

validation study will respond, which may introduce bias into the validation study. In general, these types of reinterview surveys are useful for checking that a valid interview occurred and that a few key characteristics of the respondents match, with a focus on those that are unlikely to have changed.

CONCLUSION

The telephone is no longer the dominant survey mode. The societal shift of the telephone from a household to an individual device, the ability of people to port a telephone number to new residences in different states, caller ID, answering machines, and other issues continue to whittle away at its adequacy for conducting surveys. Yet, our use of the telephone for survey purposes is far from over. The telephone will continue to be used for opinion, and in particular voter preference, surveys where timing is critical with weighting and other adjustments being made to compensate for noncontact and nonresponse issues. In addition, compared to other modes, the telephone has great strengths when it comes to selecting respondents, allowing interactive exchanges to occur between interviewers and respondents, seeking elaboration from respondents, and answering their questions that are limited in other modes.

However, we expect that another important role of the telephone, and perhaps its predominant role, will be as a mode that is used alongside other modes in mixed-mode surveys. In some respects, this role will not be new. Telephone and postal mail have been used together for quite some time such as when advance contact is made by mail to legitimize an upcoming telephone request to be interviewed or when responses are collected by telephone from those who did not respond to a mail request. We elaborate on these uses and provide guidelines for adapting the telephone for use in mixed-mode surveys in Chapter 11.

LIST OF GUIDELINES

Guidelines for Designing Telephone Questionnaires

- Guideline 8.1: Break complex questions into a series of simpler questions
- Guideline 8.2: Avoid question formats that tax respondents' memory
- Guideline 8.3: Make sure the words the interviewer reads clearly convey what is being asked
- Guideline 8.4: Provide clear and simple cues to the interviewer about what material must be read, what is optional, and what should not be read to the respondent
- Guideline 8.5: Locate interviewer instructions where they are needed by interviewers
- Guideline 8.6: Include conversational cues and short and simple transition statements to help interviewers administer the questions
- Guideline 8.7: Avoid the use of abbreviations and special characters and include pronunciations for difficult words, names, or places
- Guideline 8.8: Include a "don't know" or "refused" option for every question
- Guideline 8.9: Provide ways for interviewers to respond to and record the outcome of every possible scenario that can be anticipated

- Guideline 8.10: Provide standardized scripts for responses to questions respondents may ask and to address any special procedures for the study
- Guideline 8.11: Display each individual question on its own screen to reduce clutter and support efficient processing
- Guideline 8.12: Include additional questions needed for screening and weighting surveys that include cell phones
- Guideline 8.13: Consider offering cell phone respondents reimbursement for their minutes used

Guidelines for Administering Telephone Questionnaires

- Guideline 8.14: Provide a short, clear, and persuasive introduction to the survey
- Guideline 8.15: Read questions fully and exactly, in order, as they appear in the questionnaire
- Guideline 8.16: Record answers exactly as respondents provide them
- Guideline 8.17: Focus on the respondent and practice active listening
- Guideline 8.18: Use a controlled speaking pace and manage the pitch and tone of your voice
- Guideline 8.19: Provide encouragement and targeted feedback to respondents
- Guideline 8.20: Train interviewers before they start calling sample members and provide regular follow-up trainings

Guidelines for Establishing Calling Rules and Procedures

- Guideline 8.21: Make multiple attempts to reach someone at each sampled telephone number
- Guideline 8.22: Vary the days of the week and times of the day that call attempts are made to each sample member
- Guideline 8.23: Decide how telephone numbers will be dialed and review legal rules about calling
- Guideline 8.24: Implement a system for tracking every call attempt and assign each sample member a unique ID number
- Guideline 8.25: Decide whether to provide a phone number or description that displays on caller ID
- Guideline 8.26: Consider leaving a voice mail message, especially when calling cell phones
- Guideline 8.27: Establish procedures for dealing with inbound calls
- Guideline 8.28: Maintain an internal do not call list

Quality Control and Testing Guidelines for Telephone Surveys

- Guideline 8.29: Obtain expert review and conduct cognitive interviews, experimental evaluations, and pilot studies of implementation materials and procedures
- Guideline 8.30: Test the programming of the autodialer, CATI software, and the database as well as interviewer workstations

- Guideline 8.31: Implement a system for monitoring progress and evaluating early calling
 - Guideline 8.32: Collect paradata that provides feedback about the questionnaire and implementation process whenever possible
 - Guideline 8.33: Monitor interviewer performance to ensure quality, identify areas for retraining, and develop metrics for tracking interviewer performance
 - Guideline 8.34: Validate that interviews were conducted accurately

Conclusion

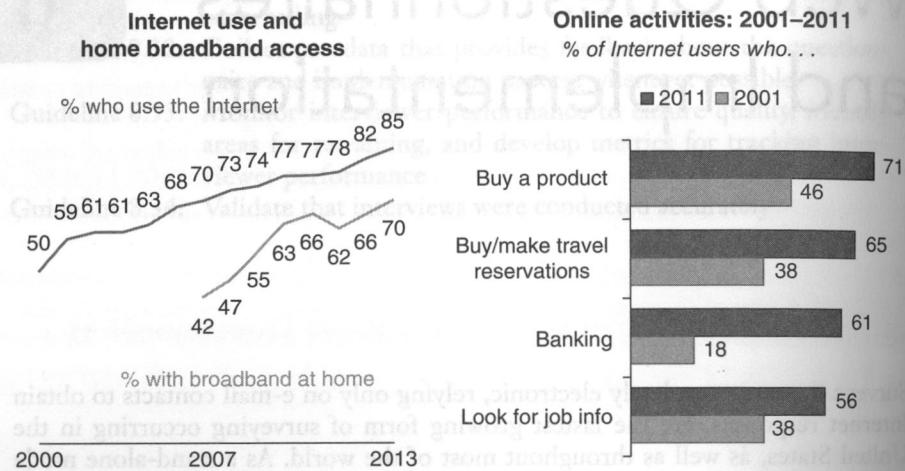
Web Questionnaires and Implementation

Surveys that are completely electronic, relying only on e-mail contacts to obtain Internet responses, are the fastest growing form of surveying occurring in the United States, as well as throughout most of the world. As a stand-alone mode of data collection, web is especially attractive because of speed, low cost, and economies of scale. However, despite these benefits, many barriers to realizing them also exist and are discussed in this chapter. Through this discussion of how to design and implement web surveys, we focus on both the benefits and the current limitations of using only the Internet and e-mail invitations to request and obtain responses.

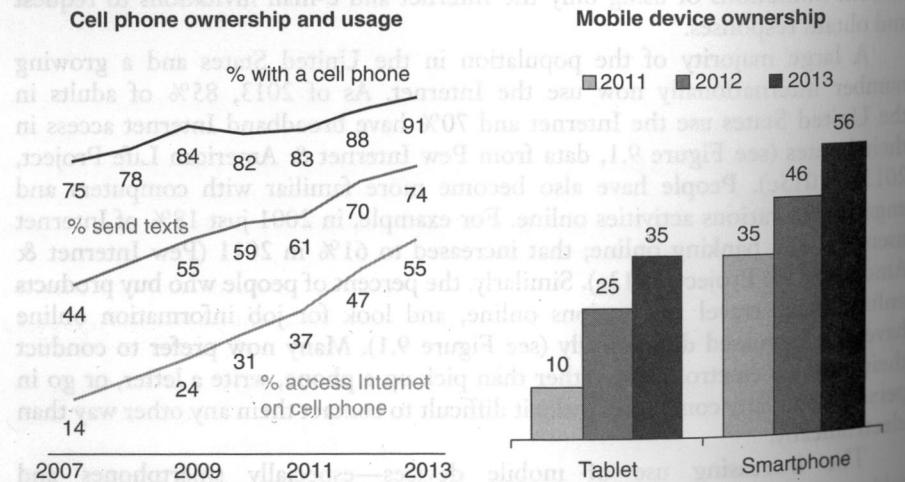
A large majority of the population in the United States and a growing number internationally now use the Internet. As of 2013, 85% of adults in the United States use the Internet and 70% have broadband Internet access in their homes (see Figure 9.1, data from Pew Internet & American Life Project, 2013b, 2013c). People have also become more familiar with computers and engaging in various activities online. For example, in 2001 just 18% of Internet users did any banking online; that increased to 61% in 2011 (Pew Internet & American Life Project, 2013a). Similarly, the percent of people who buy products online, make travel reservations online, and look for job information online have also increased dramatically (see Figure 9.1). Many now prefer to conduct their business electronically rather than pick up a phone, write a letter, or go in person, and many companies make it difficult to contact them any other way than electronically.

The increasing use of mobile devices—especially smartphones and tablets—has further fueled the growth in online behavior, especially as these devices have become the primary way that some people connect to the Internet. Nearly all adults (91%) have cell phones, up from 75% in 2007 (Duggan, 2013). And people are now far more likely to send text messages and access the Internet on their cell phones than they were just 5 years ago (see Figure 9.2). Smartphone ownership has increased from 35% to 56% among U.S. adults in just 2 years (from 2011 to 2013), and tablet ownership increased from 10% to 35% during the same period (see Figure 9.2, data from Pew Internet & American Life Project [Rainie & Smith, 2013; A. Smith, 2013a]). Further, 21% of cell phone owners say they *mostly* access the Internet using their phone, rather than other devices (Duggan & Smith, 2013).

The fact that people have become more accustomed to completing various daily activities online could be good for survey researchers interested in

FIGURE 9.1 Internet usage over time.

Source: Adapted from Pew Research Center's Pew Internet & American Life Project, 2013a, 2013b, 2013c. Figures based on adults in the United States.

FIGURE 9.2 Growth in use of mobile devices.

Source: Adapted from Pew Research Center's Pew Internet & American Life Project (Duggan, 2013; Rainie & Smith, 2013; Smith, 2013a). Figures based on adults in the United States.

conducting web surveys, since people may also have become more receptive to completing surveys online. However, it also means that web surveys are constantly changing as the ways in which people interact with computers and mobile devices also continues to evolve. The rise in mobile devices requires survey designers to reconsider aspects of questionnaire design to accommodate the smaller screen. Many people may also receive and quickly scan e-mail and texts on their phone but then wait to follow-up on requests that need more attention until they get to their desktop or laptop. The range of devices (from desktop to netbook to tablet to phablet to smartphone), operating systems and browsers (and different versions), and customized settings available to users also continues to expand,

making designing and implementing web surveys more challenging than it was even a few short years ago.

Web surveys continue to pose many challenges and benefits for surveyors, much like they did in their early days (Couper, 2000). Typically, responses can be gathered from large numbers of people in a very short amount of time. Web surveys can also often be conducted at a fairly low cost, especially when e-mail is the only form of communication with sample members. Thousands or even tens of thousands of questionnaires can be completed in a single day with the results available for review and analysis immediately.

For this reason and others, the use of web and mobile surveys continues to grow. The proliferation of opt-in panels and other nonprobability online survey methodologies has further fueled the increase in web surveys. But surveys of special populations with high levels of computer ability, such as college students, policy experts, and business executives, also are increasingly being conducted online, using web alone or in combination with another mode. Lastly, surveyors have increasingly been using web surveys in mixed-mode designs of the general public where sample members are contacted by another mode (e.g., mail) and asked to complete the web survey (Smyth, Dillman, Christian, & O'Neill, 2010). Designing questionnaires and implementation strategies for mixed-mode surveys that include web is discussed in Chapter 11.

In this chapter, we present guidelines for designing web and mobile questionnaires and for implementing web surveys in which e-mail is the only method used to contact people, but these guidelines will also be helpful to those who are conducting mixed-mode surveys that include e-mail contacts or web data collection. These guidelines are aimed at helping surveyors work their way through the development and design of a web survey in ways that will encourage responses from many types of respondents. These guidelines address many of the technological issues of constructing web and mobile surveys as well as decisions about formatting and displaying the questionnaire to respondents. The implementation guidelines focus on designing e-mail strategies and contacts to maximize response, as well as monitoring responses (and nonresponse) and evaluating the survey process. Additionally, we discuss guidelines for testing and ensuring the quality of web surveys.

GUIDELINES FOR DESIGNING WEB AND MOBILE QUESTIONNAIRES

Most web surveys are browser based, where respondents interact with the survey through their Internet browser (such as Chrome, Firefox, Internet Explorer, and Safari). The web survey is made up of a web page or series of web pages containing survey questions programmed most commonly in hypertext markup language (HTML) that are stored on a server. Users with the proper URL can access them through their computers or mobile devices and an Internet or cellular connection. Surveyors send requests, often by e-mail, but also by mail or telephone, to the person (or unit) from whom a response is desired and provide the link or URL for the web survey (and often an individual identification code). Respondents click on the URL or enter it into their browser's address bar. Alternatively, QR codes (or quick response codes) provide mobile device users with a matrix barcode that can be read or scanned by such devices to take them directly to the web survey. Survey website URLs and a QR code are illustrated in Figure 9.3.

FIGURE 9.3 Example URLs and QR code.**URL**

www.wiley.com/WileyCDA/WileyTitle/productCd-1118456149.html

Shortened URL

<http://tinyurl.com/tailored-design>

QR code

Once sample members click on the URL, they are usually routed to a welcome or introductory screen that briefly describes the survey and asks them to proceed with the questionnaire. Once they begin the survey, pressing the “submit” or “next” button on a page sends their answers back to the web server. Their responses may be reviewed by the survey software and are stored in a database on the server. What this means, in essence, is that surveyors have to translate their questionnaire designs into computer code to be stored on a server. They also have to design databases that will store survey responses in an accurate, organized, meaningful, and accessible way on the server.

This can be done by programming the survey and creating the databases from scratch (using unique code) or by using preexisting software, most of which provide fairly simple point-and-click interfaces. Programming the survey and databases from scratch provides the most design flexibility and ability to innovate, but it requires bringing together two very specialized skill sets—computer programming and survey methodology—and is often the most complex and expensive option.

Those who cannot program from scratch or who prefer other options have an almost dizzying array of software options to choose from. The available software programs vary along four dimensions that are important to consider.

1. *Design flexibility and difficulty.* Almost all survey software programs provide question templates that can be used. In some programs the template must be used as is, but other programs allow the surveyor to alter the underlying programming to customize the design. For some, customization can be done in standard programming languages like HTML and cascading style sheets (CSS), but others require one to use specialized programming languages developed for the particular software. In addition, some software packages include either mobile optimization or mobile app support and others do not, so it is important to review all of the features that a program has to offer before selecting one.

2. *Control over the data.* Some programs only allow the data to be collected and stored on the software company’s servers while others allow collection and storage to take place on the surveyor’s servers. Others provide both options. This raises the ethical considerations of how secure the data are and exactly who has access, issues that need to be considered carefully in light of any restrictions within one’s organization and before promising anonymity or confidentiality to respondents.

3. *Data access and reporting.* Some programs limit the analysis to simple frequencies and cross tabulations while others provide raw data sets that can be analyzed however the surveyor desires (these come in a variety of formats). Similarly, some packages also offer various automated monitoring and reporting features that may make it easier to track progress and quickly look at results.

4. *Cost.* Cost underlies all these dimensions. Available software packages range from free to costing tens of thousands of dollars per year. Many software providers have tiered pricing structures in which the higher cost tiers grant more design flexibility for the survey itself and more control over the resulting data. Generally speaking the design flexibility required to conduct a good web survey comes with a higher price tag.

Reviewing the various software programs along these dimensions, as well as the questionnaire design and implementation guidelines presented throughout this chapter, can help in carefully evaluating the best software option for a specific survey or organization's needs.

There are several ways, other than a browser-based survey, for researchers to collect survey data over the web. For example, survey apps can be used for those who are on mobile devices (as discussed more in Guideline 9.4). Alternatively, other electronic options, such as fillable PDFs or embedded e-mail or text/SMS surveys, can sometimes be effective. With fillable PDFs, respondents can enter answers directly into a PDF file that is then e-mailed back to the surveyor (or returned some other way). In some cases, such as in surveys of establishments, this is desirable because PDF files can easily be printed to keep copies for one's records or to pass around to all the people who need to answer the questions.

Another option is to embed the survey directly into an e-mail or text message (Schaefer & Dillman, 1998). The major advantage of this strategy is its low cost, as it eliminates considerable programming costs. However it is difficult to control the visual appearance of such surveys because of the variety of ways people read their e-mail and SMS messages (i.e., web-based e-mail providers, local software programs, on mobile devices and phones, etc.) and because entering responses shifts their content around. Lastly, these types of surveys are quite difficult for those completing them on mobile devices, unless they are kept very short (only one to three questions).

Despite these drawbacks, it is important to evaluate whether one of these alternatives may be more appropriate for one's survey needs, as they are often less costly than fully interactive web surveys. The guidelines for designing web questionnaires presented here are primarily focused on browser-based web surveys, but we also highlight ways in which the design may need to be modified and optimized for a mobile experience. Designing survey questionnaires for mobile devices is still in its infancy and more research is needed to understand how people complete web questionnaires on their mobile devices.

If one chooses a browser-based web survey, it is important to remember that designing a web survey is very different from designing a website. Although some aspects of visual design, as discussed in Chapter 6, apply either way, others differ because people's motivation and purpose for going to a typical website are quite different from their motivation and purpose for visiting a web survey site (or using a web survey app). Most of the time, people visit websites to get information, and are self-motivated to find what they are looking for. In contrast, most respondents go to a web survey because someone else asked them to; their own motivation may be low. In addition, in a web survey, respondents' primary task is to provide, rather than seek, information. Thus, it is critical that web surveys be designed to make

the response task as easy as possible while obtaining accurate measurement. Doing so may require different design strategies than might be suggested by the more general website usability literature. Moreover, design errors that may be tolerated when someone is looking for information or trying to pay their bills online may more easily trigger break-offs in a web survey.

Guideline 9.1: Decide How the Survey Will Be Programmed and Hosted

It is important to assess whether an organization has the capability of conducting and implementing a web survey that meets the desired goals. Some people have the training that allows them to design and program all aspects of their own web surveys and are located in an organization that provides the needed server capabilities and protection (including backups) to host the survey, receive the data, and send contacts to sample members. In addition, they or others in the organization can troubleshoot and manage survey and technical issues that may arise in the process.

If one's organization does not have the capabilities to design, host, and implement a wide range of web surveys, there are several other alternatives, as we discussed earlier, for programming and hosting a web survey. Designing and hosting surveys has also become an activity in which some people and organizations have become specialists. There are a variety of survey data collection organizations in the private sector and within many colleges and universities. Listings for many of these organizations can be found in the American Association for Public Opinion Research's *Blue Book* (AAPOR, n.d.) or the membership directory of the Association of Academic Survey Research Organizations (AASRO, n.d.). It may be necessary to contract out the programming and hosting of the survey to such people or organizations. Others may instead decide to purchase a software package that can help with designing and managing the implementation of the survey, particularly if they plan to conduct a large number of web surveys (see earlier discussion for issues to consider when purchasing such software). Lastly, some may choose to use one of the many online survey sites that allow them to design the questionnaire, send contacts to sample members, and collect responses using the website's servers. It is important for surveyors to think about the expectations they have for collecting data and choose from these alternatives for designing and hosting web surveys commensurate with those needs.

Guideline 9.2: Evaluate the Technological Capabilities of the Survey Population

Every web survey should be designed with the survey population in mind. Survey populations vary in their access to the necessary technology to complete a web survey and their understanding of how the technology and the process works (see Chapter 3 for more on coverage and access issues with web surveys). People differ in their adoption of new technology. Older people, those in rural areas, and those with lower education all tend to lag behind their counterparts in the adoption of the Internet, the use of mobile devices, and the speed of their connections. Even among those who have Internet access, some may not be familiar with completing web surveys (Stern, Adams, & Elsasser, 2009) and will need more instruction or even another mode of response. In contrast, for surveys of some populations, such as college students, business executives, and computer

engineers, one should expect a very high level of technical proficiency with the Internet and possibly a greater use of mobile devices to complete the survey. Thus, it is important to assess the technological capabilities of the population for each survey that is conducted, recognizing variation in the speed at which technological changes are being adopted across many populations.

Guideline 9.3: Take Steps to Ensure That Questions Display Similarly Across Different Devices, Platforms, Browsers, and User Settings

One challenge with web surveys is that there is wide variation in how respondents might experience any given web survey. The types of devices available for accessing the Internet (including desktop computers, laptops, tablets, smartphones, and other types of devices—all with varying screen sizes and with a range of processors, memory, and hard drive sizes) and the browser software available for viewing websites—have grown considerably in recent years. The situation is further complicated by the constant release of updates and new plug-ins that affect whether and how web pages are displayed, and by the fact that some people install these updates and others do not. Moreover, as people become more computer savvy, they are more likely to customize their settings in ways that can affect how a website looks to a respondent. As such, the manner in which web surveys are displayed can vary widely across respondents. This makes it necessary to take additional steps to try to control the effects of devices, software, and settings on the visual display of questions in an effort to try to ensure that every respondent receives the same stimulus.

Screen sizes and resolution are one element that varies considerably across respondents and can have significant impacts on the visual appearance of web surveys. To try to minimize the impact of screen size, program web surveys for the lowest likely screen resolution. HTML programming relies on underlying tables made up of rows and columns to locate content on the screen. Setting the main HTML table to the lowest likely screen resolution will ensure that the content will appear in the intended way on the screens of most users, and will minimize the need for them to scroll (although surveyors may want to consider using web and mobile versions that are optimized differently). Currently, most general population Internet users have screen resolutions that are at least 800×600 pixels (StatCounter Global Stats, 2013b). Thus, a design in which the question fits in this size area will work for the vast majority of respondents. Among more technologically savvy populations with more current hardware, this can be increased to 1024×768 . Similarly, most mobile Internet users have a screen resolution that is at least 320×240 pixels (StatCounter Global Stats, 2013a). See Figure 9.4 for a summary of common screen resolutions. Importantly, as time passes the recommended width and height will change because the hardware in use by most people will change. But the underlying recommendation to try to determine the minimum screen resolution used by the sample members, and to program for this resolution, should still apply.

Center-aligning the main survey questionnaire region horizontally on the page will also help ensure that the questions look similar across different screen resolutions. Within the HTML tables that make up a web page, the column widths can be manipulated to minimize the effects of changes in screen or window size on the visual appearance of the web page. Column widths can be set as either fixed widths or proportions. When they are fixed, the width of the columns does