Sullivan Section 1.1

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Statistics - Definition

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Essentially, it is the science of using data to draw (correct) conclusions.

Step 1 - Identify the Research Objective

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The question should be detailed enough to define not only the questions to be answered, but also the group to be studied.

Example: "Is a driver using a cell phone more likely to be involved in a car accident?"

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The **population** in the above example would be all people who drive.

A member of this population or an **individual** would be specific person who drives.

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In this case, the approach is usually to collect information from a subset of the population. **Definition**

When information is collected only from a subset of a population, that subset is called a **SAMPLE**

Step 3 - Organize and Summarize the Information

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Definition DESCRIPTIVE STATISTICS is the process of organizing and summarizing the data collected.

Step 4 - Draw Conclusions from the Information

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Definition INFERENTIAL STATISTICS uses methods that generalize results obtained from a sample to the entire population, and determines the reliability of those results.

Qualitative versus Quantitative Data

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A useful criterion for deciding whether a variable is **qualitative** or **quantitative** is the following:

A variable is **quantitative** if arithmetic operations can be performed on it with meaningful results.

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CONTINUOUS variables generally arise from the measurement of some quantity.

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A **VARIABLE** represents some characteristic of an individual, and **DATA** refers to the values of **variables** for a specific individual.