

U4D1_T - Sources of Data and Sampling student handout

January 19, 2018 9:32 AM



U4D1_T -
Sources o...

MPM 1DI UNIT 4 Day 1 (2.1/2.2)
Date: _____

Name: _____

Hypotheses, Sources of Data and Sampling Principles

Primary Data: Original Data that a researcher gathers for an experiment.

Secondary Data: Data that Someone else has already gathered for another purpose (usually from publications like the Internet or Surveys).

Population: The entire group of people or items being studied.

Census: A survey of all members of a population.

Sample: Any group of people or items selected from a population.

Random Sample: A sample in which **all members** of a **population** have an **equal** chance of being chosen.

↳ **Simple Random Sample**: Choosing a **specific** number of members **randomly** from the **entire** population.

↳ **Systematic Random Sampling**: Choosing members of a population at **fixed intervals** from a population.

↳ **Stratified Random sampling**: Dividing a population into **distinct** groups and then choosing a **proportionate** number randomly from each group.

Bias: Error resulting from choosing a sample that does not represent the **entire** population.

Examples:

1. Identify each data source as primary or secondary. State one advantage of each source of data.

a) A researcher interviews 100 employees about the length of time they spend travelling to work.

Primary Data

Researcher can ensure accuracy.

b) A researcher searches reference books in the library to check the value of cars made in 2008.

Secondary Data

** less time consuming, less costly*

2. Mrs. Bodkin wants to know what students think about purchasing their own chromebook for math classes. Describe 3 different methods she could use to select a random sample of 200 students. (Assume there are 1200 students at WO)

1. Simple Random Sample:

Using a random number generator choose 200 numbers between 1 and 1200. Choose the students from the alphabetical database associated with those numbers.

2. Systematic Random Sample:

Randomly choose one of the first six students on the list. Choose that student and then every 6th student after that.

3. Stratified Random Sample Determine how many students are in each grade. Suppose 300 are grade 9's. She would randomly choose

$$\frac{\text{part}}{\text{whole}} = \frac{200}{1200} = \frac{x}{300} \quad \text{where } x \text{ is the number of gr. 9's to survey}$$

$$x = 50 \quad \text{choose 50 gr. 9's.}$$

Suppose there are 223 grade 10's.

$$\frac{200}{1200} = \frac{t}{223} \quad \text{where } t \text{ is the number of gr. 10's to survey.}$$

$$1200t = 200 \times 223$$

$$\frac{1200t}{1200} = \frac{44600}{1200}$$

$$t = 37\frac{1}{6} \quad \therefore \text{survey } 37 \text{ gr. 10's.}$$

U4D1 HW: Pages 45-46 #3, 4, Pages 52-54 #1ab, 2ac, 4abc, 5-7, 9, 11, 14, 18