

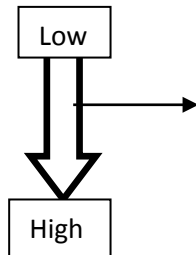
Quantitative research

Chapter 15/ lecture 11

Analyzing quantitative data

There are four levels of measurements for variables:

- Nominal measurement
- Ordinal measurement
- Interval measurement
- Ratio measurement



That does not mean nominal measurements are bad.

Keep in your mind, that you need to use nominal measurements for certain variables

Why it's important to know them and their characteristics?

Because in every quantitative research we have question or hypothesis and we need to do statistical analysis of the data which involves correlation between variables and the statistical test that will be done, both depend on level of measurements

Nominal measurement

Involves assigning numbers to classify characteristics into categories

Examples; **Gender** (male=0 and female=1 is the same of female=0 and male =1), **marital status** (single=1, married=2, divorced=3 and widowed=4; you can use other numbers for those variables)

The numbers here are only codes without any meaning (have no value), only to identify categories. So it cannot be used in correlation studies

Nominal measurement can be artificial or natural.

Keep in your mind that when you write your proposal, you should use certain variables associated with your study.

Ordinal measurement

Involves ranking objects based on their relative standing to an attribute

The numbers here have meaning (ranking), but the interval has no meaning.
It can be used in correlation studies

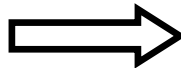
Example: Education level:

Primary (1st-10th grades) = 1

Secondary (11th-12th) = 2

College = 3

University = 4



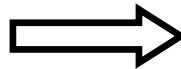
The numbers here have a ranking value: 3 is higher than 2.
The intervals has nothing to do, level 1 needs 10 years while level 2 needs 2 years.

- Race :

First athlete >> 2h and 10 min = 1

Second athlete >> 2h and 11 min = 2

Third athlete >> 2h and 30 min = 3



Regardless of each player time, they have the same difference in ranking.
The interval has nothing to do.

Interval measurement

Occurs when objects are ordered or a scale that has equal distances between points on the scale (not the same zero)

Example: temperature in F° not C° >>> distance between each temperature and the next is the same but there's no absolute zero. (freezing point is 32 F)

مثال آخر: التكمسي --- لو ركب س تكسي من الجامعة إلى صويلح فإن فتحة العداد 25 قرش واكتشف انه يملك 30 قرش فقط فلم يكمل طريقه، بينما زميل آخر ص انطلق من الجامعة إلى صويلح بكلفة 60 قرش، كلا الطالب ص دفع ضعف الطالب س على الرغم من أنه لم يقطع ضعف المسافة لأن العداد بدأ من 25... لو أن العداد بدأ من صفر فإن ص يدفع ضعف س ويقطع ضعف المسافة التي قطعها.

Ratio measurement

Occurs when there are equal distances between score and there is a rational meaningful zero

Note: if you can do the four mathematical processes on a variable that means it's applicable for rational level of measurement

Absolute zero is the only difference between ratio measurement and interval measurement.

Ratio measurement is the highest because it's the most useful and the most valuable.

Example: age: ratio measurement is preferred over ordinal; if you have 50 participant out of 250 their age is between 16 and 25, in the ordinal measurement you cannot determine exactly the age of each of them, maybe all of them are 16 or 25 and that will affect your study.

Ratio measurement

The question may be open:

How old are you?

The answer will be any number; 22
for example

Ordinal measurement

Or choose from the following:

(0-5) = 1, (6-10)=2, (7-15)=3, (16-25)=4, (26-45)=5, (>45)=6

Statistical analysis

Descriptive statistics

Used to describe and synthesize data.

Identify demographic variants and variable characteristics

Describe the characteristics of the sample, using: mean, median, standard deviation, frequency, etc

Not informative or adequate for analyzing data.

Univariate analysis >>> describes single variable like age alone or gender alone.

Inferential statistics

Used to make inferences about the population based on sample data

Link variables together by studying relationships, associations or describe differences between variables

Bivariate or multivariate >>> need at least two variables

Use parameters

Parameters: a must to be available in any statistical test, each test has specific parameter.

Good luck 😊

دعواتكم