

RESEARCH BRIEF:

The Feasibility and Cost of Using Smart Phones for Data Collection



About half of Americans with a cell phone have a smart phone.¹ As smart phones are becoming more common among local tobacco control agency staff and volunteers, the phones may present a new way to collect data. In this study, TCEC assessed the feasibility and cost of using smart phones for data collection in the field, such as when conducting observations or public opinion surveys.

Modern smart phones are closer to mini-computers in that they have constant Internet access and a large memory. In addition, smart phones are distinct from older cellular telephones in their ability to support complex software programs, commonly known as 'apps'. A systematic review of the research literature on the use of smart phones in medicine and public health concluded that their advantages include portability, uninterrupted data access, and sufficient computing power to support a range of software types.² Smart phones have been used to administer surveys in the U.S. and in developing countries with as many as 200,000 respondents in a survey and on a range of health behaviors.^{3,4}

In order to capitalize on the speed and ease of technology in collecting data, tobacco control programs might be able to take advantage of equipment already in the hands of their staff and volunteers: smart phones. Therefore, TCEC tested the feasibility and cost of using smart phones for data collection. We used volunteers with smartphones to collect a small amount of data in order to answer the following questions:

1. How easy is it to collect survey data on smart phones?
2. Which smartphones and survey platforms work best?
3. Would data collection on smartphones be costly to individuals' data plans?

Methods:

TCEC tested the two most commonly purchased smart phones: iPhones and Androids.¹ We also tested three survey platforms that work with smart phones and handheld devices such as the iPod Touch and iPad. TCEC has tested these same survey platforms on handheld devices and presents a detailed evaluation of their performance in Tips and Tools # 12: Platforms for Data Collection with Handheld Devices. Briefly, Google survey is a form of Google docs present in a Google account. SurveyPocket is an application (app) developed by QuestionPro a program used for electronic survey creation. iSURVEY and droidSURVEY are apps specifically created for smart phones, handheld devices, and tablets. iSURVEY and droidSURVEY are essentially the same, but specific to its device type. iSURVEY is downloaded from the Apple App store onto Apple devices. droidSURVEY is downloaded from the Google Play store onto android devices. Both apps, iSURVEY and droidSURVEY, can be used on multiple handheld devices to collect data offline, and your data will be loaded into a single iSURVEY account.

Six U.C. Davis undergraduate students volunteered to use their own smart phones for data collection. TCEC staff provided assistance to students to download the survey apps, provided training on two survey platforms, and training on the protocol and details of the survey questions. TCEC staff also helped students reset their data usage feature to measure how much of the data plan was used to download the app and submit survey data. There was no need for training on the actual devices because each student used his/her own smart phone to complete the surveys.

Students visited tobacco retailers in Davis, CA, to conduct observations based on a modified version of

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a Youth Tobacco Purchase Survey. The survey included questions on store type and the presence of tobacco products and signage on tobacco sales to minors. Each student visited six stores and completed a survey after each visit. At the end of the day, each student completed a user satisfaction survey on the three survey platforms where they rated the readability, ease of use, ability to enter data, and ability to correct mistakes on a scale of 1-5. TCEC staff also recorded the data usage on each smart phone.

Results:

In general, we found no real differences between the two types of smart phones. Both recorded and uploaded data effectively and completely. However, one Android user was unable to download a survey app to her phone. (Because there are many different types of Android phones, some may not be compatible with all survey platforms.)

The three survey platforms TCEC tested varied considerably in their features and usability. Table 1 summarizes the results from student data collector satisfaction ratings on the survey platforms. On a scale of 1-5, with 5 being the highest possible rating, iSurvey received the highest overall rating (4.75), as well as the best ratings for readability, ease of use, ability to enter data, and ability to correct mistakes.

Table 1. Average Survey Platform Satisfaction Ratings, (Scale 1-5)

	Google Survey	SurveyPocket	iSURVEY/droidSURVEY
Readability	4.25	3.75	5
Ease of use	4.75	4.25	5
Ability to enter data	3.75	3.75	4.75
Ability to correct mistakes	3.5	3	4.25
Overall rating	3.75	3.75	4.75

TCEC found that using the smart phones for data collection used very little of the student volunteers' data plans (Table 2). The average data usage for this study was less than what is required to download a two-minute video or stream music for one hour. No costs were incurred to volunteers while using their smart phones for this project because the data usage was minimal. Most of the data usage occurred when downloading the apps.

Table 2. Average Data Usage for each Survey Platforms

	Google Survey	SurveyPocket	iSURVEY/droidSURVEY
Data Usage	0 MB	3.16 MB	1.11 MB

Conclusion:

TCEC found smart phones to be a feasible and low-cost strategy for data collection. There was no loss of data due to connection or other problems. The impact on volunteers' data usage plan was negligible, and so incurred no cost to the student volunteers who used their own smart phones.

Limitations to this study include the small number and type of volunteers. College students may be uniquely comfortable with smart phones, and may be more likely to own them compared to community volunteers who are not college students. In addition, volunteers were able to access a continuous Internet connection with their smart phones, making it possible to collect data using Google Survey. If a 3G connection was lost, it would have been impossible to use Google Survey; but the apps were enabled to collect data offline. Further testing could identify specific makes and models of Android phones that work best with these survey platforms in order to avoid compatibility problems in the future.

The strength of this study is that it mirrored the conditions in which many tobacco control agencies work. For instance, college student volunteers can be recruited in most areas of the state, and the YPS survey is commonly used in tobacco control. Furthermore, we tested apps that function offline, and so are not dependent upon a constant Internet connection.

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References:

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