PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

In this lecture…

1. Presentation
2. Analysis
3. Interpretation

PRESENTATION

- Is the process of organizing data into logical, sequential and meaningful categories and classifications to make them amenable to study and interpretation.

Three ways of presenting data

1. **Textual** - *(statements with numerals or numbers that serve as supplements to tabular presentation)*

2. **Tabular** - *(a systematic arrangement of related idea in which classes of numerical facts or data are given each row and their subclasses are given each a column in order to present the relationships of the sets or numerical facts or data in a definite, compact and understandable form)*

Two general rules regarding the independence of tables and text

1. The table should be so constructed that it enables the reader to comprehend the data presented without referring to the text;
2. The text should be so written that it allows the reader to understand the argument presented without referring to the table. (Campbell, Ballou and Slade, 1990)

3. **Graphical** – *(a chart representing the quantitative variations or changes of variables in pictorial or diagrammatic form)*

Types of graphs and charts

1. Bar graphs
2. Linear graphs
3. Pie graphs
4. Pictograms
5. Statistical maps
6. Ratio charts

ANALYSIS

- A separation of a whole into its constituent parts (Merriam-Webster, 2012)

- The process of breaking up the whole study into its constituent parts of categories according to the specific questions under the statement of the problem. (Calderon, 1993)

DATA ANALYSIS

- The purpose
  - **To answer the research questions and to help determine the trends and relationships among the variables.**

STEPS IN DATA ANALYSIS

- Before Data Collection, the researcher should accomplish the following:
  - Determine the method of data analysis
  - Determine how to process the data
  - Consult a statistician
  - Prepare dummy tables
- After Data Collection:
  - Process the data
  - Prepare tables and graphs
  - Analyze and interpret findings
  - Consult again the statistician
  - Prepare for editing
  - Prepare for presentation

KINDS OF DATA ANALYSIS

1. Descriptive Analysis
2. Inferential Analysis

1. DESCRIPTIVE ANALYSIS

- refers to the description of the data from a particular sample;
- hence the conclusion must refer only to the sample.
- In other words, these summarize the data and describe sample characteristics.
- **Descriptive Statistics**
  - are numerical values obtained from the sample that gives meaning to the data collected.

CLASSIFICATION OF DESCRIPTIVE ANALYSIS

a. Frequency Distribution

- A systematic arrangement of numeric values from the lowest to the highest or highest to lowest.

- Formula: Ef = N

  - Where:

    E = sum of

    f = frequency

    N= sample size

CLASSIFICATION OF DESCRIPTIVE ANALYSIS

b. Measure of Central Tendency

- A statistical index that describes the average of the set values.

- **Kinds of Averages**

1. **Mode** - a numeric value in a distribution that occurs most frequently.

2. **Median** - an index of average position in a distribution of numbers.

3. **Mean** - the point on the score scale that is equal to the sum of the scores divided by the total number of scores.

- Formula:

$$X = \frac{\Sigma}{n}$$

Where:
X = the mean
Σ = the sum of
X = each individual raw score
n = the number of cases

CLASSIFICATION OF DESCRIPTIVE ANALYSIS

c. Measure of Variability

- Statistics that concern the degree to which the scores in a distribution are different from or similar to each other.

TWO COMMONLY USED OF VARIABILITY

1. Range

- the distance between the highest score and the lowest score in a distribution.

Example:

The range for learning center A 500 (750 - 250) and the range for learning center is about 300 (650 - 350)

2. Standard Deviation

- the most commonly used measure of variability that indicates the average to which the scores deviate from the mean.

CLASSIFICATION OF DESCRIPTIVE ANALYSIS

d. Bivariate Descriptive Statistics

- Derived from the simultaneous analysis of two variables to examine the relationships between the variables.

- **Two Commonly Used Bivariate Descriptive Analysis**

5. **Contingency tables**
   - is essentially a two-dimensional frequency distribution in which the frequencies of two variables are cross-tabulated.

- **Correlation**
  - the most common method of describing the relationship between two measures

KINDS OF DATA ANALYSIS

1. Descriptive Analysis
2. Inferential Analysis

2. INFERENTIAL ANALYSIS

- The use of statistical tests, either to test for significant relationships among variables or to find statistical support for the hypotheses.

- **Inferential Statistics**
  - are numerical values that enable the researcher to draw conclusion about a population based on the characteristics of a population sample.
  - This is based on the laws of probability.

LEVEL OF SIGNIFICANCE

- An important factor in determining the representativeness of the sample population and the degree to which the chance affects the findings.
- The level of significance is a numerical value selected by the researcher before data collection to indicate the probability of erroneous findings being accepted as true.
- This value is represented typically as 0.01 or 0.05. (Massey,1991)

LEVEL OF SIGNIFICANCE

- **Uses of Inferential Analysis**
  - Cited some statistical test for inferential analysis.

1. **t-test**
   is used to examine the difference between the means of two independent groups.

2. **Analysis of Variance (ANOVA)** - is used to test the significance of differences between means of two or more groups.

3. **Chi-square** - this is used to test hypotheses about the proportion of elements that fall into various cells of a contingency table.

HYPOTHESIS – TESTING PROCEDURES

- The outcome of the study perhaps may retain, revise or reject the hypothesis and this determines the acceptability of hypotheses and the theory from which it was derived.

STEPS IN TESTING HYPOTHESIS

- Determine the test statistics to be used
- Establish the level of significance
- Select a one-tailed or two-tailed test
- Compute a test statistic
- Calculate the degrees of freedom
- Obtain a tabled value for statistical test
- Compare the test statistics to the tabled value

STEPS IN TESTING HYPOTHESIS

- Presentation of Findings
  - Findings are presented in different forms such as:

1. Narrative or textual form
   - This is composed of summary of findings, direct quotations and implications of the study.

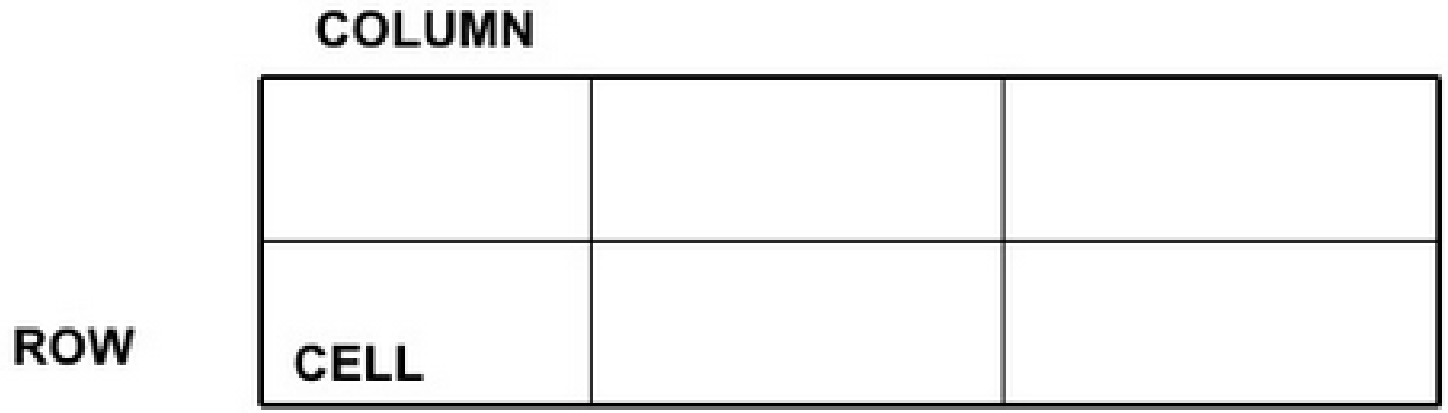
2. Tables
   - Tables are used to present a clear and organized data.
   - This is utilized for easy analysis and interpretation of data.

STEPS IN TESTING HYPOTHESIS

- The parts of tabular data are presented in the following:
  - Rows - horizontal entries (indicates the outcome or the dependent variable)
  - Columns - vertical entries (indicates the cause or the independent variable)
  - Cells - are boxes where rows and columns intersect.

STEPS IN TESTING HYPOTHESIS

- Parts of Table Columns



INTERPRETATION

- This section answers the question, "So what?" in relation to the results of the study. *What do the results of the study mean?* This part is, perhaps, the *most* critical aspect of the research report.

INTERPRETATION

- It is often the most difficult to write because it is the least structured.

- This section demands **perceptiveness and creativity** from the researcher.

How do we interpret the result(s) of our study?

1. Tie up the results of the study in both theory and application by pulling together the:
   a. **conceptual/theoretical framework**;
   b. **the review of literature**; and
   c. **the study's potential significance** for application.

2. Examine, summarize, interpret and justify the results; then, draw **inferences**. Consider the following:

a. ***Conclude or summarize***

- This technique enables the reader to get the total picture of the findings in summarized form, and helps orient the reader to the discussion that follows.

b. ***Interpret***

- Questions on the meaning of the findings, the methodology, the unexpected results and the limitations and shortcomings of the study should be answered and interpreted

c. ***Integrate***

- This is an attempt to *put the pieces together.*
- Often, the results of a study are disparate anddo not seem to "hang together." In the discussion, attempt to bring the findings together to extract meaning and principles.

d. ***Theorize***

- When the study includes a number of related findings, it occasionally becomes possible to theorize.

1. Integrate your findings into a principle;
2. Integrate a theory into your findings; and
3. Use these findings to formulate an original theory

e. ***Recommend or apply alternatives***