Descriptive Startistics-2

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CC-10: ADVANCED RESEARCH METHODOLOGY

Percentile

- These visually portray the quantiles, or percentiles (which equals to the quantiles times 100) of the distribution of sample data. Quantiles of importance such as the median are easily discerned (quantile, or cumulative frequency = 0.5). Main benefits of Quantile plots are as follows:

- Q1=25%

- Q2=50%

- Q3=75%

- Q4=100%

Graphical Representation(Bar graph, Pie Chart....)

▶ It is a very useful and display for summarizing the distribution of a data set.

▶ It provides visual summaries of the center of the data (the median-the center line of the graph), the variation or spread (interquartile range-the graph height), the skewness (quartile skew-the relative size of graph halves) and presence or absence of unusual values ("outside" and "far outside" values). Graph plots are even more useful in comparing these attributes among several data sets.

▶ Graphical representation of reports has numerous benefits.

  ▶ Acceptability: Graphical report is acceptable to people who have busy schedule because it easily highlights about the theme of the report. This helps to avoid wastage of time.

  ▶ Comparative Analysis: Information can be compared in terms of graphical representation. Such comparative analysis helps for quick understanding and attention.

  ▶ Less cost: Information, if descriptive, involves huge time to present properly. It involves more money to print the information but graphical presentation can be made in short but catchy view to make the report understandable. It obviously involves less cost.

  ▶ Decision Making: Business executives can view the graphs at a glance and can make decision very quickly which is hardly possible through descriptive report.

Cont...

- Logical Ideas: If tables, design and graphs are used to represent information then a logical sequence is created to clear the idea of the audience.

- Helpful for less educated Audience: Less literate or illiterate people can understand graphical representation easily because it does not involve going through line by line of any descriptive report.

- Less Effort and Time: To present any table, design, image or graphs require less effort and time. Furthermore, such presentation makes quick understanding of the information.

- Less Error and Mistakes: Qualitative or informative or descriptive reports involve errors or mistakes. As graphical representations are exhibited through numerical figures, tables or graphs, it usually involves less error and mistake.

- A complete Idea: Such representation creates clear and complete idea in the mind of audience. Reading hundred pages may not give any scope to make decision. But an instant view or looking at a glance obviously makes an impression in the mind of audience regarding the topic or subject.

- Use in the Notice Board: Such representation can be hanged in the notice board to quickly raise the attention of employees in any organization.

Numerical Methods

▶ These procedures are used to arithmetically describe data from a sample or population. The numerical measures of a sample can be used to estimate the corresponding numerical measures of the population. The numerical methods can be effectively demonstrated in cases dealing with complex problems for which analytical solutions cannot be obtained or hand calculations cannot be made.

▶ Characteristically, there are two general types of statistic that are used to describe data:

▶ Measures of central tendency: These are ways of describing the central position of a frequency distribution for a group of data. Measures of central tendency are numbers that tend to cluster around the "middle" of a set of values. These include the mode, median, and mean.
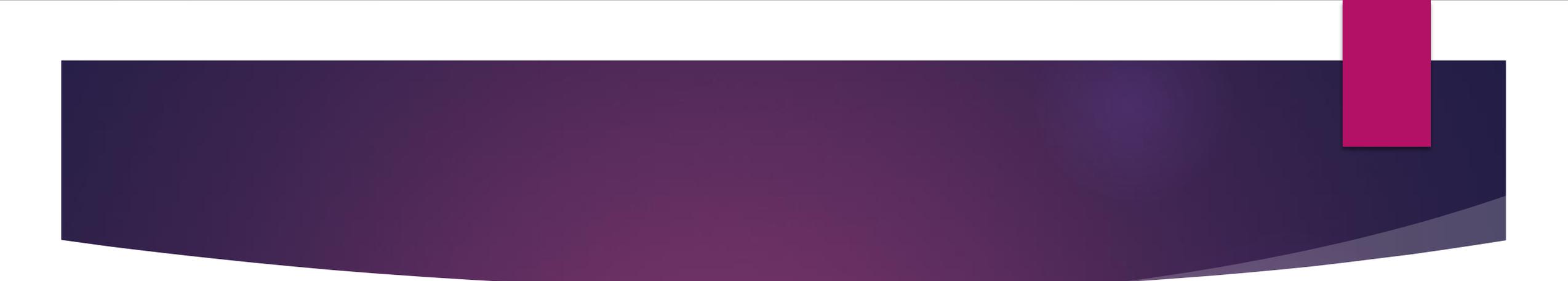
▶ Mean is the average value, calculated by adding all the observations and dividing by the number of observations. A drawback of the mean is that it is heavily influenced by extreme observations. The median is explained as the middle value when observations are arranged in an ascending or descending order. The median is easy to understand, and it is not greatly affected by extreme observations. It is often used in preference to the mean when extreme observations are present. The mode is described as the most common value of individually recorded observations and as the value of the variable for which the frequency density is greatest for grouped data.

▶ Measures of spread: In this type of statistic, group of data is summarized by describing how spread out the scores are. To describe this spread, a number of statistics are available such as the range, quartiles, absolute deviation, variance and standard deviation. When descriptive statistics is used, it is useful to summarize group of data using a combination of tabulated description, graphical description such as graphs and charts and statistical commentary such as discussion of the results.

▶ To summarize, Descriptive statistics consists of statistical procedures that are used to describe the population that are studying. The data could be collected from either a sample or a population, but the results help statistician organize and describe data. Descriptive statistics can only be used to describe the group that is being studying. That is, the results cannot be generalized to any larger group. There are three methods of descriptive statistics that include tabular, graphical and numerical methods.

Tabular Form of Data

Activity IV

c.i	f	d	fd	cf
85-89	5	9	45	120
80-84	8	8	64	115
75-79	12	7	84	107
70-74	15	6	90	95
65-69	20	5	100	80
60-64	25	4	100	60
55-59	15	3	45	35
50-54	10	2	20	20
45-49	6	1	6	10
40-44	4	0	0	4
			554	

Finding Mean, Median, Mode

$$N = 120$$

$$\overline{X} = AM + \frac{(\Sigma fd)\,i}{N}$$

$$= 42 + \frac{554 \times 5}{120}$$

$$= 42 + 23.08$$

$$= 65.08$$

$$Mdn = ll + \left(\frac{\frac{N}{2} - cf}{}\right)\left(\frac{i}{f}\right)$$

$$= 59.5 + (60-35)\left(\frac{5}{25}\right)$$

$$= 59.5 + 25 \times \frac{5}{25}$$

$$= 59.5 + 5$$

$$= 64.5$$

$$Mode = 3 mdn - 2\ Mean$$

$$= 193.50 - 130.16$$

$$= 63.34.$$