

Research method: small N

Method with small-N studies

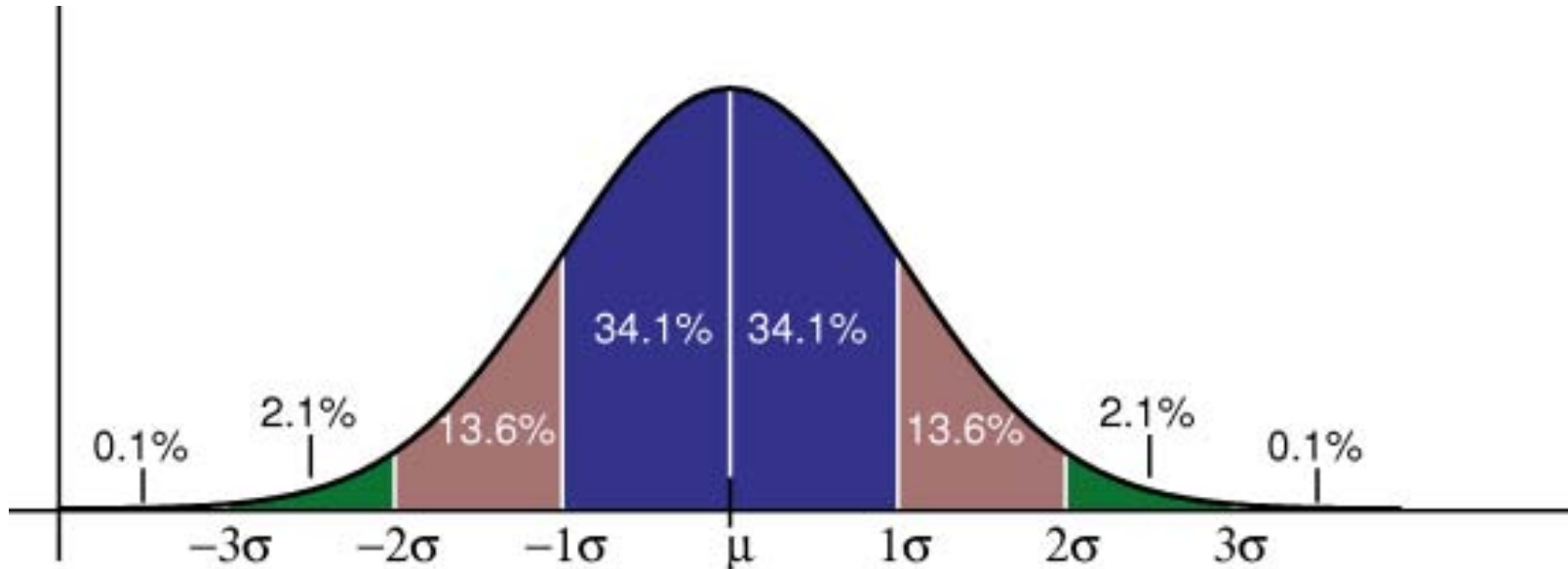
Limitations to small-N research (per Lijphart)

- Too few data points; rarely both temporal and spatial variation
- Example: claim that agrarian backwardness leads to social revolution. Case = Russia.
 - Alternative theory: ideologically motivated vanguard movements.
 - In Russia, both conditions are met; more explanations than observations.

Probabilism versus determinism

Use of small-N thus reflects limitations of time, money, data availability

Probabilism is clear enough, but its implications for research are often not



1. Cannot “prove” anything with a single case
2. Regression toward the mean (a statistical phenomenon)
 - Francis Galton: peas, fathers’ and sons’ heights
 - Pre-test, post-test scores of low (or high) performers
 - Stronger inference if outlier case moves away from the mean

Method with small-N studies (2)

Counterarguments for small-N

- a. Can always be used for hypothesis generation, even if there are limitations to hypothesis-testing
- b. Inherent importance of a case (e.g., collapse of the Soviet Union, U.S. invasion of Iraq, Watergate) justifies small-N
- c. Very few cases with certain value on the DV (e.g., Tocqueville in the U.S.)
- d. Unique leverage of specific cases (e.g., Abernathy 2000, countries that “exogenously” switched electoral systems, “accidental” rulers with specific features)
- e. Controls very strong (e.g., East versus West Berlin neighborhoods, Arab villages divided by 1968 partition)
- f. Unit homogeneity and “quality” of data points (e.g., comparing between modern and ancient “democracies” or across “civil wars”)
- g. Case ≠ observation
- h. Nailing down causal processes

Controlled comparisons

Method of Difference / MSS: cases that are as similar as possible but different in the value of the DV and on one IV.

- Example: only two students arrive at the Nurse's office. The two are roommates who ate together, but one became sick to his stomach while the other did not.
 - The first had eaten a hot dog, french fries, coleslaw, chocolate cake, and iced tea.
 - The other had eaten a hot dog, french fries, chocolate cake, and iced tea.
 - Ms. Hayes concludes that the coleslaw is what made the first roommate ill.
- We assume that, other things being equal, different effects are likely to arise from different causes; since only the student who had eaten coleslaw became ill, it was probably the cause.

Method of Agreement / Most Different Systems

- Example: only four students arrive at the nurses office
 - The first had pizza, coleslaw, orange juice, and a cookie;
 - The second had a hot dog and french fries, coleslaw, and iced tea;
 - The third ate pizza and coleslaw and drank iced tea; and
 - The fourth ate only french fries, coleslaw, and chocolate cake.
- We assume that similar effects are likely to arise from the same cause; the only thing these kids had in common was the coleslaw

Controlled comparison: case selection is crucial

Case selection is for comparative small-N what randomization is for experiments and statistical controls for regression analysis: control for confounding variables.

- Purposive sampling: too few cases for random sampling to make any sense.

The “golden rule” is that we should not select on the dependent variable.

- Example: studies that try to explain the outbreak of war including only wars; studies that try to explain the outbreak of revolution including only revolution;
- Run the risk of misestimating the effects of our treatment, because we are restricting the range of the observed DV. Sometimes we have variation on the dependent variable but it is truncated, i.e. it does not account for all possibilities.

Examples of problematic sampling

- 1936 *Literary Digest* poll (car owners), 1948 election
- Ethnic heterogeneity and violence in Eastern Europe
- Poor predictive power of GRE within sample of admitted students (censored data)

Single Case Studies

Purpose of Case Study

Most case studies seek to elucidate the features of a broader population.

- Meant to be about something larger than the case itself.
- If cases consist of countries, for example, the population might be understood as a region (e.g., Latin America), a particular type of country (e.g., oil exporters), or the entire universe of countries on a certain dimension (of issue or time).
- The problem of “representativeness” cannot be ignored if the ambition of the case study is to reflect on a broader population of cases.

Case studies can be crucial for causal processes

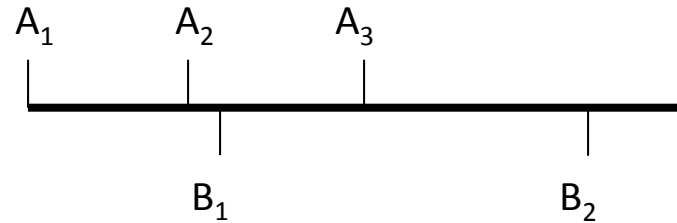
Case studies do not need to be just one “observation”

Nailing down causal processes

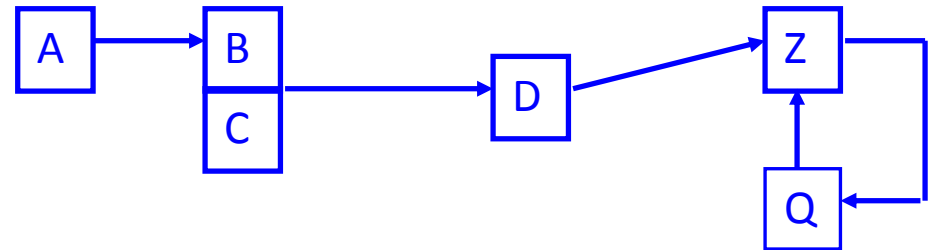
- Observational world rarely provides cases with temporal variation (pre and post tests) and spatial variation (control and treatment groups).
- Reliance on contextual evidence and deductive knowledge to get to causality.
- “Process tracing” involves examining causal chains and multiple types of evidence for the verification of one inference.
 - Process tracing looks more like detective work, legal “discovery”, or investigative reporting
 - For process tracing quality of observations and how they are analyzed (not long versus short narrative rather informative versus uninformative narrative).
 - Facts need to be narrativized which requires strong clear priors about how the world works
 - Process tracing convincing if links can be formalized ie diagramed.

Process tracing is a term that is so unclear it should be banished from the literature

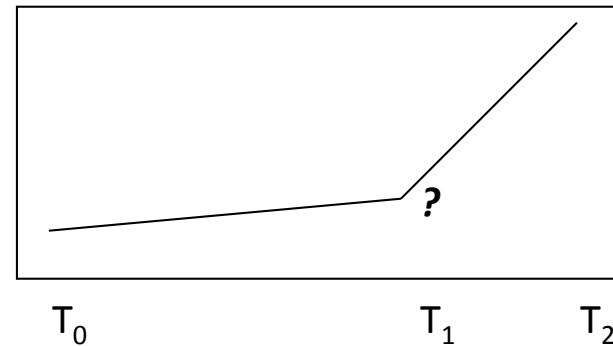
Tracing the temporal sequence



Tracing the causal sequence



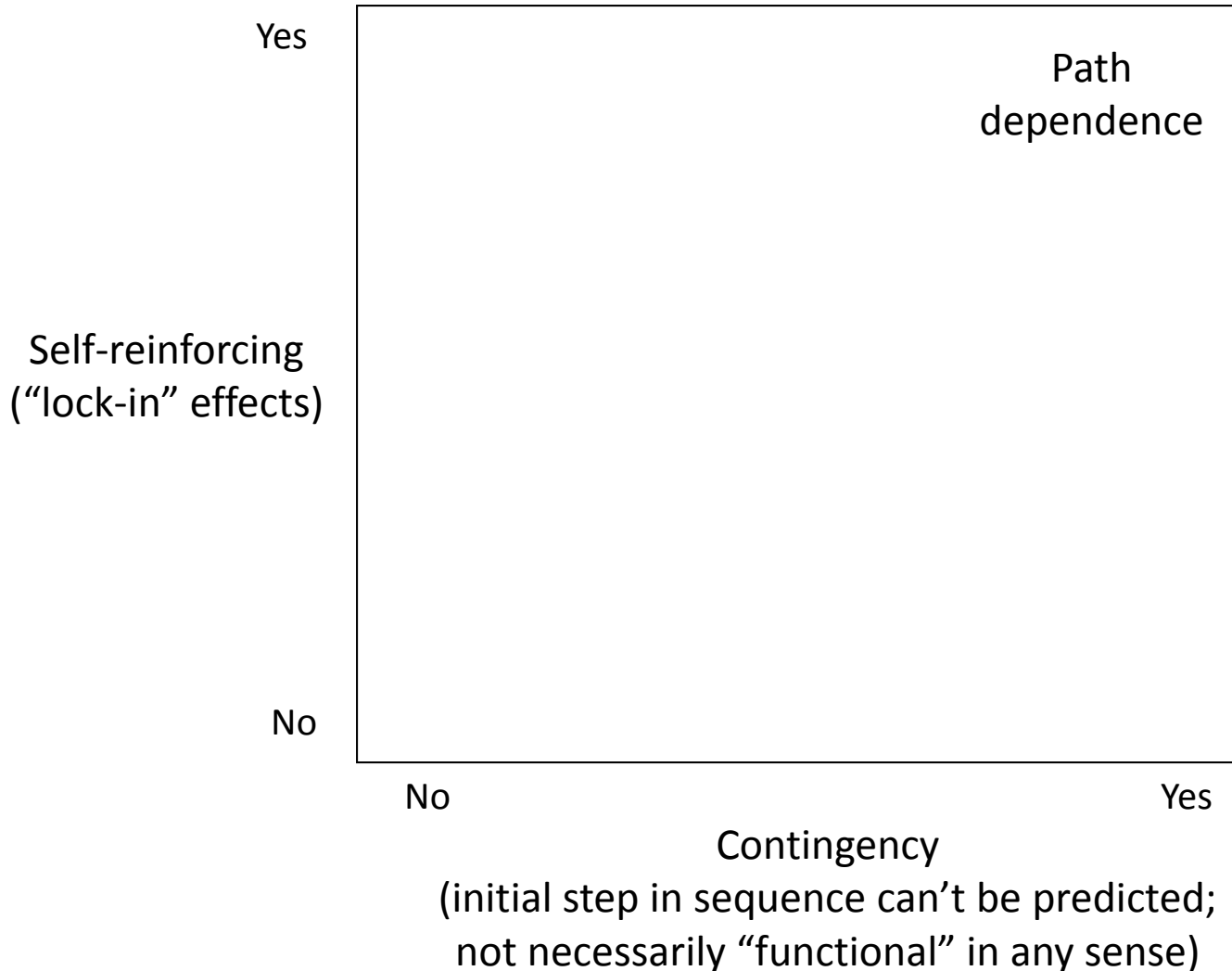
Finding “inflection points”
(what happened at ?)



Search for contingency and lock-in (i.e., “path dependence”)

“Path dependence” is another such term

For Mahoney (2000), it entails both contingency and “lock-in”



Observation versus case

Observations are the objects – be they people, states, parties, or wars – at the level where we want to test our hypotheses and where we measure our variables.

A “case” may contain many observations on several units and variables

- Spatial units (districts, villages)
- Temporal units (1997 in Asia, 2011 in MENA)
- Conceptual units (bureaucracies, wars, movements)
- Example: India (28 states, 681 districts, thousands of villages, etc.)
- What unit of analysis is appropriate? It depends on your theory and the question asked

Research design should maximize observable implications (even in one case)

- These implications may also be at more than one level of analysis (e.g., theories about parties may operate on individual voters, on party structure within districts, etc.)

Strategies for case selection

As other methods discussed to date, case study analysis both aims to identify cases that reproduce the relevant causal features of a larger universe (representativeness) and provide variation along the dimensions of theoretical interest (causal leverage).

If case based on uniqueness on some dimension, pick the highly distinctive cases

If cases are designed to support larger study, there are conflicting views, and it depends in part on your goal

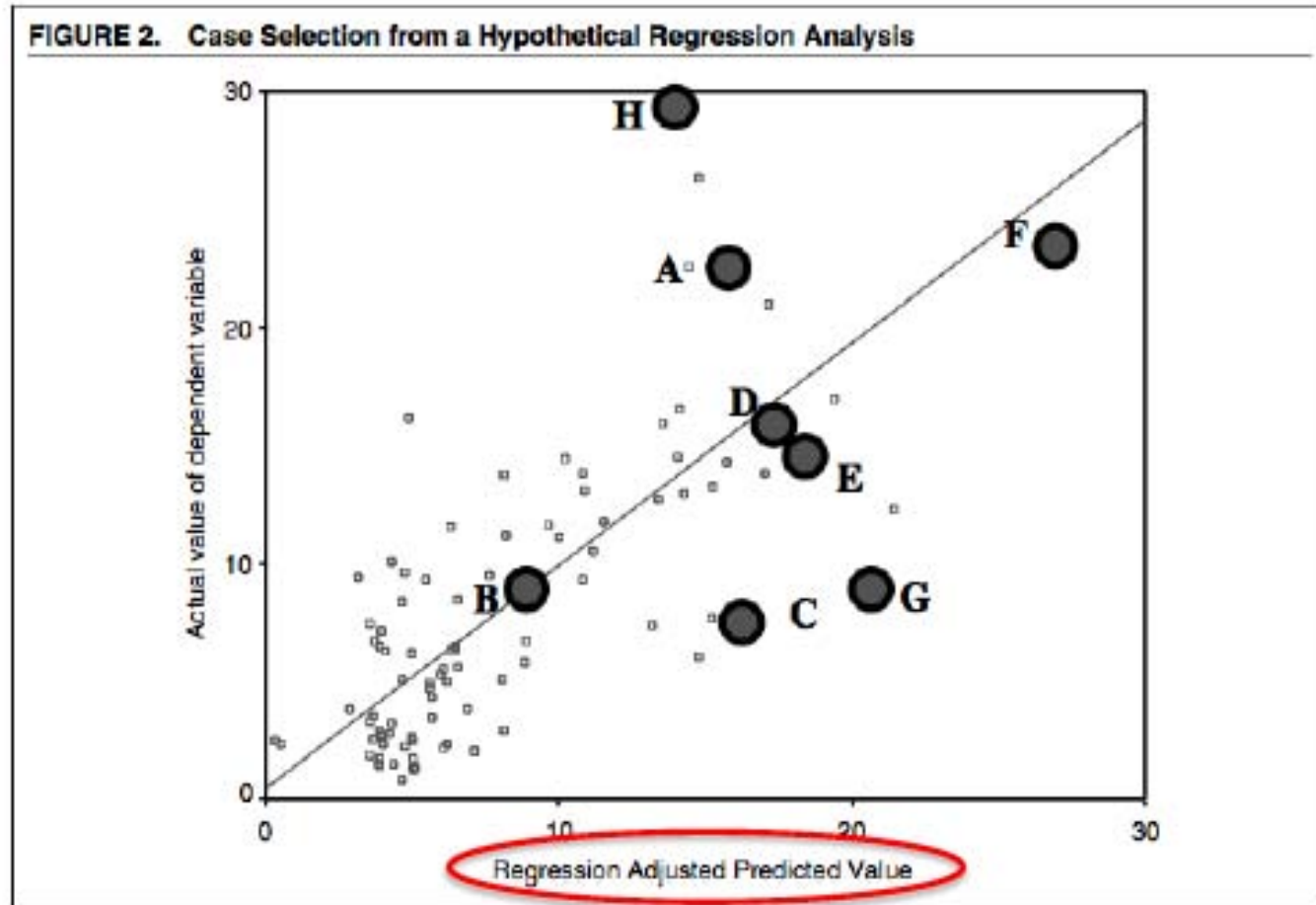
- Random selection demonstrates double-blind controls
- Select extreme values on IV to
- Select “typical” case (mean values) to illustrate mechanisms
- Select “hard” case to strengthen claims
- Select outliers or cases “moving away from the regression line” to identify unmeasured variables (e.g., democracy and level of development)

Pragmatic considerations crucial (language, local knowledge, contacts)

- These factors signal competent execution

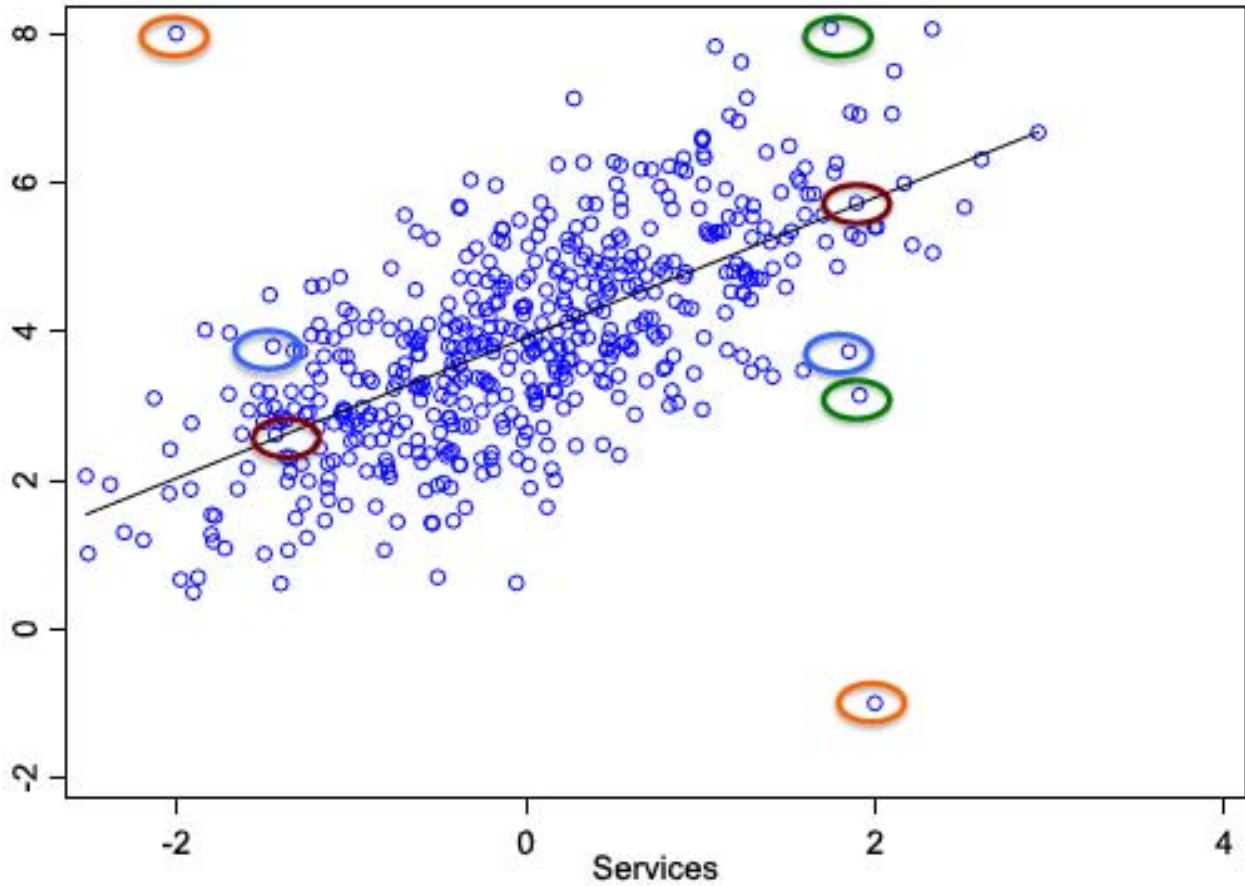
Need to justify case selection in a research design

Lieberman 2004: case selection after large-N



Lieberman, Evan S. "Nested Analysis as a Mixed-Method Strategy for Comparative Research." *American Political Science Review* 99, no. 3 (2005): 435–52. © Cambridge University Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.

Case selection after large-N



- Typical cases
- Deviant cases
- Most similar
- Most different

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