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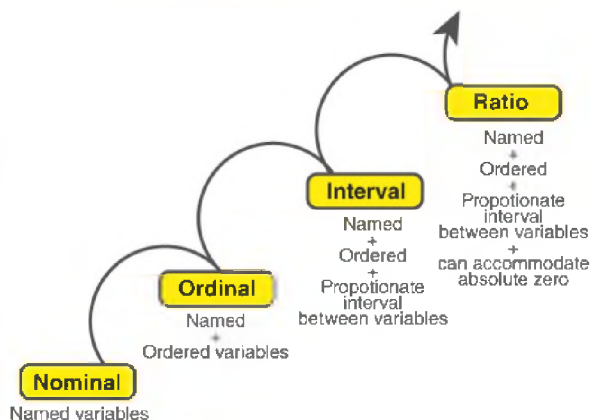
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LEVEL OF MEASUREMENTS AND DATA ANALYSIS

“ There are four major types of levels of measurement or also known as types of scales, which are nominal, ordinal, interval, and ratio “

Designing a set of questionnaires is a very challenging task. We need to understand the concepts before rendering the abstract concepts to their dimensions and elements. The forward and backward thinking skills must be seen in a comprehensive view. The expected information aligned with the study objectives could guide the researcher in rendering the abstract concepts.

How we design questions will lead to specific types of data, whether categorical or numerical. The properties of data types will lead to what kind of analysis we can run. There are four major types of levels of measurement or also known as types of scales, which are nominal, ordinal, interval, and ratio.



When using nominal scale, the form of data collected is category data. The data can be grouped into places, faculties, campuses, brands, gender and many more. Usually, can compute mode but cannot compute mean for such data.

To conclude, the “power” of scales from basic analysis to inferential analysis increases ascendingly from nominal to ordinal, ordinal to interval, and interval to ratio. The most “powerful” scale is the ratio scale. Hence, we need to carefully plan the types of scales that we need to use, or else we need to put more effort into data handling. The worst scenario is we need to revise the objectives because the data that we have is not suitable for inferential analysis.

Ordinal scale has the property of nominal scale (group/category) but is extended to “ranking”. The scale can be ranked into “poor”, “good”, “better”, and “best”. Even though the ranking can show from ascending or descending order, we cannot measure how much different from “poor” to “good”, from “good” to “better” or from “better” to “best”. The measure of central tendency for this data is median, but some scholars do compute mean.

Data collected from interval scale can be grouped, ranked, and extended to be able to measure the difference from one value of scale to another value of scale. Some scholar mentioned the Likert Scale as ordinal scale, however the characteristic of Likert Scale using values as 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree) consistent with characteristic of interval scale. Meaning that, the difference between 1 and 2 is one, 2 and 3 is one, 3 and 4 is one, and 4 and 5 is 1. The measure of central tendency (mean, median, mode) and measure of dispersion (variance, standard deviation) can be applied. On top of that, since the mean value will lead to decimal points of data, some inferential statistics can be applied onwards.

The ratio scale possesses properties of the first three scales and is extended to be able to measure the proportion of the differences. Zero is valued as zero and can have a decimal, usually computing the average from the interval scale ends up with the ratio scale as well. Therefore, despite descriptive statistics, we can run inferential statistics for such data.



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