

The Savvy Survey #14: Mixed-Mode Surveys¹

Glenn D. Israel and Jessica L. Gouldthorpe²

Introduction

As part of the Savvy Survey Series, this publication provides Extension faculty with an overview of the mixed-mode survey. There are many methods that can be combined for conducting mixed-mode surveys, including face-to-face interviews, telephone interviews, web surveys, and mail questionnaires. This publication focuses specifically on one type of mixed-mode survey that uses both e-mail and postal mail for sending survey invitations, as well as a website and paper questionnaires for collecting responses. Mixed-mode surveys such as this are well-suited for conducting needs assessments for program development or follow-up surveys for program evaluation.

A major advantage of mixed-mode surveys is that they allow Extension faculty to include people who lack access or experience with online surveys to participate via mail, while saving money by reducing the amount spent on postage when e-mail messages and an online questionnaire are used to collect some of the responses. Another advantage is that mixed-mode surveys usually have a higher response rate than surveys conducted solely online (Israel 2013a; 2013b). In short, mixed-mode surveys are an effective way to collect data (see, for example, Israel 2011; 2013a; 2013b).

Currently, the University of Florida has a license for Qualtrics survey software, which allows each Extension faculty member to have an account for creating and conducting online surveys. This fact sheet provides guidance for

constructing the questionnaire, addressing visual design and formatting considerations, and implementing a mixedmode survey. Extension faculty who incorporate best practices of questionnaire design and survey procedures will be able to collect many responses and more useful data.

Considerations Specific to Constructing a Mixed-Mode Questionnaire

Since mixed-mode surveys combine e-mail invitations and online questionnaires with postal letters and paper questionnaires, the design of the correspondence and questionnaires requires careful attention so that differences between the online and postal versions are kept to a minimum. This is important because even subtle differences in wording or visual presentation can significantly impact the amount and quality of the collected data.

For the paper version of the questionnaire, the space available on a printed page and the weight of the survey package are important considerations (see Savvy Survey #11: Mail-Based Surveys). On the other hand, the online version of the survey must be constructed to match the skill level and experience of the survey population as well as the technology used by the survey software. Qualtrics software, for example, offers a suite of tools for developing a questionnaire, and the designer can include many types of questions and response formats (see Savvy Survey # 6: Writing

- 1. This document is AEC408, one of a series of the Agricultural Education and Communication Department, UF/IFAS Extension. Original publication date April 2014. Visit the EDIS website at http://edis.ifas.ufl.edu.
- 2. Glenn D. Israel, professor; and Jessica L. Gouldthorpe, doctoral candidate, Agricultural Education and Communication Department; UF/IFAS Extension, Gainesville, FL 32611. The authors wish to thank Sebastian Galindo, David Diehl, Marilyn Smith, and Nick Fuhrman for their helpful suggestions on an earlier draft.

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Opportunity Institution authorized to provide research, educational information and other services only to individuals and institutions that function with non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, marital status, national origin, political opinions or affiliations. For more information on obtaining other UF/IFAS Extension publications, contact your county's UF/IFAS Extension office.

U.S. Department of Agriculture, UF/IFAS Extension Service, University of Florida, IFAS, Florida A & M University Cooperative Extension Program, and Boards of County Commissioners Cooperating. Nick T. Place, dean for UF/IFAS Extension.

Items for the Questionnaire). A word of caution: using some of the fancier or more complex question formats should be avoided in order to align the online response process with that for the paper version. Consequently, use of sophisticated skip logic (i.e., survey software commands to skip over questions that don't apply to a particular person) and other features of online survey software should be minimized (see Savvy Survey #13: Online Surveys). Like Qualtrics, other survey applications include many of the same options. It is important to become familiar with the features of the chosen software, especially default settings, in order to avoid unintended problems that adversely affect the usefulness and credibility of the data.

As discussed in Savvy Survey #5: The Process of Developing Survey Questions, a logic model can be very helpful in identifying and selecting high-priority questions to include in the survey.

Visual Design and Formatting

The focus of designing mixed-mode questionnaires is centered on making the online and paper versions to appear as similar as possible. Survey researchers call this a "unified mode" design (Dillman, Smyth, and Christian 2009). This can be challenging because paper surveys utilize a portrait orientation while online surveys use a landscape orientation. Consequently, the online version of the questionnaire typically uses one question per screen or a gridded set of items on a single screen (Figure 1). Likewise, the paper version of the questionnaire uses shaded areas on the printed page, separated by white outlines, to mimic the screen-by-screen construction of the online version.

The appearance of individual questions, as well as the entire questionnaire, can impact whether and how people answer the survey (Dillman et al. 2009). A good design provides cues to a respondent on how to navigate from one question to another and what kind of information the survey designer is looking for. For example, the size of the answer space for the question "What could we do to improve our services to you and others in the county?" tells a respondent how much to write (a larger space encourages people to write more than a smaller space; see Israel 2010). Qualtrics, for example, enables survey designers to specify how much space to include (e.g., a single line of text, multi-line essay space, etc.).

A "clean" design that clearly and consistently indicates where the question starts and where the associated answer choices are helps a respondent answer the questions accurately. In Figure 1, several screens of the online survey illustrate constructing the questionnaire with a consistent format, including a header at the top (with the logo and survey title) and navigation buttons in the bottom center area of the screen. There is little extra wording or graphics to distract the respondent.

For more detailed information about writing items or for formatting a questionnaire, see publications #6 and #7 of the Savvy Survey series.

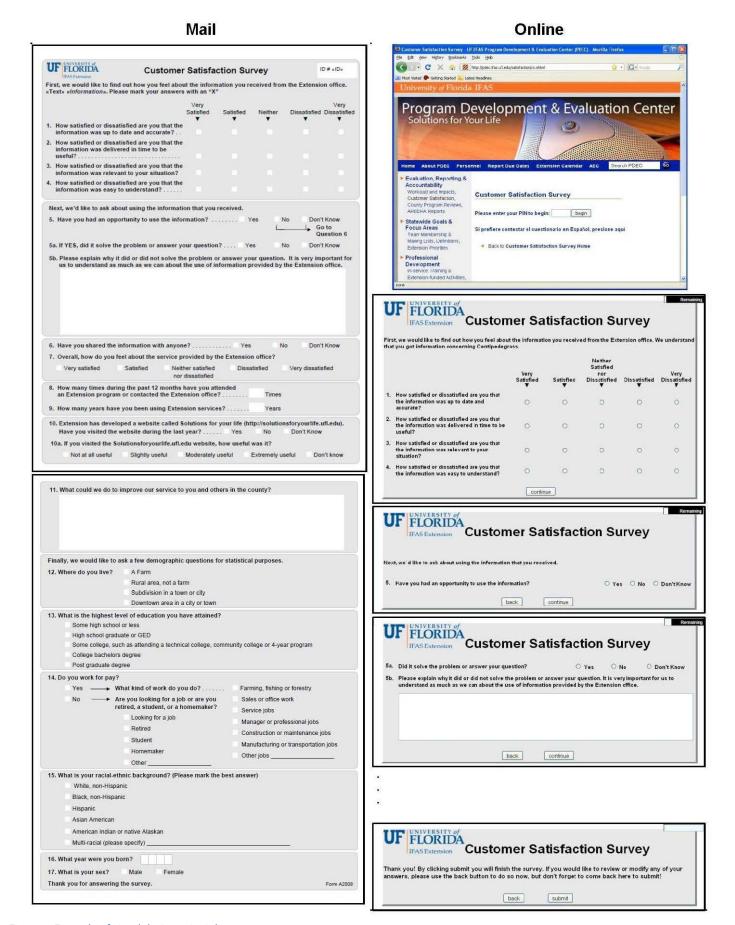


Figure 1. Example of visual design principles.

Implementing a Mixed-Mode Survey

Preparation

Getting ready to conduct a mixed-mode survey involves several steps.

Step 1: Prepare the correspondence that will be used in the survey process. There are several options for sending e-mail or mail invitations to the survey. For surveys that emphasize using e-mail and the online questionnaire, the initial contact should include the link to the website hosting the survey. This recommendation is due to the nature of e-mail messages: they are easily discarded and quickly buried in a person's in-box. Follow-up contacts using this strategy will continue with several e-mail invitations and finish with one or two postal invitations.

Each e-mail and postal message should be carefully worded using the principles of social exchange theory (Dillman et al. 2009) to encourage people to complete the survey. Briefly, social exchange theory asserts that people will be more likely to respond when the benefits (e.g., importance, salience, prestige, usefulness) outweigh the costs (e.g., time, effort, difficulty) and they trust those sending the survey to deliver the benefits. In practice, the e-mail message should discuss how the respondent will benefit, why his or her response is important, and steps taken to reduce costs (i.e., providing a postage-paid envelope).

Figures 2–6 in Appendix A illustrate a series of messages, with each one tailored to play a specific role in the survey process. In addition, the correspondence should provide all of the information needed for a person to make an informed decision to participate in the survey, including, for example, the amount of time it will take to complete. It is a best practice (and may be required) to have the questionnaire and letters reviewed and approved by the Institutional Review Board (IRB) to ensure compliance with regulations for conducting research on human subjects. Note that

mixed-mode strategies that use a different sequence of postal and e-mail contacts, as discussed below, will also have the letters worded in a manner that fits the mode and step in the process.

When preparing the correspondence, consider how to personalize it. Research shows that personalization has a small but significant effect on increasing response rates (Dillman et al. 2009). Personalization helps connect the respondent to the survey. This can be done by using individual names of clients in contact messages (e.g., Dear Joe Client) or by a group name with which clients identify (e.g., Dear Jackson County Cattlemen). Although including logos or images might help personalize e-mails to a group, some people continue to use e-mail applications without HTML formatting (which is required to display the graphics). Consequently, e-mail messages should limit the use of logos and images. Finally, draft a simple subject line to use with the e-mail messages (e.g., Florida Extension Service's Customer Satisfaction Survey).

Step 2: Develop an e-mail list with names, e-mail addresses, postal addresses, and other relevant information.

Spreadsheet programs, such as Microsoft's Excel, are useful for organizing the information and keeping track of which people respond and which do not. Table 1 illustrates a spreadsheet list, which includes a column listing the response status and one recording the date that a completed questionnaire is received. In addition, data in a spreadsheet can be used in a mail merge to personalize both e-mail and mail messages by inserting names and other information.

Step 3: Test the survey. The third step is to test (and re-test) the online survey, making sure that questions are displayed properly, they are shown in the right order, and questions are skipped when they should be. In addition, it is important to test the e-mail distribution procedures by sending an invitation to your own and a colleague's e-mail address (it is embarrassing to have to send out corrected links to the survey, etc.).

Table 1. Example of a spreadsheet file with contact information for mailing and record keeping

ID	Status	Date	Name	Email	Street
001	Eligible		Joe Client	Joe.Client@email.com	3 Chestnut St
002	Returned	6/1/13	Jane Client	Janelovesbees@email.com	21 Live Oak Ct

Table 2. Examples of contact procedures for a mixed-mode survey

Contact	Option 1: Email augmentation	Option 2: E-mail preference	Option 3: E-mail emphasis
1st	Postal pre-letter (Day 1)	Postal pre-letter (Day 1)	E-mail message with URL link to the survey (Day 1)
2nd	Mail survey packet: cover letter, questionnaire, & return envelope (Day 4)	E-mail message with URL link to the survey (Day 4)	E-mail message with URL link to the survey (Day 4)
3rd	E-mail message with URL link to the survey (Day 7)	E-mail message with URL link to the survey (Day 11)	E-mail message with URL link to the survey (Day 11)
4th	Mail survey packet to nonrespondents (Day 21)	Mail survey packet to nonrespondents (Day 25)	Mail survey packet to nonrespondents (Day 25)
5th	Mail survey packet to nonrespondents (Day 35)	Mail survey packet to nonrespondents (Day 39)	Mail survey packet to nonrespondents (Day 39)

Sending Survey Invitations

Contact procedures should be tailored to the situation, as recommended by Dillman et al.'s (2009) Tailored Design Survey Method. Table 2 shows several examples of contact procedures for a mail and e-mail mixed-mode survey. A best practice is to use multiple contacts to obtain a high response rate and minimize the risk of nonresponse bias.

The sequence of contacts can be tailored to fit one's budget and desire to emphasize online responses.

- Option 1: E-mail Augmentation is designed to collect a large majority of the responses by postal mail. This option also provides an opportunity for people who prefer to complete the survey online by sending an e-mail invitation that is scheduled to arrive shortly after the mailed survey packet (Israel 2013a).
- Option 2: E-mail Preference can be used with populations who may be unfamiliar with Extension (and reluctant to respond to a cold contact via e-mail). The postal pre-letter can help to introduce the survey and encourage people to respond to the two e-mail invitations. The final two contacts might be sent by postal mail because a number of studies have shown that a postal follow-up with a paper questionnaire results in a large number of completed surveys (Israel 2013a; 2013b; Millar and Dillman 2011; Messer and Dillman 2011).

• Option 3: E-mail Emphasis starts with three e-mail invitations to maximize online responses and minimize postage costs. Because of the findings from the previously cited studies, sending one or two replacement questionnaires by postal mail is highly recommended for this option.

Because the population and timing of the invitations will vary with each option, the letters and e-mail messages should be tailored to the specific role in the sequence. For example, the e-mail message in Option 1 should emphasize the convenience and opportunity to complete the survey online instead of using the paper questionnaire, while the initial e-mail for option 3 would use a similar introduction as that for an e-mail-only survey.

There are several methods for sending e-mail invitations with the Qualtrics survey software. These options are outlined in Table 3.

These options vary in complexity and the amount of faculty control, with the first having the least and the last having the most complexity and control. When using the second option (the Qualtrics internal mailing tool), it is important to recognize that the software reports the number of e-mail invitations sent and, recently, it also reports the number of e-mails that "bounce" or fail to be delivered. One advantage of the third option—using your own e-mail software—is

Table 3. Methods for implementing the online portion of the survey using Qualtrics.

Contact	Advantages	Disadvantages
1. Using an anonymous link that is included in the e-mail invitation to each person	Simple to use; the same link is sent to each person	Respondents cannot be identified and omitted from follow- up e-mail messages
2. Creating a unique link to the questionnaire and sending the e-mails using the Qualtrics mailing utility	Simple to use; allows tracking of respondents and nonrespondents for targeting follow up contacts	More complex than using anonymous link; requires additional skills for addressing bounced e-mails
3. Creating a unique link for each person, which is then exported to Excel and used by the faculty member's e-mail program	Allows tracking of all outcomes of e-mail messages (delivery and bounced messages); most user control	Complex; requires skills with Qualtrics, Word, Excel, Outlook, or a similar suite of applications for mail merge procedures

that bounced and delayed e-mail messages can be identified and more easily addressed.

In Summary

This publication in the Savvy Survey Series has focused on procedures for constructing a mixed-mode questionnaire and implementing the survey. It noted that a population's access and experience, software capabilities, and screen/ paper compatibility are important considerations in the construction of the questionnaire. In addition, attending to the visual design and formatting of the online and paper questionnaires to minimize differences was emphasized as a critical step in the process. Finally, steps in getting prepared and for sending a sequence of e-mail and postal invitations for completing the survey were discussed. Using multiple contacts in each mode also was emphasized as a best practice for mixed-mode surveys. Using a mixed-mode survey is a way for Extension faculty to collect data from more people and reduce the risk of bias while keeping costs within the available budget.

References

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2009). *Internet, mail, and mixed-mode surveys: The tailored design method.* (3rd ed.) Hoboken, NJ: John Wiley and Sons.

Israel, G. D. (2010). Effects of answer space size on responses to open-ended questions in mail surveys. *Journal of Official Statistics*, 26(2), 271-285.

Israel, G. D. (2011). Strategies for Obtaining Survey Responses from Extension Clients: Exploring the Role of Email Requests. *Journal of Extension* [on-line], 49(2), Article 3FEA7. Available at: http://www.joe.org/joe/2011june/a7.php.

Israel, G. D. (2013a). Combining mail and e-mail contacts to facilitate participation in mixed-mode surveys. *Social Science Computer Review*, *31*, 3, 346-358. doi: 10.1177/0894439312464942. Available at: http://ssc.sage-pub.com/content/early/2012/11/26/0894439312464942.

Israel, G. D. (2013b). Using Mixed-mode Contacts in Client Surveys: Getting More Bang for Your Buck. *Journal of Extension*, *51*(3), article 3FEA1. Available at: http://www.joe.org/joe/2013june/a1.php

Messer, B. L., & Dillman, D. A. (2011). Surveying the general public over the Internet using address-based sampling and mail contact procedures. *Public Opinion Quarterly*, 75(3), 429-457. doi: 10.1093/poq/nfr021.

Millar, M. M., & Dillman, D. A. (2011). Improving response to Web and mixed-mode surveys. *Public Opinion Quarterly*, 75, (2), 249-269. doi: 10.1093/pog/nfr003.

Appendix A.

Israel, Glenn D

From: Israel,Glenn D

Sent: Tuesday, June 11, 2013 11:16 AM

To: Israel,Glenn D

Subject: Florida Cooperative Extension Service's Customer Satisfaction Survey

Dear <<Cli>entName>>,

The University of Florida's Cooperative Extension Service is conducting a survey of people who have contacted the <<CountyName>> County Extension office for information or attended one of its programs. We want to find out how people feel about the information that they got. Your responses will help us find out what we are doing well and where we need to improve. The survey will take about 5 minutes to complete.

We are hoping that you will be able to complete the survey on the Internet so that we can summarize the results more quickly and accurately. Doing that is easy: just click on the link below or enter this web page address in your Internet browser's address field, and then type in your PIN code to begin the survey.

https://ufaecd.gualtrics.com/SE?Q DL=6QonT5eNyY1r2OF d4E6SJv7xkoy1X7 MLRP 8qPJRh3lje2WDJP

Your PIN code: <<PIN>>

You are one of a small number of Extension clients randomly chosen to participate in this study. Since your responses will also represent others who were not selected, we hope that you will complete the survey as soon as possible. Your participation is voluntary. You do not have to answer any question that you do not wish to answer. We believe that there are no risks to you from participating in this study. There are also no direct benefits or compensation to you for participating in the study. If you have questions about your rights, please contact the UFIRB office, Box 112250, University of Florida, Gainesville, FL 32611-2250.

We will keep your answers confidential to the extent provided by law. Your name will not be used in any report. We will only use your answers after they have been combined with the other respondents' answers.

If you have any questions, please call 352-273-2586, or send an email to gdisrael@ufl.edu. Thank you for your help.

Sincerely,

Glenn Israel Survey Director

Figure 2. Example of the first survey invitation for a mixed-mode survey starting with email.

Israel, Glenn D

From: Israel,Glenn D

Sent: Tuesday, June 11, 2013 11:46 AM

To: Israel, Glenn D

Subject: Florida Cooperative Extension Service's Customer Satisfaction Survey

Dear << ClientName>>,

A few days ago, we sent you an e-mail asking you to complete a questionnaire about your experience with contacting the <<CountyName>> County Extension office for information or attending one of our programs. We want to find out how people feel about the information that they got. Your response will help us find out what we are doing well and where we need to improve.

We hope that you will do so as soon as possible. Because of the small number of people being asked to participate in this survey, it important that each person complete the questionnaire. The survey will take about 5 minutes.

Please click on the link below or enter this web page address in your Internet browser's address field, and then type in your PIN code to begin the survey.

https://ufaecd.qualtrics.com/SE?Q DL=6QonT5eNyY1r2OF d4E6SJv7xkoy1X7 MLRP 8qPJRh3lje2WDJP

Your PIN code: <<PIN>>

Thank you for your help.

Sincerely,

Glenn Israel Survey Director

Figure 3. Example of a second email message in the series.

Israel, Glenn D

From: Israel, Glenn D

Sent: Tuesday, June 11, 2013 11:47 AM

To: Israel, Glenn D

Subject: Florida Cooperative Extension Service's Customer Satisfaction Survey

Dear <<Cli>entName>>,

This is a busy time of year for many people and we understand how valuable your time is. We are hoping that you can give about 5 minutes of your time to help us collect important information for the Florida Cooperative Extension Service by completing a short survey. We would really like to know about your experience with contacting the Extension office for information or attending one of its programs. Your response will help us find out what we are doing well and where we need to improve.

We urge you to complete the survey as soon as possible. Please click on the link below or enter this web page address in your Internet browser's address field, and then type in your PIN code to begin the survey.

https://ufaecd.qualtrics.com/SE?Q_DL=6QonT5eNyY1r2OF_d4E6SJv7xkoy1X7_MLRP_8qPJRh3lje2WDJP

Your PIN code: <<PIN>>

Thank you in advance for completing the survey. Your response is important. Clients, such as yourself, are the best source of information to help shape Extension's services.

Sincerely,

Glenn Israel Survey Director

Figure 4. Example of a third contact message in the series.



Department of Agricultural Education and Communication

PO Box 110540 Gainesville, FL 32611-0540 Telephone: (352) 392-0502

June 27, 2012

<<Name>> <<Street>> <<City>>, FL <<Zip>>>

Dear << Name>>,

A couple of weeks ago, we sent you a survey asking about your experience in getting information from the county Extension office or attending one of its programs. As of today, however, we have not received your completed survey.

Many people have already responded. They described their experience, both good and bad, from their contact with Extension. The results will be very useful to us at the University of Florida.

We are writing again because of the importance that your questionnaire has for helping to get accurate results. Although we sent questionnaires to people across Florida, we need to hear from nearly everyone in the sample to be sure that the results are truly representative.

Your participation is voluntary. You do not have to answer any question that you do not wish to answer. We believe that there are no risks to you from participating in this study. There are also no direct benefits or compensation to you for participating in the study. If you have questions about your rights, please contact the UFIRB office, Box 112250, University of Florida, Gainesville, FL 32611.

We will keep your answers confidential to the extent provided by law. Your name will not be used in any report. We will only use your answers after they have been combined with the other respondents' answers. Please note that the number on the questionnaire will be used only to check your name off the mailing list when your survey is returned.

If you have any questions, please call 352-273-2586, or send an email to gdisrael@ufl.edu. We have enclosed a postage paid envelop for you to mail the completed survey. Thank you for your help.

Sincerely,

Glenn Israel Survey Director

Glenn Jarael

The Foundation for The Gator Nation
An Equal Opportunity Employer

Figure 5. Example of a fourth contact message in the series.



Department of Agricultural Education and Communication

PO Box 110540 Gainesville, FL 32611-0540 Telephone: (352) 392-0502

July 20, 2012

<<Name>> <<Street>> <<City>>, FL <<Zip>>>

Dear << Name>>,

This is our last call for your opinion on how we are doing! Please take just five minutes to answer the survey about your experience in getting information from the <<CountyName>> County Extension office or attending one of its programs.

Many people have already responded, but we need to hear from you too. This is because we need to hear from nearly everyone to get an accurate picture of our clients' experience, both good and bad. The results will help us serve you and your neighbors better.

Your participation is voluntary. You do not have to answer any question that you do not wish to answer. We believe that there are no risks to you from participating in this study. There are also no direct benefits or compensation to you for participating in the study. If you have questions about your rights, please contact the UFIRB office, Box 112250, University of Florida, Gainesville, FL 32611.

We will keep your answers confidential to the extent provided by law. Your name will not be used in any report. We will only use your answers after they have been combined with the other respondents' answers.

If you have any questions, please call 352-273-2586, or send an email to gdisrael@ufl.edu. We have enclosed a postage paid envelop for you to mail the completed survey. Thank you for your help.

Sincerely,

Glenn Israel Survey Director

Glenn Jarael

The Foundation for The Gator Nation
An Equal Opportunity Employer

Figure 6. Example of a fifth and final contact.