Quadrant II – Notes

Programme: Bachelor of Arts

Subject: Psychology

Paper Code: PSD 101

Paper Title: STATISTICS FOR PSYCHOLOGY

Unit: 4 – Percentile and Correlation

Module Name: Correlation-meaning, value strength, types, utility & methods.

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Notes :

Correlation: Meaning

- Correlation is a statistical analysis used to measure and describe the relationship between **two variables**. In statistical terms we use correlation to denote **association** between two quantitative variables.Most common and most useful statistics. A single number/ value that describes the degree of relationship between two numeric variables.

Correlation Measures Association, Not Causation

Correlation means there is a relationship or pattern between the values of two variables.

Causation means one event causes another event to occur. Causation is determined from an appropriately designed experiment. (cause & effect relation).

"Correlation does not imply causation"

Eg: A high r between sales of personal computers & athletic shoes, cannot be used to infer that buying computers causes people to buy athletic shoes (or vice versa).

Value strength of a Correlation Coefficient

Correlation is measured using correlation coefficient ("r").

The value of r ranges from -1.0 to +1.0.

Types of Correlations: help describe associations.

- **Positive correlation**: direct relationship- as A increases, B increases and as A decreases, B also decreases.

- **Negative correlation**: Inverse relationship- as A increases, B decreases and as A decreases, B increases.
- **No correlation**: no clear pattern of increase or decrease between variables.
- **Perfect Correlation**: the proportion of increase or decrease in A is accompanied by an equal proportion of increase or decrease in B.

Utility of correlations

Describe the degree of relationship or inter dependence between two variables

- **Prediction & Regression**: X scores used to predict Y scores.
- Determine the **reliability** of a test result.
- Determine the **validity** of test scores.
- **Take decisions** in educational and vocational guidance.
- **Compute other statistics** like factor analysis, regression prediction and multiple correlation etc.

Methods of calculating correlations.

Usually, in statistics, we use three methods to compute correlations:

- ❖ Product Moment Method - Karl Pearson
- ❖ Kendall rank correlation - Kendall
- ❖ Rank Order Method - Spearman

Each method has its own merits and demerits.

Choice of a method depends on the type of data available.

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