

EQ:

## Part 1

Population --- all members of a \_\_\_\_\_ group that we are \_\_\_\_\_ or \_\_\_\_\_ information on for \_\_\_\_\_ driven decisions.

Sample --- \_\_\_\_\_ of the population, a slice of it, and all its \_\_\_\_\_

Ex . Population vs. Sample

A sociologist wants to know the opinions of employed adult women about government funding for day care. She obtains a list of 520 members of a local business and professional women's club and mails a questionnaire to 100 of these women selected at random. Only 48 questionnaires are returned.

What is the population?

What is the sample?

Observation vs Experiment

Randomized Experiment --- assignment of \_\_\_\_\_ controlled by \_\_\_\_\_

Ex. State whether each example is an experimental study or an observational study. Explain.

1. You find 100 women age 20 who do not currently smoke. You randomly assign 50 of the 100 women to a group that will smoke a pack of cigarettes a day for 10 years and the remaining 50 women to a group that will remain smoke-free for 10 years. After 10 years, you measure the lung capacity of all 100 women, analyze, interpret, and draw conclusions from your results.
2. You find 100 women age 30 of which 50 have been smoking a pack of cigarettes a day for 10 years while the other 50 have been smoke free for 10 years. You measure the lung capacity of all 100 women, analyze, interpret, and draw conclusions from your results.

3. A group of 60 exercisers are classified as "walkers" or "runners". A longitudinal study (one conducted over time) is conducted to see if there are differences between the groups in terms of their scores on a wellness exam.
  
4. A group of 60 volunteers who do not exercise are randomly assigned a fitness program. One group of 30 is enrolled in a daily walking program and the other group is put into a running program. After a period of time, the two groups are compared based on their scores on a wellness index.

- Planning A Study

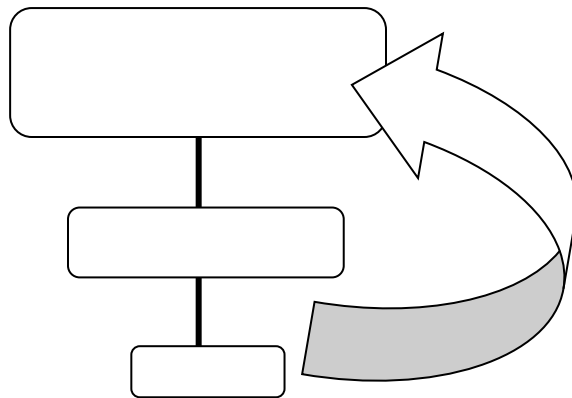
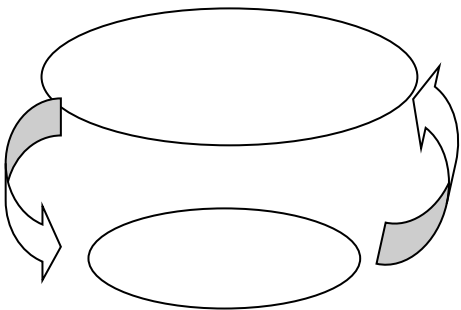
Step 1: Identify \_\_\_\_\_

Step 2: Compile list of \_\_\_\_\_ in the \_\_\_\_\_ from which the \_\_\_\_\_ will be taken \_\_\_\_\_

Step 3: Specify a \_\_\_\_\_ for \_\_\_\_\_ from the \_\_\_\_\_

Step 4: \_\_\_\_\_ subjects, \_\_\_\_\_ and \_\_\_\_\_

Step 5: Make \_\_\_\_\_ about \_\_\_\_\_ based on \_\_\_\_\_



- ❖ Data Collection Strategies

- Census --- the procedure of systematically \_\_\_\_\_ and \_\_\_\_\_ about the members of a given \_\_\_\_\_; it is a regularly occurring and official \_\_\_\_\_ of a particular population.
  
- Sampling --- study a \_\_\_\_\_ to learn about the \_\_\_\_\_

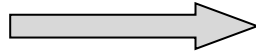
- ❖ **Sampling Technique**



\_\_\_\_\_

1) Simple Random Sample --- select individuals at random \_\_\_\_\_;  
\_\_\_\_\_ has the \_\_\_\_\_ of occurring

### ❖ **Sampling Techniques**



- 1) Voluntary Sampling --- you \_\_\_\_\_ to participate
- 2) Convenience Sampling --- people chosen based on \_\_\_\_\_ of \_\_\_\_\_  
them
- 3) Quota Sampling --- organized around \_\_\_\_\_

Ex . What type of sampling does each of the following methods represent?

1. The owner of a club with 1,000 members wants to survey 50 members about the friendliness of the staff. He asks the first 50 members who enter the club one morning.
2. The owner of a club with 1,000 members wants to survey 50 members about the friendliness of the staff. He leaves a stack of response cards by the sign-in desk asking members to participate.
3. The owner of a club with 1,000 members wants to survey 50 members about the friendliness of the staff. He puts each name on a slip of paper then places all of the slips in a hat and mixes them well. He draws one slip out, notes the name, and returns the paper back into the hat. He continues picking and noting the name until 50 different names are selected.
  - Bias --- systematic error, \_\_\_\_\_

#### ❖ Three Types of Bias Which Could Occur in Sample Surveys:

##### ▪ Population Under Represented in Sample as a Result of:

- 1) Undercoverage --- my group is \_\_\_\_\_ of the sample; not even \_\_\_\_\_
- 2) Nonresponse --- group is chosen for the sample can't be \_\_\_\_\_ or \_\_\_\_\_ to participate

##### ▪ Inaccurate Responses Result of:

- 3) Response Bias --- problems that result from the \_\_\_\_\_ process; due to \_\_\_\_\_ or \_\_\_\_\_ (what

you think the \_\_\_\_\_; particularly if survey  
\_\_\_\_\_)

\*\*Know Difference Between \_\_\_\_\_ and  
\_\_\_\_\_ as a result of these methods.

➤ Complete Handout for Samples & Handout for Bias      Assignment p. 333 - 334 #1 - 8

**Part 2:**

❖ Random Sampling Schemes:

I. Simple Random Sample



\_\_\_\_\_

- \_\_\_\_\_ of population \_\_\_\_\_ to be chosen
- \_\_\_\_\_ of the sample are \_\_\_\_\_ of one another

➤ Selection Method for SRS:

Step 1:

- obtain \_\_\_\_\_ ( \_\_\_\_\_ ) of population:  
\_\_\_\_\_  
\_\_\_\_\_

Step 2:

- Assign \_\_\_\_\_ to \_\_\_\_\_ in \_\_\_\_\_;  
\_\_\_\_\_ select a \_\_\_\_\_ of size \_\_\_\_\_ using:  
(i) \_\_\_\_\_  
(ii) \_\_\_\_\_

➤ Using A Random Digit Table to Create Random Samples:

**Problem:**

There are 120 students in BETA club. The national convention is to be held in Las Vegas this year, but only 20 students are interested in attending. Because of expenses, Mrs. Mize can only take 8 students. She has asked you to help her randomly pick the 10 students who will get to go to Las Vegas.

**Step 1:**

Assign the digits 01 to 20 to these students. Make sure your list has been alphabetized.

Alex	Allen	Barnes	Bennett	Cook	Dixon	Edwards
Flynn	Garris	Glenn	Jacobs	Jones	Long	Moore
Norris	Scott	Shaw	Phillips	Thomas	Young	

**TABLE B** Random digits

LINE								
145	19687	12633	57857	95806	09931	02150	43163	58636
146	37609	59057	66967	83401	60705	02384	90597	93600
147	54973	86278	88737	74351	47500	84552	19909	67181
148	00694	05977	19664	65441	20903	62371	22725	53340

**Step 2:** To determine which students will attend the convention, match each name with the two-digit number from your random digit table. Record your results in the chart below.

	Random Number	Name of Student Attending Convention
1		
2		
3		
4		
5		
6		
7		
8		

❖ Why would you consider this a simple random sample?

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**II. Stratified Random Sample:**

The researcher divides the entire target population into different \_\_\_\_\_, or strata, and then randomly \_\_\_\_\_ from the different strata.

Common variables to use in defining strata:

- a) \_\_\_\_\_ b) \_\_\_\_\_ c) \_\_\_\_\_

❖ Advantages of Using Strata Sampling:

- a) natural strata can \_\_\_\_\_
- b) \_\_\_\_\_ within homogenous groups results in  
\_\_\_\_\_ of estimation
- c) estimates of \_\_\_\_\_ may be desired for \_\_\_\_\_

**III. Cluster Sampling:** Entire population is divided into \_\_\_\_\_ or clusters, and a  
\_\_\_\_\_ All observations in the  
selected clusters are included in the sample.

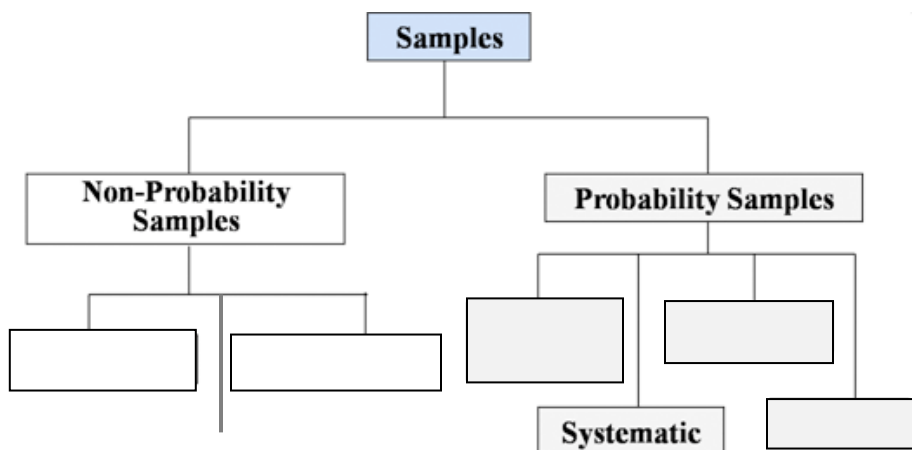
❖ Common Cluster Sampling Groups:

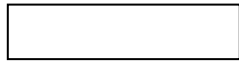
- a) \_\_\_\_\_ b) \_\_\_\_\_ c) \_\_\_\_\_

Advantages of Cluster Sampling:

- a) \_\_\_\_\_
- b) \_\_\_\_\_

**IV. Systematic Sampling:** The elements of the population are put into a list and then every  
\_\_\_\_\_ element in the list is chosen (systematically) for inclusion in the sample.





➤ In Class Assignment: Worksheet "Rolling Down the River"

➤ Assignment: p. 341 - 342 #10, 11, 13, 14

p. 349 21, 23, 25, 27, 28, 30

