Descriptive Studies
Causality and Causal Inference
I. Descriptive Studies

- observable consequences/manifestations of the study
- specify up-front what you intend to do in your research
- need good understanding of the context/culture within which we conduct our study; understanding of the subject/topic
- description of events should be as precise & systematic as possible;

- use valid quantitative measures when available; oftentimes, national/regional statistics provide helpful data; can also construct ourselves

Ex: % of articles within a year dedicated to sexual minority issues...

Attn: the quantitative measures should relate closely to the concept of interest

(else, measurement error and validity problems)
To enhance descriptive studies:

1) select observations such that the facts that you have will allow you to infer information about unobserved facts.

2) among the facts (observations) that you have, distinguish the systematic components from the non-systematic/‘random’ ones.

Inference is the process of using the facts we know to learn about facts we do not know.
1) Selecting facts that can allow for descriptive inference

How to find appropriate observations (i.e. get the facts that we know)?

Chose your observations and organize your facts as observable implications of some theory/hypothesis

“If my explanation is correct of why a certain decision/outcome came about the way it did, what else shall I expect to observe in the real world?” (King et al., 1994:47)

- list all implications of the theory that could, in principle, be observed;
- limit the list to those items for which data have been collected, or could be collected.
- organize the data by it
Benefits:

- more observations on the implications of a specific theory will help us evaluate that theory don’t discard data

- learn from (preliminary) data; this could lead to reorganizing our data into observable implications of the new theory; after reorganization, continue to collect data in order to evaluate the new (modified) theory.

  (Generally, avoid using same data to evaluate the theory that we used to develop it)

- Allows to systematize the data; if observations are implications of the theory – keep them; if not – irrelevant.
2. **Systematic (‘real’) component/differences** vs. **non-systematic (random) component/differences** in the phenomenon we study (i.e. in the DV)

- do observations reflect typical characteristics, or are they ‘accidents’/outliers (random processes, which cancel each other out)

In qualitative projects/case study: careful selection of the case (for ex. community) to make sure it is representative, ‘average’;

- learn facts;
- extract systematic features;
- use knowledge to learn (i.e. infer) about what aspects of the phenomenon (subject) are likely to persist and/or be relevant for future events or studies.
A hypothesis is a *prediction* about how variables relate to each other (i.e. the relationship btw. variables).

This stated relationship creates observable implications:
- if the specified explanatory (independent) variable(s) takes on certain values, we should observe specified values in the dependent variable.
David Hume (1711-1776)
Causality cannot be observed; it is an interpretation.

Conditions:
(1) A and B are contiguous in space and time (spatial and temporal contiguity),
(2) A precedes B (time ordering),
(3) A & B always occur together (constant conjunction).
Mill's conditions of causality. John Stuart Mill (1806-1873) and his System of Logic (1843).

No factor can be regarded as a cause if:

(1) it is present while the effect is absent (i.e. method of agreement),
(2) it is absent while the effect is present (i.e. method of difference),
(3) it varies while the effect does not vary (i.e. method of concomitant variation)
Multiple Causality (Charles Ragin, 1987)

- the same outcome can be caused by combinations of different independent variables

Ex: social origin and respondent’s educational attainment affect R income/class
1. Causal Mechanism
   Causality operates through processes; specify how a cause exerts its effects.

   C is a cause of E if there is a series of events $C_i$ leading from C to E, & the transition from each $C_i$ to $C_{i+1}$ is governed by law L.

2. Inductive regularity
   C is a cause of E if there is a regular association btw. events $C_i$ and E, and $C_i$ happens reasonably before E.

3. Necessary and sufficient conditions
   C is a cause of E if events $C_i$ are necessary condition for the occurrence of E, and events $C_i$ are jointly sufficient to give rise to E.
King, Keohane and Verba (1994)

The causal effect = difference btw. actual(observed) outcome in the DV and the likely outcome in the DV in the **counterfactual** situation.
Counterfactuals

A counterfactual condition is a **conditional ("if-then")** statement indicating what **would be** the case if its antecedent **were** true.

*If* I would not have had a boy, *then* I would have had a girl.

Counterfactuals = basis of experimental methods for establishing causality in the natural sciences.

Ex: Does Tamiflu help cure H1N1 infection?

For every individual, *i*, there is a **function** that specifies the state of *i*’s infection under 2 hypothetical conditions:

- had *i* taken Tamiflu;
- had *i* not taken the medication.

Only 1 of these states can be observed; the other one is ‘counter factual’.

The overall **effect of the medication on** infection = defined as the difference between these two states, **averaged** over the entire population.
The causal effect is defined only in theory;

In real situation we can observe either one or the other, or none, but never both → we never know a causal effect for certain.

Fundamental problem of causal inference (Holland, 1986; King et al. 1994)
Characteristics:
- are counter to the facts;
- must be reasonable;
- should be possible to have occurred under precisely stated circumstances

Need to be clear as to what we hold constant while we are, hypothetically, changing the value of the independent variable (i.e. apply the counterfactual).
King et al. example: counterfactual in qualitative research (p. 83):

Parliamentary vs. Presidential System of Government in CEE
Black box: Father’s education & income affect son’s outcome; why?

(Resource and socialization)

In causality, time matters: immediate vs. lagged effects