

Interview and Questionnaire

CSE 3223

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Population & Sample Size

- A **population** includes all of the elements from a set of data from which samples can be extracted for a specific study.
- A **sample** is a subset of the population, **Sample Size**: num of values or objects in the sample set.
- For example, if you want to know the average height of the residents of Bangladesh, that is your population.
- The thing is, this is quite large a number, and you wouldn't be able to get data for everyone there.
- So you draw a sample height of some of the people in Bangladesh (a subset of the population, the sample)

Sampling Frame

- **Sampling** is the process in which a sample, i.e. a subset of units of observation from a sampling frame is selected to be used in a study.
- A **sampling frame** is the source from which a sample, i.e. a subset of units from the target audience, can be retrieved.
- **Basic problems of sampling frames.**
 - Missing elements, when the sampling frame does not include all units from the target audience.
 - Foreign elements, when there are elements in the sampling frame out from the target audience.
 - Duplicate entries, when two or more elements from sampling frame represents the same unit.
 - Groups based on clusters, i.e. rather than groups based on individuals.

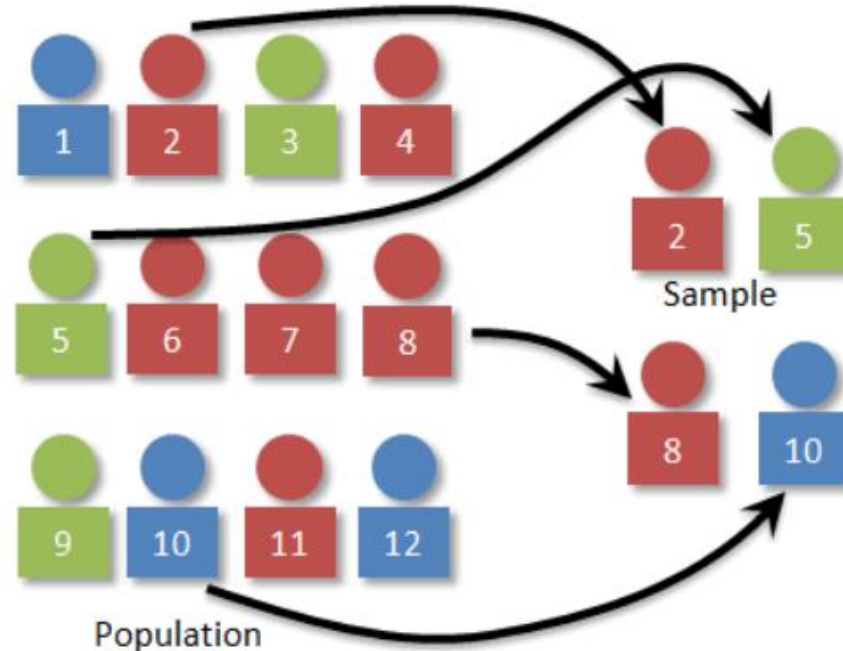
Characterizing the Target Audience

- Examples:
 - Jobs and Responsibilities
 - Education Level
 - Gender
 - Age
 - Geographical information
 - Marital status
 - Income
 - Technical abilities
 - Relevant experience
 - Perception regarding the survey' domain knowledge

Probabilistic Sampling

- All units from a sampling frame must have the same probability to be selected which can be supported through random sampling.
- **Simple Random Sampling (SRS)**

If sampling frame is large, this method is not practical.



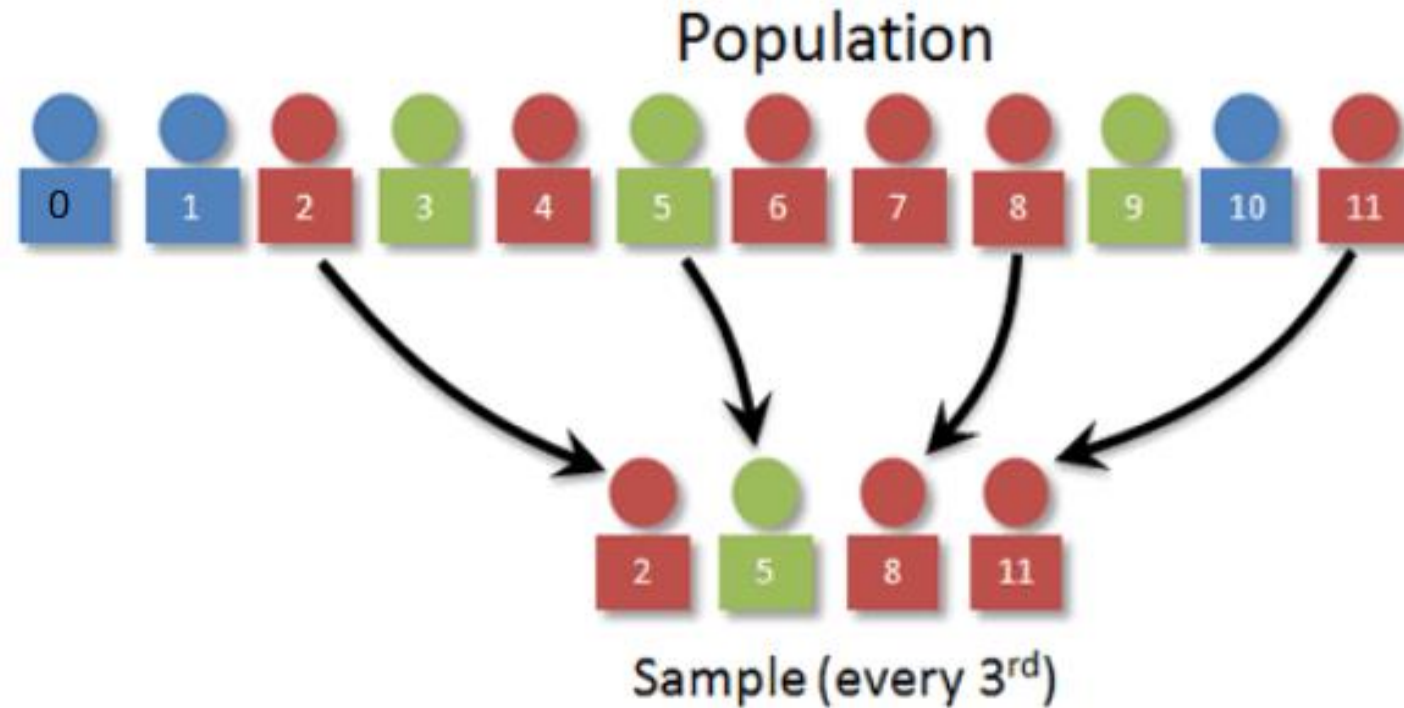
Stratified Sampling

Non-overlapping groups;
Individuals within each group (stratum) should be similar in some way;
Proportional sample from each stratum.



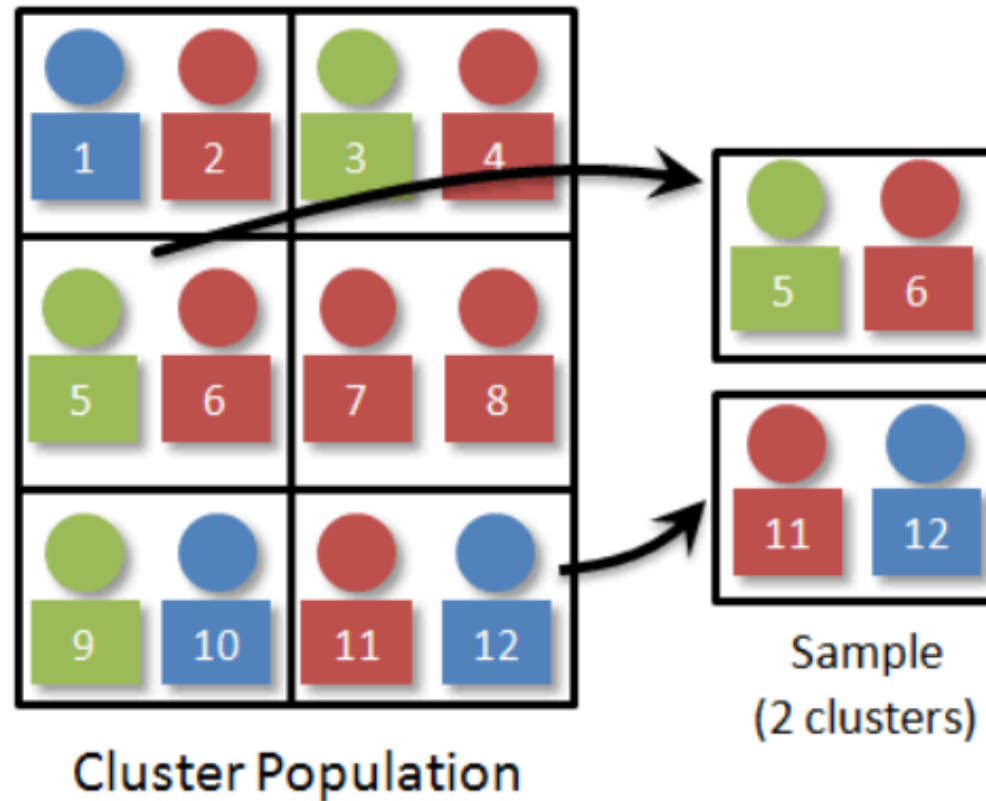
Systematic Sampling

First order our individuals, then select every k -th; $k=N/n$; where N =total population and n =sample size



Cluster Sampling

We use it when our population is already broken up into groups (clusters)), and each cluster represents population; We assume clusters do not differ significantly from each other.



Non-sampling Errors

- Non-sampling error: results from the survey process.
 - Non-response
 - Interviewer error
 - Misrepresented answers
 - Data checks
- Sampling error: results from using a sample to estimate information regarding a population

Methods of collecting survey data

- It is important to remember that a survey is a type of research design.
- In contrast, an interview or a postal questionnaire is a method of data collection.
 1. face-to-face interviews
 2. Telephone interviews
 3. Questionnaires

Interviews

- Basic steps to the interview process:
 - Preparation for the Interview
 - Reviews the documents available on the company, existing system, and users.
 - Company's goals and objectives
 - Forms, reports, and business models of the current system
 - Design of Interview Questions
 - Conduct the Interview
 - Document the Interview
 - Write down any unclear or additional questions that may arise during this process and make a list of questions for follow-up interview.
 - Perform a Follow-Up Interview
 - Depending on the number and type of questions, the follow-up interview can be performed in person or over telephone or any other suitable mechanism (mail, fax, and e-mail).

Guidelines for Conducting Interview

- Listen very carefully to the interviewee and give opportunity to answer.
- Take careful notes. Take a second person, if needed to take notes.
- If permitted by the organization, record the interview.
- Ask questions, even if they sound “dumb”. Not asking questions may result wrong conclusion causing further potential problems.
- Give the interviewee opportunity to ask questions.
- Separate facts from individual user opinions. Facts are important but opinions are not.
- Do not make any premature promise on any part of the delivery of the system.
- Thank the interviewee at the end and mention that a follow-up interview may occur to further clarify questions that may arise.

Interview Summary

INTERVIEW SUMMARY

Project: The Georgeson Department Stores
Date: January 20, 1993
Prepared By: George Kubal
Interviewee: Maria Lopez, Store Manager, Highland Park, IL

Project Scope: Ms. Lopez wishes to change the existing sales transaction system in the store in order to speed up customer checkout, improve tracking of inventory, automate the reordering of merchandise, and obtain up-to-date information on sales revenue and the profits yielded each month. Although the present system uses an OCR system to scan merchandise tags, prices of sale merchandise or special coupon discounts must be entered manually. The OCR wand appears to have a high error rate, causing the sales clerk to manually key in data for each item purchased. Even when the wand is working, the clerks prefer to use the manual entry method. The handling of credit cards such as VISA and MasterCard is also very slow and requires the clerk to manually key in all pertinent information. The credit transaction then requires a separate slip to be written manually by the clerk. The use of the store's own credit card requires the same lengthy process. Whenever the store offers a special sale with discounts on selected merchandise, the clerks must manually enter the discount rate. If one item is wrong on a sales slip, the entire sales slip must be manually rekeyed.

The inventory tracking portion of the present system is not working to her satisfaction; merchandise runs out frequently. Sales forecasting is desirable but can be delayed until the sales transaction system has been improved.

System Objectives

1. To improve speed and ease of sales transactions.
2. To reduce manual keying of sales data.
3. To produce current information regarding sales volume, revenue, and profits per monthly period, preferably by the 5th of each month. On demand queries are also desired.
4. To automatically create the orders for restocking merchandise and do so in a timely fashion. Note: Individual items require a separate lead time for goods.

Required System Features

1. Speedy and accurate customer transaction procedure.
2. Monthly sales reports (prepared no later than the 5th of each month).
3. Reorder of merchandise on an as-needed basis.
4. Sales forecasting to be installed later.

Demographics Questions

- **Demographics** are characteristics of a population. Characteristics such as race, ethnicity (e.g., origin, culture, society), gender, age, education, profession, occupation, income level, and marital status, are all typical examples of **demographics** that are used in surveys.
- Useful for demographic-related questions.
 - Demographics questions should be asked at the end of the questionnaire
 - Feeling of losing anonymity, if they were asked those questions at the beginning of the questionnaire.

Web-based questionnaires

- More popular
- Time efficient
- Higher response rate.
- Easy to set up
- Distribution is also very simple and straightforward by sending the corresponding link to target audience.
- Data collection by investigators is also easy because it does not require the time consuming data entries.
- May miss a part of the population that does not have access to internet.

Examples of Web-based Questionnaire

- [Google forms](#)
- [Survey Monkey](#)
- [LimeSurvey](#)
- [QuestionPro](#)
- [QuestBack](#)
- **Others**
 - CustomInsights.com
 - Zoomerang.com
 - ZapSurvey.com
 - FormDesk.com

Designing survey questions

- In general, there are three conditions that must be fulfilled to get appropriate response of survey questions from their respondents.
 - The questions must be understandable by the target population
 - Making sure that respondents have sufficient knowledge required to answer survey questions
 - Are participants motivated and willing to participate in survey?

Guidelines for designing questionnaire

- **Using appropriate and simple language**
 - keeping the target population in consideration so that all respondents can understand them.
 - Always define any likely ambiguous terms used in survey questions.
- **Avoiding technical terms**
 - For example, a survey in a software engineering context can have some technical terms that are not well known by all respondents.
 - In such case it is important to either avoid those technical terms or define them in the introduction section of a survey.

Guidelines for designing questionnaire

- **Keeping questions short**
 - It is important to have short questions that ask about only one concept.
- **Avoiding ambiguous sentences**
- **Avoiding biased questions**
 - Biased questions suggest likely answers or responses in their sentences.
- **Avoiding sensitive questions**
 - They should not have sensitive questions (too personal, i.e., sex, income, opinion about organization or management etc.) that can lead to low response rate.
 - If for some reason one wants to ask a few sensitive questions in a survey then they should come at the end of the questionnaire.

Guidelines for designing questionnaire

- **Avoiding too demanding questions**

- Avoid too demanding (that require too much effort at the respondents end) questions.

- **Avoiding double-barreled questions**

- Avoid asking two questions in one question, which is known as double barreled questions.
- If a researcher asks these questions then respondent most likely can not answer both questions asked in one question, which leads to difficulties in analyzing collected data.

Guidelines for designing questionnaire

- **Avoiding double negatives**

- Double negative questions are confusing questions and they must be avoided while writing survey questions

- **Avoid asking about past events**

- It is important to avoid questions about events that have occurred long time ago.
- In this case it is likely that respondents do not remember exact information

Closed ended question

- Close-ended questions are questions that have limited response options.
- Quick and requires little time to answer.
- The downside of this question type is that they can be leading, hence *irritating or threatening*.
- *Discourage disclosure* since the possible answers are predefined.

Examples of Closed-Ended Questions

- **Dichotomous**

- Do you think this product would be useful?
 - Yes
 - No

- **Multiple Choice**

- What are the top reasons for you to purchase a product?
 - Price
 - Quality
 - Ease of use
 - Utility
 - Other
 - Please specify: _____

Examples of Closed-Ended Questions

- **Rating**

- Please rate your use of this product from 1 to 6:
 - [1] Daily
 - [2] Twice a week
 - [3] Once a week
 - [4] Twice a month
 - [5] Once every six months
 - [6] Never

Examples of Closed-Ended Questions

- **Likert Scale**

- Indicate your agreement with the following statement by circling the number on the scale which most closely represents your opinion.
- Do you believe adding this additional feature will make this product useful?
 - [1] Strongly disagree
 - [2] Disagree
 - [3] No opinion
 - [4] Agree
 - [5] Strongly agree

Q. How difficult was Eclipse to use?

Very Easy—— Easy—— Fair—— Difficult—— Very Difficult——.

OR


Q. Eclipse was easy to use?

Strongly agree—— Agree—— Neutral—— Disagree—— Strongly disagree——.

Examples of Closed-Ended Questions

- A tabular Likert scale is useful when multiple questions have the same set of options.

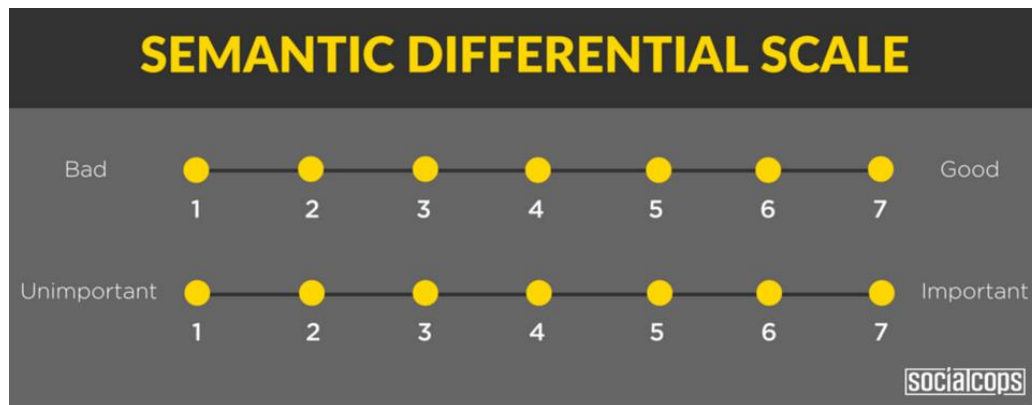
LIKERT SCALE					
Do you think trade globalization is good for...	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Consumers like you	1	2	3	4	5
Companies in your country	1	2	3	4	5



Examples of Closed-Ended Questions

- **Semantic Differential Scale**

- Semantic differential scales only work well when the concepts at either end of the scale are mutually exclusive.
- If the respondent feels that they could select both ends of the scale then the scale is impossible to answer.



works well	1	2	3	4	5	doesn't work
is safe						is dangerous
has no side effects						has strong side effects
is pleasant to take						is unpleasant
is convenient						is inconvenient

Examples of Closed-Ended Questions

- **Ranking**

- Rank these cities in the order of where you'd like to live. ("1" indicates the highest preference, "5" indicates the lowest preference.)
 - Dhaka
 - Khulna
 - Barisal
 - Sylhet
 - Rajshahi

- **Checklist**

- Which of the following would you like to see in a cafeteria? (Check all that apply)
 - Cold Sandwiches
 - Hot Sandwiches
 - Soups and Salads
 - Fruits
 - Other

Open ended questions

- Open-ended questions are questions that have unlimited response options.
- This question type allows for maximum flexibility in the interviewee's response.
 - Describe your daily uses of the order entry system.
 - What are the most useful features of the current order entry system?
 - What features would you change?

Difference

- Close ended questions
 - Are you satisfied?
 - Did you know ... ?
 - Did it act as you expected?
 - Does that work for you?
 - Is your birthday in May?
- Open ended questions
 - How satisfied or dissatisfied are you with this process?
 - How do you know ... ?
 - What would (did) you expect to happen when you ... ?
 - What do you think about that?
 - When is your birthday?

Probing Questions

- **Probing questions** are not just about clarifying specific details; instead, these **questions** dig much deeper than the surface.
- An effective **probing question** helps to get a person to talk about their personal opinions and feelings.
 - **Clarification**
 - Could you tell me more about YY?
 - **Purpose**
 - Why did you say that?
 - **Relevance**
 - Is that relevant to the main question?

Probing Questions

- **Completeness**

- Is that all? Is there anything you have missed out?

- **Examples**

- Sorry, I don't understand. Could you help by giving an example?

- **Extension**

- Could you tell me more about that, please?

- **Evaluation**

- What are the pros and cons of this situation?

- **Emotional**

- And how did you feel about that?

Advantages and Disadvantages

- **Interview**

- Interview is a good tool to collect detailed information.
- It allows exploration and follow-up questions.
- Interviews are time-extensive and expensive.
- Interviews cannot be performed with many people in a short time.

- **Questionnaire**

- Questionnaires are most useful when used for specific purposes.
- Questionnaires can be given to many people at a time.
- Questionnaires are less expensive and less time-consuming.
- Questionnaires can be performed on paper, over the telephone and electronically.
- Questionnaires are a rigidly structured means to obtain answers to pre-selected inquiries.

END

