are able to distribute more written materials than we are to see workers face to face. We do know that our website gets quite a few hits from Mexico. We worked last year and will do so again this year to deliver more information via Facebook, now that more workers have smartphones.”
- “We conduct nightly outreach to farmworker labor camps throughout the state. This is completed by one or two teams about 4 days a week from June through early November.”
- “I'm not really sure which method of delivery is most used. We provide information however possible and our paper handouts/brochures are circulated amongst workers to some extent without us, to our knowledge. We have a Facebook feed that we update daily but I don't know what sort of reach it has.”
- “Face-to-face with outreach activities.”
- “Usually it is only the people enrolled in our program that we work with, so face-to-face is the best delivery method.”
- “We use any opportunity to provide information to families and we find that a face-to-face meeting works best. Our staff are bilingual and are able to answer questions, as well as elaborate more to explain a point.”
- “Outreach worker(s) go out into the community and recruit customers for our various educational, energy and vocational trainings. We use a mobile unit for rural outreach, meet with customers one on one and also do group presentations to individuals and organizations.”
- “Outreach events are scheduled in communities where farm workers live. Staff also attend community wide events that draw this demographic.”
- “As we conduct outreach or meet clients in our offices, we provide information on various educational and employment resources, human services resources, and resources value to the various farmworker populations we serve such as immigration issues, housing issues, and offender services to name a few.”
- “The majority of our population has limited education and linguistic skills. Vast majority have less than a ninth grade education and don't trust written materials.”
They need a face-to-face relationship in order to understand and access the services”

• “Our organization has four different departments, and the largest one is our head start department. Because they mainly communicate to their head start parents through phone, that is the option I selected. However, each of our 13 programs has a different preferred method. The top three methods among all departments are: phone call, flyer/brochure, and face-to-face.”

• “Our organization comes into contact with thousands of Farmworkers every year. The main purpose of this encounter is to recruit them into our training program. This is done through outreach, word of mouth, radio, TV, and marketing brochures.”

• “Word-of-mouth is still the most effective form of outreach. Most referrals come from current/former clientele.”

• “Our organization uses a lot of face to face. Our services are primarily offered outside of the office. We go to where the farmworkers are.”

• “Farmworker outreach staff go out to all communities and post flyers and posters in stores, resource agencies, and schools. Partner staff...also distribute flyers to the farmworker communities.”

• “We set up mobile clinics at farmworker camps and teach farmworkers about a variety of health topics. Outreach workers deliver information with print materials and verbally. We also individualize topics depending on assessments and perceived needs. Outreach workers alert clinicians to topics they feel may be needed most and our clinical providers often expand on related health topics, such as nutrition, body mechanics, alcohol use, etc.”

• “Because is easy to explained to them face-to-face so you can will be able to answer any questions or doubts that they may have”

• “Most of our information is given on outreach, where we talk to farmworkers face-to-face. Phone calls and paper handouts are mostly used as follow-up to reinforce face-to-face conversations.”

• “In order to ensure qualifications of our program, and in order to receive effective services face-to-face contact is essential.”

• “Building personal rapport and using personal communication seem to be the most effective and trustworthy methods received by farmworkers.”

• “Most of our patients come to the clinic. The info that is given to them mostly is face to face. It is important for us that, they understand and most of our farmworkers can't read neither English or Spanish. That is the biggest reason why why try to to face to face information.”
Appendix C: Responses to Question Ten
If you answered yes to the above question, please explain the project(s) briefly.

- “We have discussed the need to be able to communicate with workers via mass texting.”
- “Expand use of social media.”
- “We want to create a page specifically for farmworkers on our website. We gathered information on how workers access information and want to follow up but are trying to figure out capacity and resources.”
- “See above. We have had a Spanish/English website for some time. We are now expanded to 2 Facebook sites, one in Spanish and one in English. We use it to post news and hope that it will be particularly helpful for heat advisories and the like.”
- “We are expanding our social media outreach efforts through our Website and Facebook feed.”
- “Our website and our Facebook are current projects that share information about services and about ways to safe and protected on the job.”
- “Trying to engage with social media.”
- “We hope to improve our communication with customers via the Internet. Will work on making it more user friendly.”
- “Services for farm workers are available via our website in English and in Spanish. Clients may also register to receive text e-blasts on job placement or training events.”
- “Dissemination of information through text and web media regarding taxes and immigration issues.”
- “We are redesigning our website so that it’s fully bilingual (English and Spanish) and fully operational on any device.”
- “Follow up is a function that is done by mobile phone contact and email. With Farmworkers, the younger generation is connected to the Internet and we use that to the best extent possible. Older workers are still not connected.”
- “Considering twitter accounts or texting - possible costs involved for receiving announcements though. Current projects include websites and email blasts.”
Appendix D: Responses to Question Eleven

*What design considerations does your organization use in designing informational materials for farmworkers? Please explain briefly.*

- “We especially consider the literacy levels of the farmworkers, so when we design written information materials, we use low-literacy Spanish and incorporate many images. Because of low literacy levels, and because some farmworkers speak indigenous languages rather than Spanish, we prefer to conduct presentations that involve games/activities based in popular education. We also always use a small book that we have designed with images and writing about green tobacco sickness, pesticide poisoning, nutrition, etc., and we read through the book and ask questions of farmworkers when we are on outreach. Then we leave several copies of the books in the camps so that farmworkers can read through them in their spare time.”

- “When developing written materials such as health brochures, we use illustrations and vocab for low literacy. For video and presentations, we try to make them entertaining and focusing on the key messages rather than the details. We recognize that farmworkers are often exhausted after working full days when our outreach staff visit them, and try to make the materials engaging for this reason.”

- “We consider literacy level and try to include a lot of visuals and graphics. We try to make our information culturally appropriate. In bilingual publications we try to make all the text evenly visable. We try to use images and words from farmworkers in our materials.”

- “We try to include graphics and as little text as possible. Being lawyers, we don't always succeed.”

- “We attempt to reach a wider audience with graphics and materials designed for low level literacy and diverse language needs.”

- “We are working to make our materials more accessible for low-literacy and non English/Spanish/Haitian Creole speakers by including more pictures and other types of media.”

- “Short, using a 3rd grade reading level.”

- “Make it catchy to draw attention, use farmworkers in the pictures, use farmworker quotes and design write at a educational level appropriate to farmworkers.”

- “Use of images that may be relatable to the demographic, such as models that reflect their heritage, familiar occupations, colors of flag of native country, and Spanish language print.”

- “We try to cater to the basic education level of the clients we serve based on the characteristics of the enrollments we've had through the years.”

- “We take into consideration level of literacy and preferred language in addition to the normal design aspects such as information compiling and graphic creation.”

- “Information is brief and provided in English and Spanish.”

- “Use of graphics depicting farm laborers to allow them to identify as the target audience. Information is produced in both English and Spanish. We also produce a resources directory addressing farmworker families' needs.”
• “We look for low literacy type materials with good photos. Often we use fotonovelas.”
• “The flyers are made as simple and concrete, straight to the point, so it is easier for the farmer to understand what we offer and provide to them.”
• “We look for materials that are low-literacy, interesting in some way, use more pictures than words.”
• “we know that some of our families are pre-literate and that for some Spanish is a second language, English possible a third, with indigenous native American languages as the primary language.”
• “Make flyers simple without too much writing for the basic ideas, then talk about the issue in person.”
Appendix E: Questions for semi-structured interviews

Please discuss the project and how the idea for the project came into being.

To what extent does the project incorporate mobile or web technology?

What type of information is provided?

Approximately what percentage of users are farmworkers?

How do you find out users’ information needs?

How does the technology/information solution work? How do users sign up for it?

How do users find out about this service? How is it marketed?

How is/was it evaluated?

What are the results of the evaluation?