

LECTURE 1: INTRODUCTION TO SAMPLE SURVEYS

Textbook: Levy, Paul S. and Stanley Lemeshow, *Sampling of Populations: Methods and Applications*, Hoboken, NJ: John Wiley & Sons, Inc., 4th edition, 2008.

Sample survey is a method for collecting information for a subset (**sample**) of individuals selected from a large **population**.

When **all** individuals in the population are selected for measurement, the study is called a **census**.

When questions are administered by a researcher, the survey is called a **structured interview** or a **researcher-administered survey**. When questions are administered by the respondent, the survey is referred to as a **questionnaire** or a **self-administered survey**.

Why surveys are needed?

Surveys help to obtain the knowledge about the population. For example, knowing what the client wants is the key factor to success in any type of business. News media, government agencies and political candidates need to know what the public thinks. Associations need to know what their members want. Large companies need to measure the attitudes of their employees. The best way to find this information is to conduct a survey.

Sample Survey Designs

- A **cross-sectional survey** is administered once.
- A **longitudinal survey** is administered several times by re-contacting the same sample from the initial survey for the following measurement occasions, and asking the same questions at every occasion. The time intervals may be different between measurement occasions, but they are the same for all respondents.
- A **time-series survey** also uses the same respondents at each of the measurement occasions, but the difference with the longitudinal study design is that in the time-series design both the number of measurement occasions and the time intervals between occasions may be different between respondents.

Methods of Data Collection

- **Telephone interview**
 - Advantages: ✓ fairly cost efficient
✓ interviewer can increase respondent's comprehension of questions
 - Disadvantages: ✓ cannot be used for non-audio information (graphics, demonstrations, taste/smell samples)
✓ unreliable for consumer surveys in rural areas where telephone penetration is low
- **Mail survey**
 - Advantages: ✓ low cost
✓ respondents can answer at their own convenience
✓ large amount of information can be obtained: some mail surveys are as long

as 50 pages

Disadvantages: ✓ long time delays
✓ not suitable for issues that may require clarification

- **Online survey**

Advantages: ✓ low cost
✓ very fast results
✓ easy to modify

Disadvantages: ✓ easy to manipulate by completing multiple times to skew results
✓ skews sample towards younger demographics

- **Personal in-home survey**

Advantages: ✓ suitable when graphic representations, smells, or demonstrations are involved
✓ suitable for locations where telephone or mail are not developed
✓ fast results

Disadvantages: ✓ very high cost

- **Personal mall-intercept survey** (respondents are intercepted at malls, streets, campuses)

Advantages: ✓ fast results
✓ socially acceptable – people feel that a public place is a more appropriate place to do research than their homes, for example

Disadvantages: ✓ relatively high cost
✓ easy to manipulate by completing multiple times to skew results

Why a statistician is needed to conduct a survey?

- Chooses an appropriate design
- Suggests appropriate sampling technique
- Computes required sample size
- Suggests appropriate wording of questions and choices for answers (so that responses can be easily quantified and analyzed)
- Analyzes results statistically