

PLSC 308: Introduction to Political Research

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Measurement

“...measurement is always a theory about one’s observations. In other words, measurement constitutes a proposition about the ways that numerical scores reflect substantively interesting properties of data... No measurement whatsoever is “natural,” “pre-ordained,” or exists prior to/apart from human interpretation.”

– Jacoby (1999, 272-273)

Measurement: *Operationalization*

“...deciding how to record empirical observations of the occurrence of an attribute or a behavior using numerals or scores.”

What makes for good operationalization?

- *Consistent* with the researcher's concepts
- *Clearly* defined
- *Specific* to the research question.
- *Accurate*
- *Precise*

Operationalization: *Dimensionality*

“...a specifiable aspect or facet of a concept.”

– Babbie (1995, 114)

- Part of making measures sufficiently specific
- Isolates source / type of variation
- Is key to validity







GENTRAL PARK IN WINTER.

LITHO BY CURRAGH & CO.

Levels of Measurement

N → O → I → R (information is increasing...)

Nominal

- *Unordered Categories*
- *Discrete*
- Operations: $=, \neq$
- Examples: Colors (red/blue/black), brands (Jeep/VW/Audi), etc.

Levels of Measurement: Ordinal

Ordinal

- *Ordered Categories*
- *Discrete*
- Operations: $=, \neq, >, <$
- Examples: Rankings, many survey questions (“Likert items”)

Levels of Measurement: Interval

Interval

- *Cardinal* numbers with no true “zero”
- *Continuous* (or discrete)
- Can tell *degree* of difference, but not ratios
- Operations: $=, \neq, >, <, +, -$
- Examples: Temperature (Fahrenheit), Year, SAT scores

Levels of Measurement: Ratio

Ratio

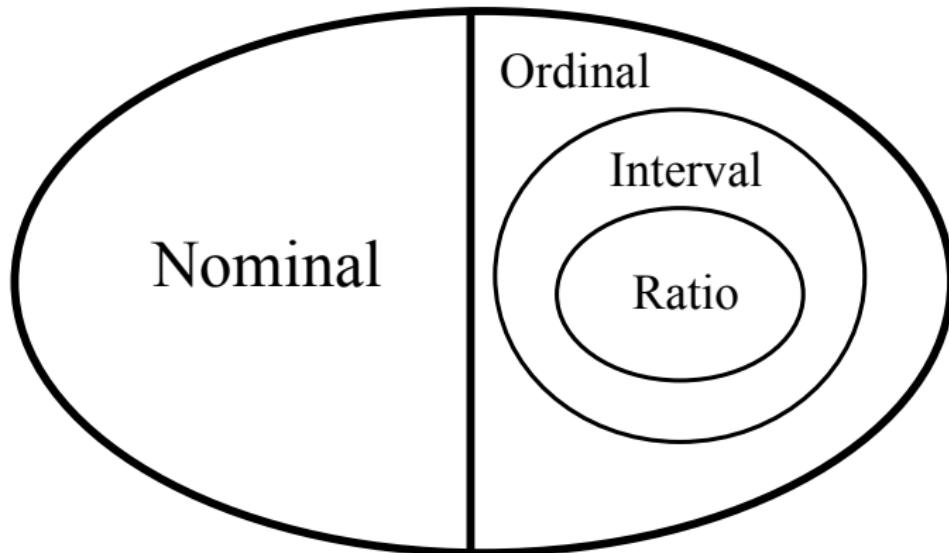
- *Cardinal* numbers with a true “zero”
- *Continuous* (or discrete)
- Can tell *ratio* of differences
- Operations: $=, \neq, >, <, +, -, \times, \div$
- Examples: Counts (generally): prices, age, etc.

A Special Case: *Dichotomous* Variables

Dichotomous

- a/k/a “binary,” “dummy”
- Indicates *presence* or *absence*
- Often recorded as “0” (absent) or “1” (present)
- Effectively any / all levels of measurement
- Underscores: Instrument categories need to be:
 - Mutually exclusive
 - Exhaustive

Levels of Measurement Visualized



Measurement: General Rules

Measures should:

- Reflect a single dimension of the concept
- Contain categories that reflect
meaningful variation
- Measure concepts at the highest level possible

