Sampling and Data: Practice 1*

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Abstract

This module provides an opportunity for students to practice concepts related to statistical sampling and data. Given a sample data set, the student will practice constructing frequency tables, differentiating between key terms, and comparing sampling techniques.

1 Student Learning Outcomes

- The student will construct frequency tables.
- The student will differentiate between key terms.
- The student will compare sampling techniques.

2 Given

Studies are often done by pharmaceutical companies to determine the effectiveness of a treatment program. Suppose that a new AIDS antibody drug is currently under study. It is given to patients once the AIDS symptoms have revealed themselves. Of interest is the average(mean) length of time in months patients live once starting the treatment. Two researchers each follow a different set of 40 AIDS patients from the start of treatment until their deaths. The following data (in months) are collected.

Researcher A 3; 4; 11; 15; 16; 17; 22; 44; 37; 16; 14; 24; 25; 15; 26; 27; 33; 29; 35; 44; 13; 21; 22; 10; 12; 8; 40; 32; 26; 27; 31; 34; 29; 17; 8; 24; 18; 47; 33; 34

Researcher B 3; 14; 11; 5; 16; 17; 28; 41; 31; 18; 14; 14; 26; 25; 21; 22; 31; 2; 35; 44; 23; 21; 21; 16; 12; 18; 41; 22; 16; 25; 33; 34; 29; 13; 18; 24; 23; 42; 33; 29

3 Organize the Data

Complete the tables below using the data provided.

Researcher A

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Survival Length (in months)	**Frequency**	**Relative Frequency**	**Cumulative Relative Frequency**
0.5 - 6.5			
6.5 - 12.5			
12.5 - 18.5			
18.5 - 24.5			
24.5 - 30.5			
30.5 - 36.5			
36.5 - 42.5			
42.5 - 48.5			

Table 1

Researcher B

Survival Length (in months)	**Frequency**	**Relative Frequency**	**Cumulative Relative Frequency**
0.5 - 6.5			
6.5 - 12.5			
12.5 - 18.5			
18.5 - 24.5			
24.5 - 30.5			
30.5 - 36.5			
36.5 - 42.5			
42.5 - 48.5			

Table 2

4 Key Terms

Define the key terms based upon the above example for Researcher A.

Exercise 1
Population

Exercise 2
Sample

Exercise 3
Parameter

Exercise 4
Statistic

Exercise 5
Variable

Exercise 6
Data

5 Discussion Questions

Discuss the following questions and then answer in complete sentences.

Exercise 7
List two reasons why the data may differ.

Exercise 8
Can you tell if one researcher is correct and the other one is incorrect? Why?

Exercise 9
Would you expect the data to be identical? Why or why not?

Exercise 10
How could the researchers gather random data?

Exercise 11
Suppose that the first researcher conducted his survey by randomly choosing one state in the nation and then randomly picking 40 patients from that state. What sampling method would that researcher have used?

Exercise 12
Suppose that the second researcher conducted his survey by choosing 40 patients he knew. What sampling method would that researcher have used? What concerns would you have about this data set, based upon the data collection method?