# Pew Research Methods

## 1 Sampling

The typical Pew Research Center national survey selects a random digit sample of both landline and cellphone numbers in all 50 U.S. states and the District of Columbia

Approximately 35% of the interviews conducted by landline and 65% by cellphone. This ratio attempts to balance cost and fieldwork considerations as well as overall demographic composition of the sample (in terms of age, race/ethnicity and education).

The landline sample ensures representation of both listed and unlisted numbers by using random digit dialing. This method uses random generation of the last two digits of telephone numbers selected on the basis of the area code, telephone exchange and bank number. A bank is defined as 100 contiguous telephone numbers, for example 800-555-1200 to 800-555-1299. The telephone exchanges are selected to be proportionally stratified by county, i.e. the number of telephone numbers randomly sampled from within a given county is proportional to that county's share of telephone numbers in the U.S. Only banks of telephone numbers containing one or more listed residential numbers are selected.

The cellphone sample is drawn through systematic sampling from dedicated wireless banks of 100 contiguous numbers and shared service banks with no directory-listed landline numbers (to ensure that the cellphone sample does not include banks that are also included in the landline sample).

When interviewers reach someone on a landline phone, they randomly ask half the sample if they could speak with "the youngest male, 18 years of age or older, who is now at home" and the other half of the sample to speak with "the youngest female, 18 years of age or older, who is now at home." If there is no eligible person of the requested gender currently at home, interviewers ask to speak with the youngest adult of the opposite gender, who is now at home. This method of selecting respondents within each household improves participation among young people who are often more difficult to interview than older people because of their lifestyles.

Unlike a landline phone, a cellphone is assumed in Pew Research Center polls to be a personal device. Interviewers ask if the person who answers the cellphone is 18 years of age or older to determine if the person is eligible to complete the survey.

For each of our surveys, we report a margin of sampling error for the total sample and usually for key subgroups analyzed in the report (e.g., registered voters, Democrats, Republicans, etc.). For example, the sampling error for a typical Pew Research Center national survey of 1,500 completed interviews is plus or minus 2.9 percentage points with a 95% confidence interval. Thus, the chances are very high (95 out of 100) that any sample we draw will be within 3 points of the true population value.

## 2 Nonresponse

At least seven attempts are made to complete an interview at every sampled telephone number. The calls are staggered over times of day and days of the week (including at least one daytime

call) to maximize the chances of making contact with a potential respondent. Interviewing is also spread as evenly as possible across the field period. An effort is made to recontact most interview breakoffs and refusals to attempt to convert them to completed interviews.

Response rates for Pew Research polls typically range from 5% to 15%. Fortunately, low response rates are not necessarily an indication of nonresponse bias, as we discuss in the problem of declining response rates.

In addition to the response rate, we sometimes report the contact rate, cooperation rate or the completion rate for a survey. The contact rate is the proportion of working numbers where a request for an interview was made. The cooperation rate is the proportion of contacted numbers where someone gave initial consent to be interviewed. The completion rate is the proportion of initially cooperating and eligible households where someone completed the interview.

## 3 Data weighting

Nonresponse in telephone interview surveys can produce biases in survey-derived estimates. Survey participation tends to vary for different subgroups of the population, and these subgroups are likely to also vary on questions of substantive interest. To compensate for these known biases, the sample data are weighted for analysis.

The landline sample is first weighted by household size to account for the fact that people in larger households have a lower probability of being selected. In addition, the combined landline and cellphone sample is weighted to account for the fact that respondents with both a landline and cellphone have a greater probability of being included in the sample.

The sample is then weighted using population parameters from the U.S. Census Bureau for adults 18 years of age or older. The population parameters used for weighting are: gender by age; gender by education; age by education; region; race and Hispanic origin, which includes a break for Hispanics based on whether they were born in the U.S. or not; population density; and among non-Hispanic whites  age, education and region.

## 4 Oversampling

For some surveys, it is important to ensure that there are enough members of a certain subgroup in the population so that more reliable estimates can be reported for that group. To do this, we oversample members of the subgroup.

For example, African Americans make up 13.6% of the total U.S. population, according to the U.S. Census. A survey with a sample size of 1,000 would only include approximately 136 African Americans. The margin of sampling error for African Americans then would be around 10.5 percentage points, resulting in estimates that could fall within a 21-point range, which is often too imprecise for many detailed analyses surveyors want to perform. In contrast, oversampling African Americans so that there are roughly 500 interviews completed with people in this group reduces the margin of sampling error to about 5.5 percentage points.

## 5 Internet surveys

Web surveys have a number of advantages over other modes of interview. They are convenient for respondents to take on their own time and at their own pace. The lack of an interviewer means web surveys suffer from less social desirability bias than interviewer-administered modes. And web surveys also allow researchers to use a host of multimedia elements, such as having respondents view videos or listen to audio clips, which are not available to other survey modes.

Surveys of the general population that rely only on the internet can be subject to significant biases resulting from undercoverage and nonresponse. There also is no systematic way to collect a traditional probability sample of the general population using the internet.

Because of these limitations, researchers use two main strategies for surveying the general population using the internet. One strategy is to randomly sample and contact people using another mode (mail, telephone or face-to-face) and ask them to complete a survey on the web. Contacting respondents using probability-based sampling via another mode allows surveyors to estimate a margin of error for the survey.

## 6 Question development

- Identify what topics will be covered
- Discuss drafts of the questionnaire several times over the course of its development
- Pretest and make final changes before fielding the survey

At Pew Research Center, questionnaire development is a collaborative and iterative process where staff meet to discuss drafts of the questionnaire several times over the course of its development. After the questionnaire is drafted and reviewed, we pretest every questionnaire and make final changes before fielding the survey.

## 7 Measuring change over time

- cross-sectional design: the most common one used in public opinion research, surveys different people in the same population at multiple points in time
- panel or longitudinal design: surveys the same people over time (e.g. Pew Research: American Trends Panel)
- it is important to use the same question wording and ordering within the questionnaire to maintain a similar context as when the question was asked previously

## 8 Open- and closed-ended questions

- In a poll conducted after the presidential election in 2008, people were asked: What one issue mattered most to you in deciding how you voted for president? One was closed-ended and the other open-ended. In the closed-ended version, respondents were provided five options (and could volunteer an option not on the list)

- The econony
- The war in Iraq
- Health care
- Terrorism
- Energy policy
- Other (please state)

Results:

1. 58% chose the economy when offered as a choice versus 35% in the open-ended version
2. 92% chose one of the five issues that were explicitly offered as a choice, versus 57% in open-ended version

- Researchers may conduct a pilot study using open-ended questions to discover which choices should be included in closed-ended questions
- Issues to consider when asking closed-ended questions

1. The choice of options provided

   In January 2002:

   "Was it more important for President Bush to focus on domestic policy or foreign policy?" 34% said foreign policy.

   "Was it more important for President Bush to focus on domestic policy or the war on terrorism?" 52% chose the war on terrorism.
2. The number of response options offered

   Keep to a relatively small number just four or perhaps five at most especially in telephone surveys

   More categories can be used when asking about an objective fact (e.g. "What is your present religion if any?" (Protestant, Roman Catholic, Mormon, Greek or Russian Orthodox, Jewish, Muslim, Buddhist, Hindu, atheist, agnostic, something else, or nothing in particular?)
3. The order in which options are read

   Research suggests that in telephone surveys respondents more frequently choose items heard later in a list (a "recency effect"). Many response options in Pew Research Center's surveys are programmed to be randomized.

   Questions with ordinal response categories are generally not randomized but the order can be reversed for some respondents. For example, when asking whether abortion should be "legal in all cases, legal in most cases, illegal in most cases, illegal in all cases", half of the sample is asked the same question with the response categories read in reverse order.

# 9 Question Wording

- Small wording differences can substantially affect the answers people provide

  January 2003:

  "Do you favor or oppose taking military action in Iraq to end Saddam Hussein's rule?" 68% favor, 25% oppose

  "Do you favor or oppose taking military action in Iraq to end Saddam Hussein's rule even if it meant that U.S. forces might suffer thousands of casualties?" 43% favor, 48% oppose

- Important things to consider in wording survey questions

  1. Ask questions that are clear and specific and that each respondent will be able to answer. If a question is open-ended, it should be evident to respondents that they can answer in their own words and what type of response they should provide (an issue or problem, a month, number of days, etc.). Closed-ended questions should include all reasonable responses (i.e., the list of options is exhaustive) and the response categories should not overlap (i.e., response options should be mutually exclusive).
  2. Ask only one question at a time. "How much confidence do you have in President Obama to handle domestic and foreign policy?" is called a double-barrelled question. It is better to ask two separate questions.
  3. Use simple and concrete language that are more easily understood by respondents.

     "Do you favor or oppose not allowing gays and lesbians to legally marry?" is a confusing double negative.

     Unfamiliar abbreviations or jargon (e.g., ANWR instead of Arctic National Wildlife Refuge) can result in respondent confusion.
  4. Consider whether certain words may be viewed as biased or potentially offensive, as well as provoke emotional reaction

     "Do you favor or oppose making it legal for doctors to give terminally ill patients the means to end their lives?" 51% favor

     "Do you favor or oppose making it legal for doctors to assist terminally ill patients in committing suicide?" 44% favor
  5. Agree-disagree versus forced-choice format
     (a) "The best way to ensure peace is through military strength." (55% agree, 42% disagree)
     (b) "Which of the following statements more closely matches your view?"
     "The best way to ensure peace is through military strength." (33%)
     OR
     "The best way to ensure peace is through diplomacy." (55%)
  6. People may provide inaccurate answers to questions that deal with sensitive subjects. Research has shown that respondents understate alcohol and drug use, tax evasion and racial bias; they also may overstate church attendance, charitable contributions and the likelihood that they will vote in an election.

     "In the 2012 presidential election between Barack Obama and Mitt Romney, did things come up that kept you from voting, or did you happen to vote?"

7. Question order affects responses

   "Do you favor or oppose allowing gays and lesbians to enter into legal agreements that give them the same rights as married couples?" (37% favor, but 45% favor when asked after "Do you favor or oppose allowing gays and lesbians to marry?")

8. A questionnaire, like a conversation, should be grouped by topic and unfold in a logical order. Begin with simple questions that respondents will find interesting. Throughout the survey, an effort should be made to keep the survey interesting and not overburden respondents with several difficult questions right after one another. Demographic questions such as income, education or age should not be asked near the beginning of a survey unless they are needed to determine eligibility for the survey or for routing respondents through particular sections of the questionnaire.

# 10 Pretests

- Determine whether respondents are interpreting questions as intended and whether the order of questions may influence responses
- Use a small sample of people from the survey population
- Use the same protocol and setting as the survey
- Typically conducted once the questionnaire and procedures have been finalized
- Get feedback from interviewers about the questions and an estimate of how much time it will take people to respond to the questionnaire