Hilla University
College of Medical and Health Technology
Anthesis department
Computer Application
Third stage / First course

Lec. No. 1



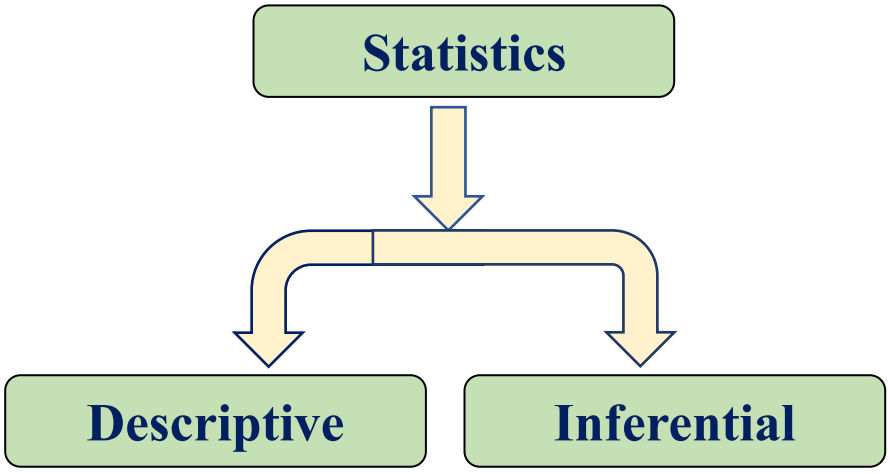
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Introduction to Statistics

What is Statistics?

Statistics is the science of collecting, analyzing, interpreting, presenting, and organizing data, it helps us make informed decisions based on data.

Types of Statistics:



- Descriptive Statistics: Summarizes and describes the features of a dataset (e.g., mean, median, mode, standard deviation).
- Inferential Statistics: Draws conclusions and makes predictions about a population based on a sample (e.g., hypothesis testing, confidence intervals).

Importance of Statistics

- ❖ Data Analysis: Enables effective data interpretation and decision-making.
- ❖ Research: Essential in scientific research for validating hypotheses and understanding trends.
- ❖ Real-world Applications: Used in various fields such as business, healthcare, economics, social sciences, and more.

*There are several programs and software tools commonly used in statistics for data analysis, visualization, and modeling, the most popular ones:

(SPSS, Excel, SAS, MATLAB)

What is SPSS?

SPSS (Statistical Package for the Social Sciences) is a powerful software tool widely used for statistical analysis in social science research, market research, healthcare, and various other fields. Developed in the late 1960s, SPSS has evolved into a comprehensive tool for data management, statistical analysis, and graphical representation.

Key Features

- User-Friendly Interface: SPSS offers a straightforward graphical interface that allows users to perform analyses without extensive programming knowledge.
- Data Management: It supports various data formats, including spreadsheets and databases, making it easy to import, manipulate, and manage data.
- Statistical Analysis: SPSS provides a wide range of statistical tests and procedures, from basic descriptive statistics to advanced inferential techniques.
- Visualization: Users can create various types of charts and graphs to visualize data effectively, aiding in the interpretation of results.
- Output Viewer: The software includes an output viewer for displaying results in a clear and organized manner.

Common Applications

- ❖ Social Sciences: Analyzing survey data, conducting experiments, and performing demographic studies.
- ❖ Healthcare: Evaluating clinical trial data and patient surveys.
- ❖ Market Research: Analyzing consumer behavior and preferences.
- ❖ Education: Conducting research studies and evaluating educational programs.

Basic Functions

- Descriptive Statistics: Calculate measures like mean, median, mode, standard deviation, and frequency distributions.
- Inferential Statistics: Perform hypothesis testing, correlation, regression analysis, and ANOVA.
- Data Transformation: Create new variables, recode existing ones, and handle missing data.
- Graphical Analysis: Generate bar charts, histograms, boxplots, and scatterplots to visualize data distributions and relationships.

Running SPSS

Depending on how the computer you are working on is structured, you can open SPSS in one of two ways.

1. If there is an SPSS shortcut like this on the desktop, simply put the cursor on it and double click the left mouse button.
2. Click the left mouse button on the Start menu, then put your cursor on Programs or All Programs and left click the mouse.

Layout of SPSS

The SPSS interface consists of several key components, each serving a specific function:

1. Data View: This is where you enter and view your data in a spreadsheet format. Each row represents a case (or participant), and each column represents a variable.
2. Variable View: This tab allows you to define the properties of each variable, including:
    - Name: The variable's name.
    - Type: Data type (e.g., numeric, string).

- Width: The number of digits/characters.
- Decimals: Number of decimal places for numeric variables.
- Label: A descriptive label for the variable.
- Values: Labels for categorical variables.

3. Output Viewer: This window displays the results of your analyses, including tables, charts, and statistical outputs. You can edit and export results from here.

