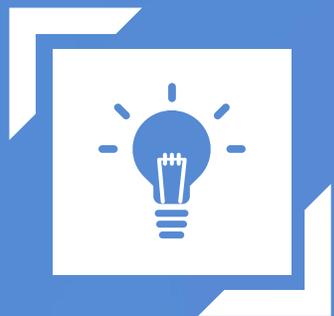




STATISTIK, DATA & PEMIKIRAN STATISTIK

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RULES



The Science of Statistics

Statistics is the science of data. This involves collecting, classifying, summarizing, organizing, analyzing, presenting, and interpreting numerical information.



Types of Statistical Applications

the applications of statistics can be divided into two broad areas:

descriptive statistics and inferential statistics.



Descriptive statistics

Descriptive statistics utilizes numerical and graphical methods to look for patterns in a data set, to summarize the information revealed in a data set, and to present that information in a convenient form.

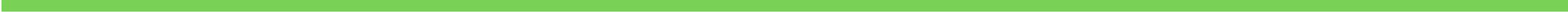
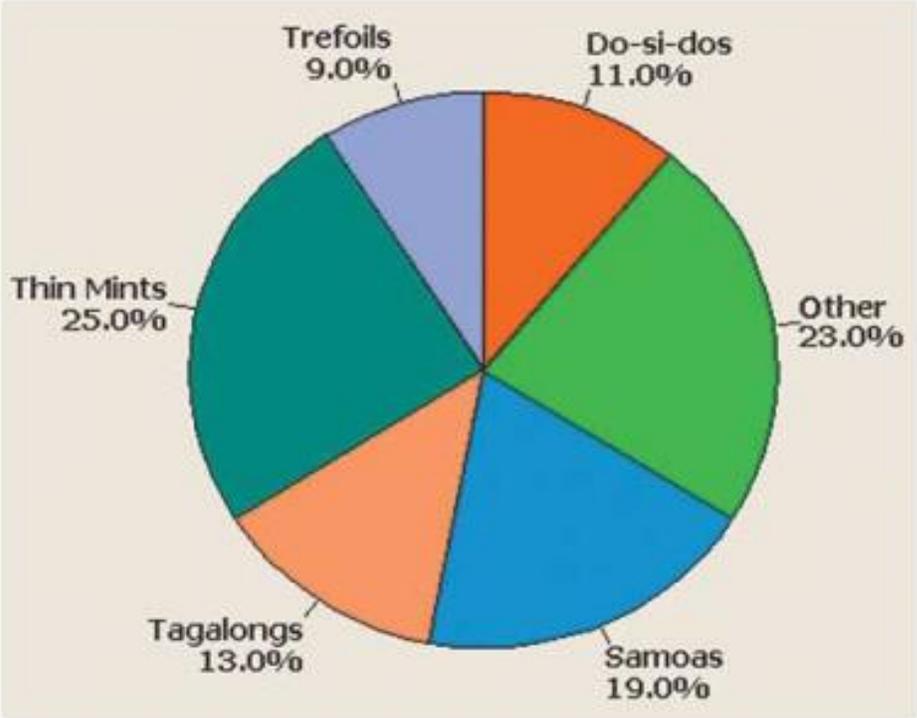


Inferential statistics

Inferential statistics utilizes sample data to make estimates, decisions, predictions, or other generalizations about a larger set of data.



Peanut Butter Patties, Do-si-dos, Peanut Butter Sandwiches, and Trefoils. Each of the approximately 150 million boxes of Girl Scout cookies sold each year is classified by variety. The results are summarized in Figure 1.1. From the graph, you can clearly see that the best-selling variety is Thin Mints (25%), followed by Samoas (19%) and Tagalongs (13%). Since the figure describes the various categories of boxes of Girl Scout cookies sold, the graphic is an example of descriptive statistics.



Fundamental Elements of Statistics

Statistical methods are particularly useful for studying, analyzing, and learning about populations of experimental units.



An experimental (or observational) unit is an object (e.g., person, thing, transaction, or event) about which we collect data.

A population is a set of units (usually people, objects, transactions, or events) that we are interested in studying

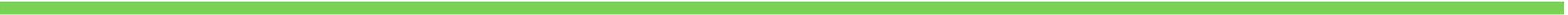
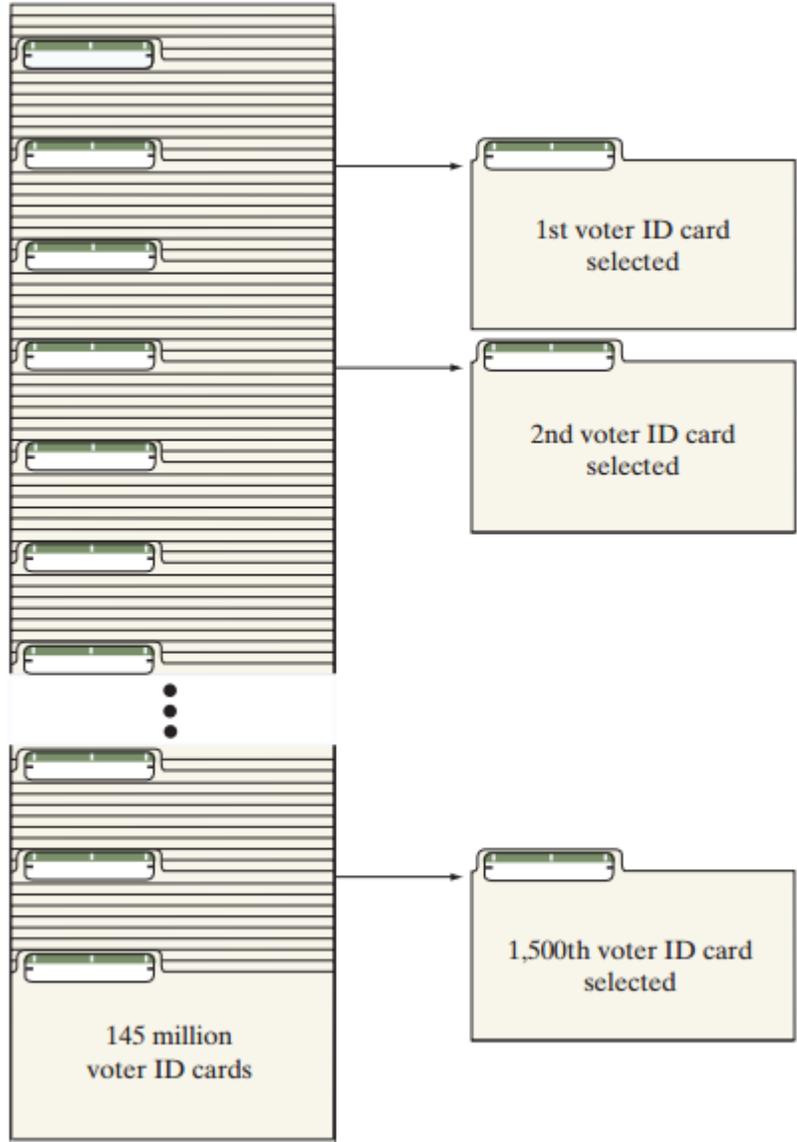
A variable is a characteristic or property of an individual experimental (or observational) unit in the population.

A sample is a subset of the units of a population

A statistical inference is an estimate, prediction, or some other generalization about a population based on information contained in a sample

Population

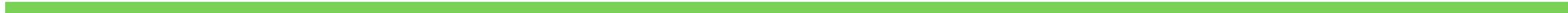
Sample



Key Elements of a Statistical Problem— Ages of TV Viewers

Problem According to *Variety* (Aug. 27, 2009), the average age of viewers of live television programs broadcast on CBS, NBC, and ABC is 51 years. Suppose a rival network (e.g., Fox) executive hypothesizes that the average age of Fox viewers is less than 51. To test her hypothesis, she samples 200 Fox viewers and determines the age of each.

- a. Describe the population.
- b. Describe the variable of interest.
- c. Describe the sample.
- d. Describe the inference.



Solution

- a. The population is the set of units of interest to the TV executive, which is the set of all Fox viewers.
 - b. The age (in years) of each viewer is the variable of interest.
 - c. The sample must be a subset of the population. In this case, it is the 200 Fox viewers selected by the executive.
 - d. The inference of interest involves the *generalization* of the information contained in the sample of 200 viewers to the population of all Fox viewers. In particular, the executive wants to *estimate* the average age of the viewers in order to determine whether it is less than 51 years. She might accomplish this by calculating the average age of the sample and using that average to estimate the average age of the population.
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Pepsi vs. Coca-Cola

Problem “Cola wars” is the popular term for the intense competition between Coca-Cola and Pepsi displayed in their marketing campaigns, which have featured movie and television stars, rock videos, athletic endorsements, and claims of consumer preference based on taste tests. Suppose, as part of a Pepsi marketing campaign, 1,000 cola consumers are given a blind taste test (i.e., a taste test in which the two brand names are disguised). Each consumer is asked to state a preference for brand A or brand B.

- a. Describe the population.
 - b. Describe the variable of interest.
 - c. Describe the sample.
 - d. Describe the inference.
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Solution

- a. Since we are interested in the responses of cola consumers in a taste test, a cola consumer is the experimental unit. Thus, the population of interest is the collection or set of all cola consumers.
 - b. The characteristic that Pepsi wants to measure is the consumer's cola preference, as revealed under the conditions of a blind taste test, so *cola preference* is the variable of interest.
 - c. The sample is the 1,000 cola consumers selected from the population of all cola consumers.
 - d. The inference of interest is the *generalization* of the cola preferences of the 1,000 sampled consumers to the population of all cola consumers. In particular, the preferences of the consumers in the sample can be used to *estimate* the percentages of cola consumers who prefer each brand.
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REFLEKSI

Informasi penting hari ini

Manfaat penting dari informasi penting hari ini

Tindak lanjut yang dapat saudara lakukan



Thank You