Research Core-Science

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Research Decision Making

- You have to make a few decisions before you can start designing your experiment, survey or case study
- How do you measure the concepts of phenomena you plan to observe during data collection? – that is, how are you defining them and how you will know them when you see them?

Measurement

- Measurement is how you observe and catalog information about your concepts of interest and assign them numbers, symbols, definitions, and other meanings.
- Measurement is what takes you from vague and subjective feelings about a concept to something concrete and objective that invites comparison.

How Do You Measure What You Want To Measure?

Conceptually define your variable of interest

A variable is a characteristic of a unit or concept that varies in value or category.

Conceptualizing your variables requires you to develop a clear definition of your concepts.

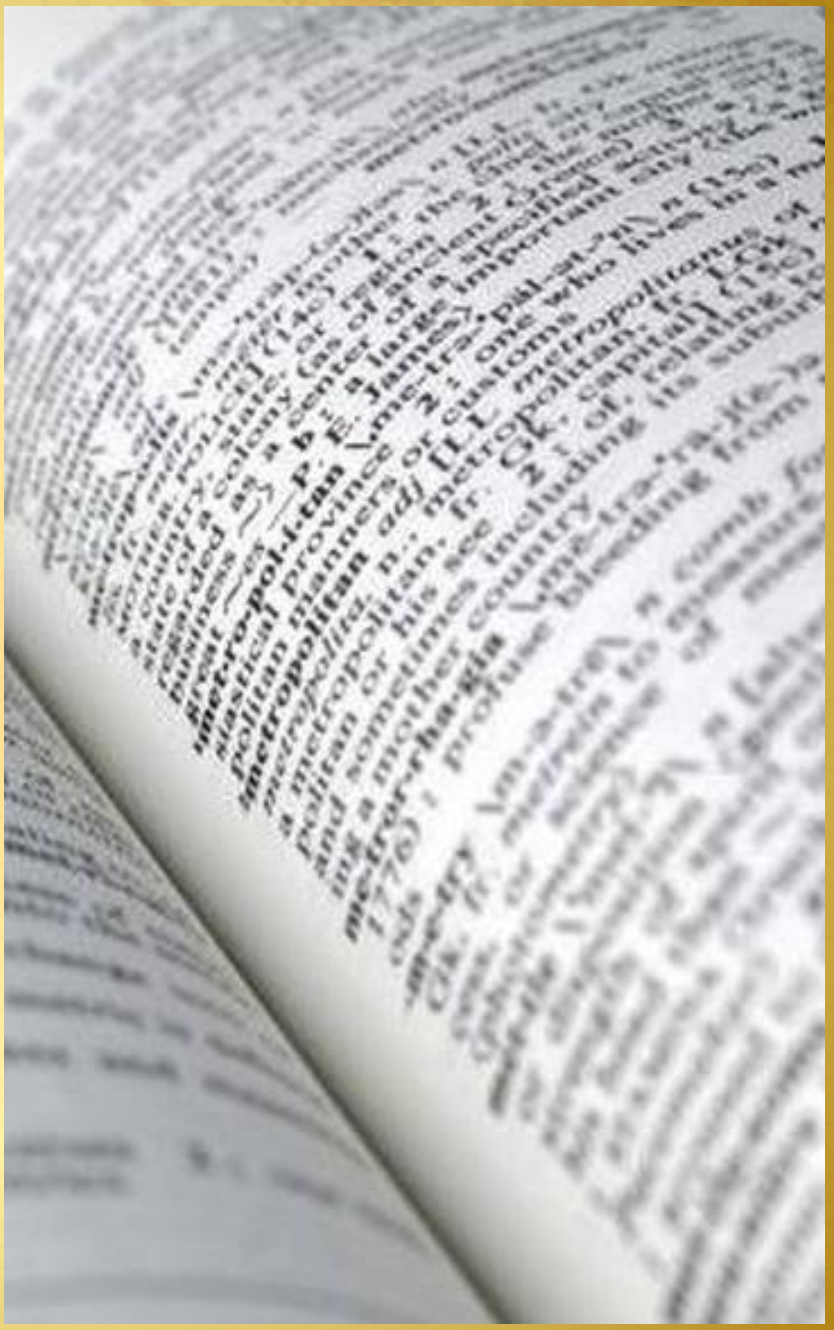
This is important because some concepts have multiple meanings, and you may want to be transparent about exactly what you mean.

Before you start looking at data, think through your definitions.

Start With The Dictionary

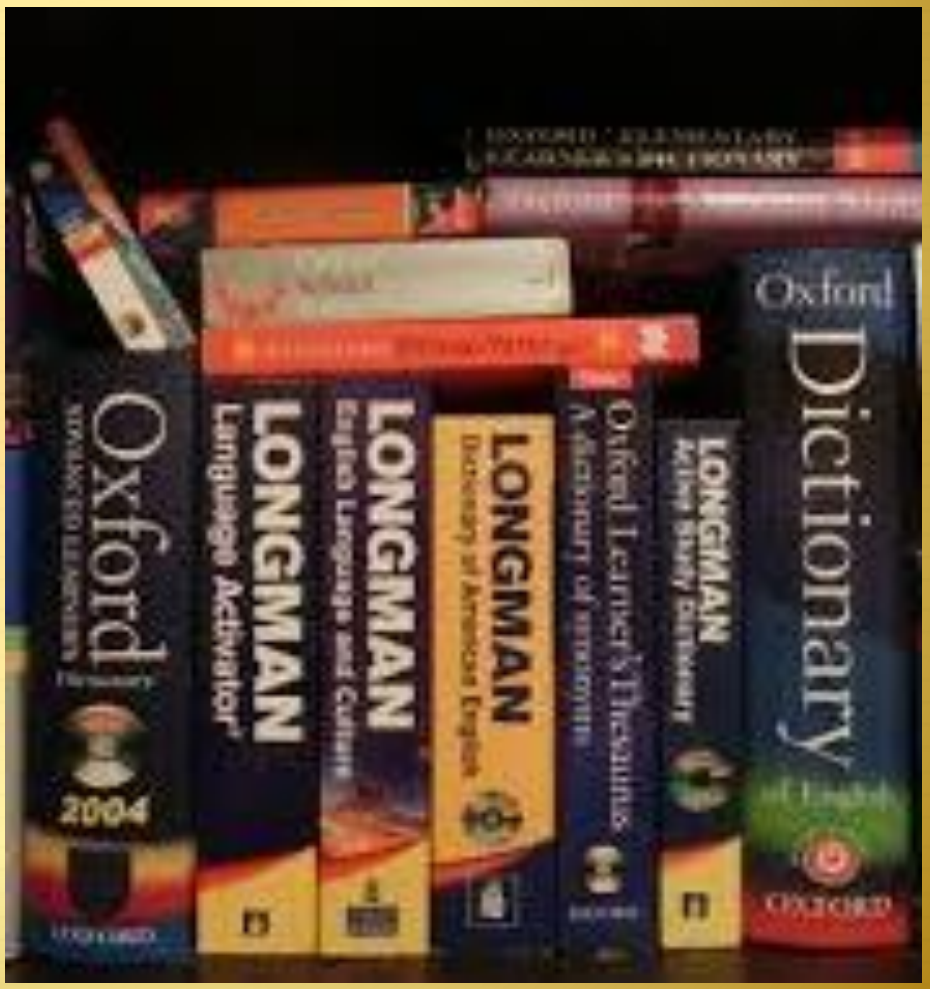
If your variable is a general term like “healthy” or “safety” it can be useful to understand how the term is used in general practice so you can refine your own thoughts.

From there, you might want to visit scholarly articles to see how the variables are designed in their work.



Why Is This Useful?

- First, it saves you the time it would take for you to come up with your own definition, refine it and defend it.
- Second, you may find out that there is a conventional and widely accepted definition for your concept, in which case you can simply cite it and move on.
- If there aren't already clear conceptual definitions for your topic, that's OK. Developing a new and compelling definition for a concept can be a scientific contribution.



How To Operationalize A Variable

- Figure out what the possible observable indicators are of your variable.
  - How would you observe this variable in the real world.
  - What kind of variables are present? Characteristics?

Determine Categories

- The categories within the variables are often called values.
- Part of the operationalization process is determining what the theoretical range of values will be for your variables.

Nominal and Ordinal Levels

- Keep in mind when determining your values is how precise you want them to be.
- **Nominal Level**: - A difference between at least 2 values within the variables. (Marital Status, Religious denomination and nationality)
- **Ordinal Level:** You can clearly define highest to lowest, tallest to shortest, or youngest to oldest. You can rank the responses. Example: High school freshman, sophomore, junior and senior.

Interval Levels & Ratios

Interval Level- A variable at the interval level lets you clearly measure how far it is between categories. Examples: Distance, Temperature….really any two data points.

Ratio-At the ration level, you introduce to your variable a true zero and the idea of an absence of the characteristic. Zero is a valuable number….when comparing data points.

Thank You So Much