36-303 Sampling, Surveys & Society
Homework 01 Solutions

February 9, 2012

1 Mormons in America

See Table 1.

(b) Since people living in counties with low Mormon densities were undersampled, the data pertaining to them may be less reliable. The survey was limited to people with telephones whose numbers could be obtained; this may not account for those Mormons living in environments were telephone communication might be less common. Additionally, "respondents reached by landline were selected by randomly asking for the youngest adult male or female currently at home." As younger Mormons may have different views than older Mormons, this method may bias results.

2 AAA Foundation Traffic Safety Culture Index

See Table 2.

(b) I found all the information needed to fill the table. Overall, I am generally happy about the survey. For example, response rate and cooperation rate were adjusted for calculations.

3 Groves 1.6, page 36

Answers will vary according to which reports were examined.

4 Groves 2.1, page 65

(a) The target population is US adults (18 years or older). The population in the sample frame is a subset of all individuals using the five largest commercial internet service providers

Table 1: Mormons in America

Sponsor	Pew Forum on Religious and Public Life
Collector	Social Science Research Solutions (SSRS)
Purpose	to understand how Mormons view their religion, their position in society (including their treatment by the media), and various political, cultural, and social issues
Year started	2011
Target Population	Mormons living in the United States"
Sampling Frame	People 18 years or older, living in the United States, possessing land-line or cellular phones, who responded "Mormon" when asked their religious affiliations
Sample Design	Multistage, by county and then by telephone number. Some subjects were freshly obtained, while others were in the "recontact sample," meaning that they belonged to households where somebody had identified as Mormon in previous Pew and SSRS surveys. For both the fresh sample and the recontact sample, people were asked to choose their religious affiliation from a long list, and the interview was concluded if they did not select "Mormon." Geographically, people from "very high" Mormon-dense counties were oversampled, while people from "low" and "very low" Mormon-dense counties were undersampled.
Sample Size	1019
Use of Interviewer	Interviewer Administered
Mode of Administration	Telephone interviewer
Computer Assistance	Computer-Assisted Telephone Interviewing (CATI) system
Reporting Unit	adult identifying as Mormon
Time dimension	One survey
Frequency	once
Interviews per Round of Survey	one
Levels of observation	person
Web Link	`http://www.pewforum.org/mormons-in-america/`

Table 2: Traffic Safety Culture Index

Sponsor	AAA Foundation for Traffic Safety
Collector	Knowledge Networks
Purpose	To assess a few key indicators of the degree to which traffic safety is valued and is being pursued
Year started	2008
Target Population	Individuals in the United States who are sixteen years of age or older, presumably those who are allowed to drive
Sampling Frame	Knowledge Networks' KnowledgePanel, sample of U.S. residents designed to be representative of the U.S. population.
Sample Design	KnowledgePanel members are recruited through stratified national random samples, originally by telephone and now almost entirely by postal mail, including people residing in households without landline or cellular telephones or Internet access. Sampled panelists received an invitation to complete the survey and were asked to do so at their earliest convenience.
Sample Size	3147 individuals (3800 respondents, 6832 recipients of survey)
Use of Interviewer	no
Mode of Administration	online survey
Computer Assistance	online survey
Reporting Unit	one individual over the age of 16
Time dimension	cross-sectional (?)
Frequency	once every year
Interviews per Round of Survey	one
Levels of observation	individual
Web Link	`http://www.aaafoundation.org/resources/index.cfm?button=research`

in the US.
(b) Obviously, the sample frame over covers people who uses the five largest commercial ISP. Samples from the target population who does not use emails from one of these five ISP are excluded. Survey were sent through E-mails soliciting however, many email ISP nowadays use automatic spam filter so the these emails may not have reached the targeted individuals. Measurement error describes behavior that is common and systematic across administrations of the question. Given that the survey is about handheld digital devices, people that actually own blackberries and PDAs are likely to respond fast. Also, the category division is misleading because some people may consider laptops as handheld digital devices.
(c)the coverage error can be reduced by simply expanding E-mail soliciting to users outside of the five largest ISP. Also, sampling frame can be extend to people that go to regular stores. Nonresponse error arises when the values of statistics computed based only on respondent data differ from those based on the entire sample data. I think sample frame needs to be extended so that it covers the targeted population. To reduce the measurement error, other sample design other than E-mails soliciting needs to be employed.
(d) Cutting the sample in half increase the sampling error because sampling error is the nonobservational gap between the sampling frame and sample. However, this wouldn't affect the coverage error because our sampling frame is still major ISPs.

5 Groves 2.7, page 67

From an inference perspective, we would be concerned about individuals that do not respond because there might be some reason why they would not respond that would relate to one of the variables we are trying to measure. We could only feel truly comfortable with using the data from responders and ignoring nonresponders if we were confident that the binary variable of responsiveness was uncorrelated with any of the measured variables.
For example, if we were trying to estimate what percentage of people actually served on juries, and we mailed a survey to people asking them about it, we would probably overestimate the percentage; the same sort of people who have enough free time to respond to mailed surveys are the sort of people who do not vigorously attempt to wriggle out of jury service.