SOC40830 Quantitative Data Analytics and Applications

Eoin Flaherty (D413, Newman Building)
eoin.flaherty@ucd.ie

Week 1, Monday September 12th

1

Week 1 Outline

1. Introductory assessment
2. Quantitative research strategy
3. Cause, effect, and causal complexity
4. Theory and theorizing
5. The role of statistical models
6. A brief introduction to Stata

2

1. Introductory Assessment

https://play.kahoot.it/#/k/da5c6d84-88c1-4b03-9709-803d8370a1b2

3

2. Quantitative research strategy

Core Principles of Quantitative Research

Concepts/Conceptualisation – categories for ordering observation.
Indicators – items to capture dimensions of concepts.
Reliability – stability across time/space, internal consistency.
Validity – fit/capacity of indicator to capture concept.
Generalisation – inferring sample characteristics to populations.
Replicability – disclosing procedures and protocols.
Sampling – representation, coverage, and weighting.
Variables – independent and dependent variables.
Parsimony – Occam's razor.
Statistical control – experimental control often not possible.

4

2. Quantitative research strategy

Exercise

Select one of the following: (1) **religiosity,** (2) **social class,** (3) **happiness.**

Conceptualise your chosen term (what is it?)
Suggest an indicator for the concept (operationalise it).

5

2. Quantitative research strategy

Levels of Measurement

Variables are either ***Quantitative*** or ***Categorical***

Quantitative variables can be either *Interval* (no 'true' 0), or *Scale* (true 0).
Quantitative variables can also be *discrete* or *continuous*.
Categorical variables with unordered categories have a **Nominal** Scale
Categorical variables with ordered categories have an **Ordinal** Scale.

The 'hierarchy' of measurement, from the lowest to highest level of mathematical precision runs from: **Nominal, Ordinal, Interval, to Scale**.

6

2. Quantitative research strategy

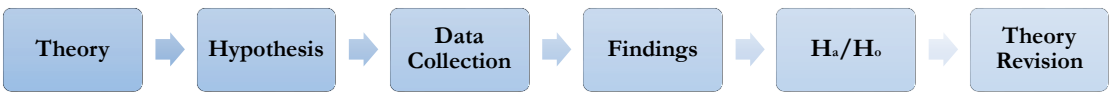
Identify the level of measurement of the following variables (whether they are nominal, ordinal, or scale).

If a variable is scale, state whether it is discrete or continuous.

a. Total net household income.
b. Political party voted for in last election.
c. Smoker or non-smoker.
d. Highest level of education completed (degree, masters, PhD etc)
e. Number of houses in an electoral district.
f. Gender.
g. Religion.
h. Whether country is liberal/residual/social-democratic welfare state.
i. A country's GDP.
j. Total Fertility Rate (TFR)
k. Net Migration Rate.

7

2. Quantitative research strategy



	Quantitative	Qualitative
Orientation to Theory	Deductive, testing	Inductive, generalisation
Epistemology	Scientific, positivist	Interpretivist
Ontology	Objectivist	Constructivist

8

3. Cause, Effect, and Causal Complexity

How healthy are you, or how long will you live - what matters more?

'What' you are – male, 38, professional, smoker, heavy drinker, no exercise, family history of type-2 diabetes, sedentary lifestyle, married, respiratory function, BP, BMI, height, cholesterol (**Compositional effects**).

'Where' you are – resident of a low-income underdeveloped country, liberal welfare state, agrarian society, industrial region, rural, far from neighbours, urban, low income neighbourhood, high-crime area, social housing estate (**Contextual effects**).

9