

Surveys and Sampling

How to avoid dumb answers to dumb questions

Surveys and Sampling

- I. Goals
- II. Question construction
- III. Administering the Survey
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I. Goals

- A. Gain a lot of information
- B. Do it in a cost effective fashion
- C. Get a representative sample
- D. Take as little time from your respondents as necessary

II. Question Construction

A. General Principles

1) avoid ambiguity

Example: (question from OIT survey)

Are you hooked on the internet?

2) do not use "leading" questions

Example: "Do you think pornographers should be allowed to sell their smut on the internet?"

3) give responders appropriate options:

Example: Which of the following is true for you:

1) I use the internet everyday.

2) I use the internet 3 times a week.

3) I use the internet 3 or more times a week.

4) ask only ask what you need to know
Example: What is your email address?

5) consider the order of questions
Example:
1) There is a lot of pornography on the internet (agree or disagree)
2) I use the internet everyday (agree or disagree)

6) Pretest the survey

II. Question Construction

B. Types of Questions

1) Open ended questions:

When you are "online," what types of activities do you do?

- get a lot of information

but

- hard to answer

- hard to score

2) fixed-alternative questions:

Do you believe the internet is (circle one)

good or bad for society.

- easy to fill out

- easy to score

But - limits the information you can obtain.

Consider adding qualifiers ("but")

Consider adding "other"

3) Closed-ended questions:

How much of your free time do you spend
"surfing" the internet?

1. A lot

2) Some

3) A little

4) None

III. Administering the Survey

A. Face-to-Face Interviews

advantages:

- clarify questions
- see the “set” of the responders
- probe for additional information

A. Face-to-Face Interviews (cont.)

Disadvantages:

- potential bias
- expensive
- time consuming
- sampling bias?

B. Telephone Interviews

Many of the same advantages of Face-to-Face
More cost effective

But:

- limit the time (15 min)
- sampling bias?

C. Mail-in Questionnaires
advantages:
mail anywhere
cost effective
disadvantage
low return rate
75% - good
above 50% acceptable
below 50% questionable

C. Mail-in Questionnaires (cont)
How to improve return rates:
- use first class mail
- postage paid envelopes
- professional quality questionnaire
- easy to answer

IV. Sampling
A. Goal: Obtain a representative data set to enable generalization to the population.
Famous example: 1936 Presidential Election
Literary Digest:
n = 2,376,523
sampled from phone directories and automobile registration
Predicted Alfred Landon (Republican) would win

1936 Presidential Election (cont.)
Gallup, with a much smaller sample,
Correctly predicted Roosevelt would win.

Today: Most opinion polls contain less than
2000 individuals.

B. Two Types of Sampling:
Probability Sampling
-relies on chance to determine inclusion in the
sample
Nonprobability Sampling
- sample selected in other ways
Generally: Probability sampling is preferred

1) Probability Sampling

a) Simple Random Sampling:
- each member of a population has an equal
chance of being selected
- good generalizability
- difficult to accomplish

b) Systematic Sampling

Select from the entire population by pulling every n th individual from a list.

Example: Sampling registered voters from a list ordered by SS#

- must have a complete list
- must have list ordered in an unbiased fashion

c) Stratified Random Sampling

Used to ensure that certain groups are systematically represented.

Example: You may want to be sure that some African Americans included in your sample. Construct your sample to include 10% African Americans.

d) Cluster Sampling:

Randomly select a grouping (cluster) of individuals, and then evaluate everyone in that cluster.

Example: Randomly select a classroom time and place. Give the Internet Survey to everyone in that class.

e) Multistage Sampling:

Variant of Cluster Sampling

Randomly select a cluster, and then randomly select individuals from the cluster.

Example: Randomly select a University, then randomly select students from the University.

2. Nonprobability Sampling

a) Convenience Sampling

Sampling individuals who are readily available

Example: people passing by in a shopping mall

Not generalizable at all!

b) Quota Sampling

fixed numbers of specific types of people

Example: 10 Psych. majors, 10 Biology majors

c) Snowball Sampling

Allow sampled people to help find other people to measure.

Example: prostitutes and risky sexual behavior

C. Sample Size

- 1) Large samples increase generalizability
(law of large numbers)
- 2) Large samples increase power
(the ability to detect true differences)

3. How to calculate needed sample size:

$$\text{Sample size} = \left(\frac{\text{confidence level} \times \text{stdev}}{\text{desired precision}} \right)^2$$

However: stdev (standard deviation) is typical unknown

Sample size and surveys: (Yamane, 1967)

| <u>Sample Size</u> | <u>Percent Error</u> |
|--------------------|----------------------|
| 100 | 10 |
| 1000 | 3 |
| 2500 | 2 |
| 10,000 | 1 |

V. Dumb Surveys

Some Examples:

VI. Conclusions

Surveys should:

- 1) be short
- 2) ask appropriate questions
- 3) use representative samples
- 4) use large samples
