

Making Causal Critiques

Day 1 - Deconstructing an Argument

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Objectives

1. What makes an Explanation **Convincing**?

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5. How can we **Deconstruct** a Political Science Paper?

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2. What **Evidence** strengthens an Explanation?
3. What Types of **Causation** are there?
4. How do we reach **Consistent** Conclusions?
5. How can we **Deconstruct** a Political Science Paper?
6. What Types of **Critiques** of an Argument can we make?

Causal Critiques

- Political science is about *explaining* outcomes

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 - ▶ Did voters support President Trump because of jobs lost to immigration?

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Does development lead to democracy?	"No, democracy causes development"
Does democracy prevent war?	"Of course not, India and Pakistan were democracies and had a war in 1999"
Did voters support President Trump because of jobs lost to immigration?	"Obviously not, jobs were lost to technological change"

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 - ▶ Advice to a friend
 - ▶ A worry about your *own* research paper

What makes an Explanation Convincing?

- ▶ Explanation requires:
 1. Theory
 2. Evidence

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- ▶ Next time the laptop fails to charge, our wiggling might not be enough and we won't know how to fix it

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 - ▶ Note we cannot *reject* the theory - it may be that both sockets are broken
- ▶ We can design other tests to check the laptop, charger, adapter etc.

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- ▶ We might arrive at an argument like:
 - ▶ “When an international adapter is used with an old socket, the electrical connection between the wires is weak and unreliable, preventing the laptop from charging. The socket works fine with other laptops, the laptop and charger work fine in newer sockets, and the problem is the same using alternative international adapters.”

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10. **Policy-relevance** - Can the argument help us design better policy?

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 - ▶ The same evidence can be consistent with many possible mechanisms
 - ▶ We need a chain of 'local causality' (Elster 1983)
- ▶ A **Convincing Explanation** requires evidence that supports a *specific* theory
 - ▶ And *rejects other theories*

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 - ▶ If your friend plugs their own laptop and charger into the socket and it charges fine, we can rule out the socket being a problem
 - ▶ But we still do not know if your own laptop or charger are the problem
- ▶ We need to design tests (produce evidence) that *distinguish between* specific theories

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4. **Doubly Decisive Test:** Can confirm a hypothesis and reject all other hypotheses
 - If we test the charger with an entirely new socket and laptop that we have previously checked work, *and* similarly for the socket and laptop

Learning from Evidence

- ▶ What caused the reduction in price variation in Kerala's fishing industry?
- ▶ **Hypothesis:** The introduction of mobile phone service
- ▶ **Theory:** Mobile phones allowed people to quickly share the price of fish in different villages, so fishermen got the best prices more consistently
 - ▶ Jensen et al (2007): Compare price dispersion with the timing of the introduction of new mobile phone masts
 - ▶ A 'smoking gun' test at least

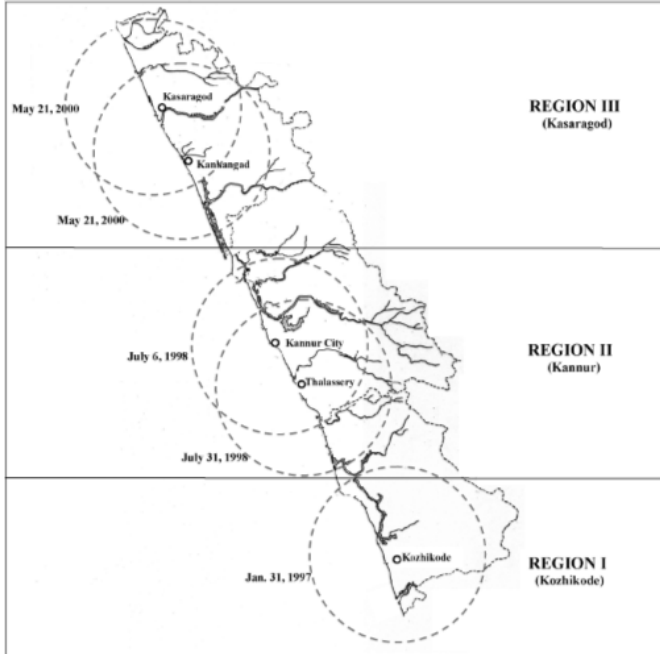


FIGURE II
Spread of Mobile Phone Coverage in Kasaragod, Kannur,
and Kozhikode Districts

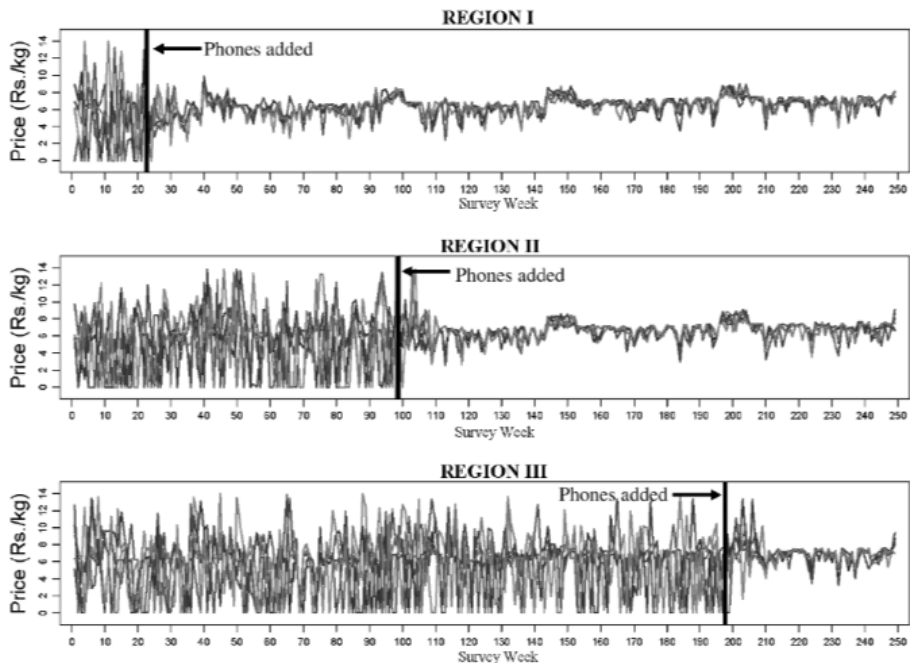


FIGURE IV
Prices and Mobile Phone Service in Kerala

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7. **Replicability** - Can we take the same (or similar) data and reach the same conclusion?

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 2. Societies are even more complex interactions of millions of humans
 3. Everyone has an opinion, including researchers
 4. Ethical constraints on the data we can gather
 5. Political explanations in one place may not work in another

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- ▶ The charger only worked about half of the time

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- ▶ That means we need to treat causation as **probabilistic**
 - ▶ The presence of a cause does not guarantee an outcome
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- ▶ For example, a left-wing party in government may not guarantee the passage of social welfare legislation
- ▶ But it can make it more likely

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7. **Granger Causation** - If D causes Y , D must be before Y

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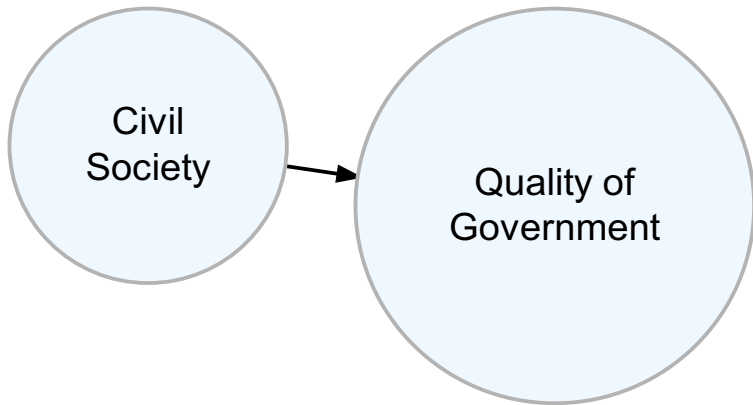
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- ▶ Using Causal Diagrams to clarify arguments
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 - ▶ Connecting them with arrows to represent the author's **causal** argument

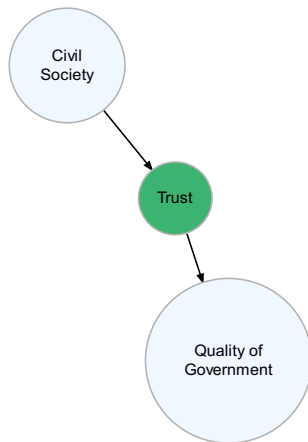
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 - ▶ Write all the variables on the paper
 - ▶ Connecting them with arrows to represent the author's **causal** argument
 - ▶ And also the *threats* to the author's argument
 - ▶ Even if they can't be measured

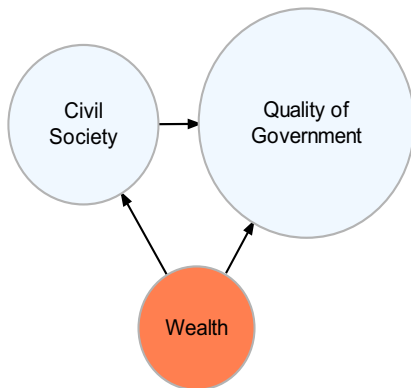
Causal Theory



Causal Theory



Causal Theory



Causal Theory

- We can always break causal connections into smaller chunks

Causal Theory

- ▶ We can always break causal connections into smaller chunks
- ▶ At some point we rely on theory to provide the causal power:
 - ▶ Physical processes (gravity, momentum)
 - ▶ Behavioural theory (incentives, psychology)

Consistent Conclusions

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 - ▶ Formally: $\forall p : h, p \Rightarrow h$

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 - ▶ $\forall p: h, h \Rightarrow p$
 - ▶ This is logically inconsistent

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Consistent Conclusions

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 - ▶ All chargers are tested to make sure they are working before they are sold. So if I buy a new charger, my laptop will start charging again.
 - ▶ My laptop has always charged fine on Thursdays. So if I wait until Thursday, it will work again.

Consistent Conclusions

► Logical Fallacies

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1. **False syllogism:** Conclusions do not follow from premises
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2. **False dichotomy:** Restricting the possible options to only two
 - Eg. "Either we attack them first or they attack us first"
3. **Circular reasoning:** The conclusions just restate the premises
 - Eg. "Abortion should be legal because women have the right to an abortion."

Consistent Conclusions

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4. **Over-generalization:** Extending the conclusions beyond the scope of the evidence

- Eg. "All of my friends support party X so of course they will win the election"

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6. **Appeal to Authority:** Assuming the author is right because they are senior
 - Eg. Assuming that political science professors know what they are doing!

Consistent Conclusions

► Logical Fallacies

7. **Fallacy of Composition:** Extending what is true of part to being true of the whole

Consistent Conclusions

► Logical Fallacies

7. **Fallacy of Composition:** Extending what is true of part to being true of the whole

- Eg. "If someone stands up at a football match, they can see better. Therefore, if everyone stands up, they can all see better."

Consistent Conclusions

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 - ▶ Voters are rational - they choose the politician that is best for them. Therefore we always elect the best politicians.

Consistent Conclusions

- ▶ Some political science arguments are logically inconsistent:
 - ▶ Voters are rational - they choose the politician that is best for them. Therefore we always elect the best politicians.
- ▶ Of course the other possibility is that the **premise is false**
 - ▶ But that's a different critique

Deconstructing a Political Science Paper

- Before we can critique an argument we have to understand its content

Deconstructing a Political Science Paper

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 - ▶ What is the **scope** of the argument's application?
- ▶ *Causal* critiques depend on understanding the building blocks

Deconstructing a Political Science Paper

High school education is central to adolescent socialization and has important downstream consequences for adult life. However, scholars examining schooling's political effects have struggled to reconcile education's correlation with both more liberal social attitudes and greater income. To disentangle this relationship, I exploit a major school leaving age reform in Great Britain that caused almost half the population to remain at high school for at least an additional year. Using a fuzzy regression discontinuity design, I find that each additional year of late high school increases the probability of voting Conservative in later life by 12 percentage points. A similar relationship holds when pooling all cohorts, suggesting that high school education is a key determinant of voting behavior and that the reform could have significantly altered electoral outcomes. I provide evidence suggesting that, by increasing an individual's income, education increases support for right-wing economic policies, and ultimately the Conservative party.

(Marshall 2015)

Deconstructing a Political Science Paper

- How to read a political science paper:

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 - ▶ **Role of Variables** - Which is the outcome variable and which the explanatory? What controls are used?

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 - ▶ **Evidence** - What evidence does the methodology produce?

Title: Making Democracy Work			
Authors: Robert Putnam		Year: 1993	
Research Question: Why are some parts of Italy governed better than others?			
Answer/Causal Argument: Places with more civic social interactions have better government			
Scope of Argument (in Time, Space, Demographics etc.): Advanced Democracies			
Concept/Variable	Measure	Unit of Analysis	Role (DV, XV, Control)
Civil Society	Density of sports clubs, newspapers, electoral turnout	Region	Explanatory Variable
Government Performance	12 Indicators, eg. Budget on time, number of day care centres per child	Region	Dependent Variable
Wealth	GDP per capita	Region	Control Variable
Theory: Civic interactions between people and groups create trust and more ‘horizontal’ relationships that prevent government from being predatory		Methodology:	
		<input type="checkbox"/> Case Study, Process Tracing	
		<input checked="" type="checkbox"/> Comparative Cases	
		<input type="checkbox"/> Regression with Controls	
		<input type="checkbox"/> Matching	
		<input type="checkbox"/> Field Experiment	
		<input type="checkbox"/> Lab/Survey Experiment	
Evidence: Regions of Italy with similar institutional rules and similar wealth but with more civil society have, on average, better performing government		<input type="checkbox"/> Natural Experiment	
		<input type="checkbox"/> Instrumental Variable	
		<input type="checkbox"/> Regression Discontinuity	
		<input type="checkbox"/> Difference-in-Differences	

Title:			
Authors:		Year:	
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Theory: 	Methodology: <input type="checkbox"/> Case Study, Process Tracing <input type="checkbox"/> Comparative Cases <input type="checkbox"/> Regression with Controls <input type="checkbox"/> Matching <input type="checkbox"/> Field Experiment <input type="checkbox"/> Lab/Survey Experiment <input type="checkbox"/> Natural Experiment <input type="checkbox"/> Instrumental Variable <input type="checkbox"/> Regression Discontinuity <input type="checkbox"/> Difference-in-Differences
Evidence: 	

Fundamental Critiques

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Fundamental Critiques

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- ▶ When scores "meaningfully capture the ideas contained in the corresponding concept"
 - ▶ Does the scale make sense?

Fundamental Critiques

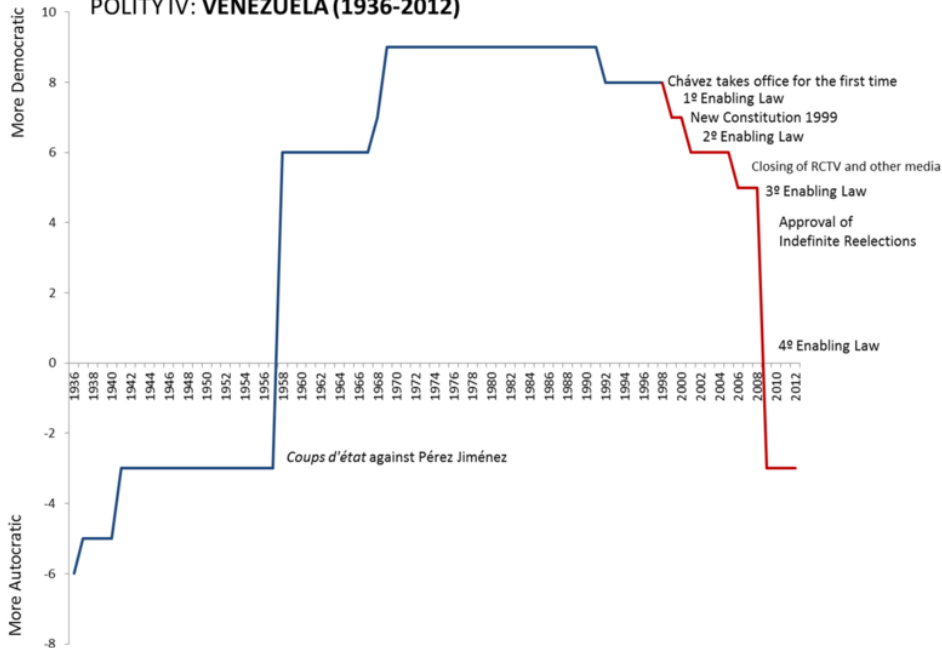
- ▶ **Measurement Validity**
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Fundamental Critiques

► **Measurement Validity**

- When scores "meaningfully capture the ideas contained in the corresponding concept"
 - Does the scale make sense?
 - Is democracy binary or continuous? Positive or negative?
 - Are the cases (units) scored correctly? How reliable is the scoring?

POLITY IV: VENEZUELA (1936-2012)



Explanation
○○○○○○○○

Evidence
○○○○○○

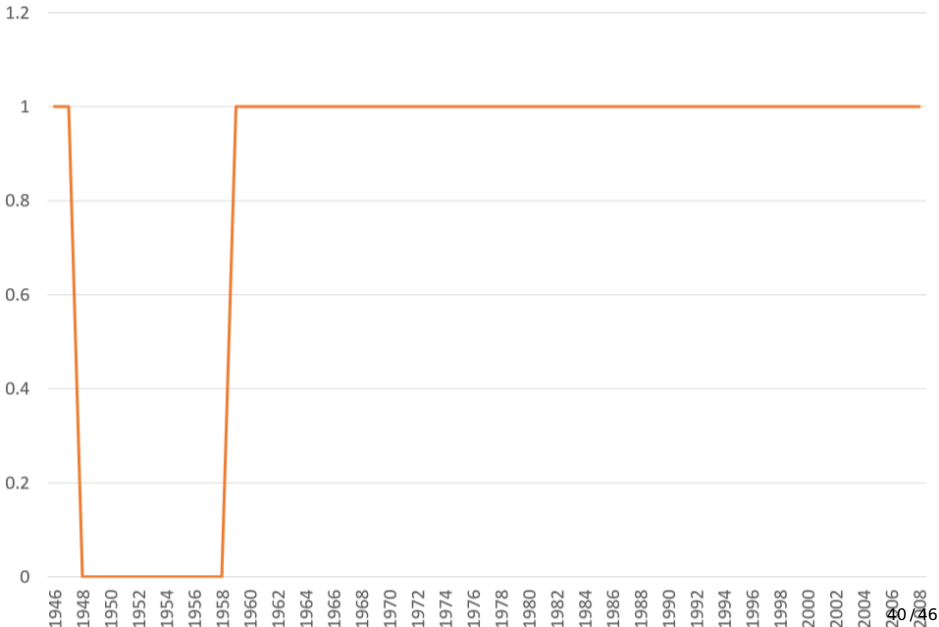
Causation
○○○○○○○○

Consistent Conclusions
○○○○○○○

Deconstructing Papers
○○○○○○

Fundamental Critiques
○○●○○○○○

Venezuela



Fundamental Critiques

► Unit of Analysis

Fundamental Critiques

- ▶ **Unit of Analysis**
- ▶ Does the unit of analysis match the theory?

Fundamental Critiques

- ▶ **Unit of Analysis**
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- ▶ Would the argument work at an alternative level of analysis?

Fundamental Critiques

► **Unit of Analysis**

- Does the unit of analysis match the theory?
- Would the argument work at an alternative level of analysis?
- Eg. Should we use annual data to assess the effect of Trump's tweets on the stock market?

Fundamental Critiques

► Theory

Fundamental Critiques

- ▶ **Theory**
- ▶ Is the theory internally consistent?

Fundamental Critiques

- ▶ **Theory**
- ▶ Is the theory internally consistent?
- ▶ Is the theory falsifiable?

Fundamental Critiques

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- ▶ Is the theory falsifiable?
- ▶ Is the theory portable?

Fundamental Critiques

► Evidence

Fundamental Critiques

- ▶ **Evidence**
- ▶ Where did the dataset come from?

Fundamental Critiques

- ▶ **Evidence**
- ▶ Where did the dataset come from?
 - ▶ Sampling strategy

Fundamental Critiques

► Evidence

- Where did the dataset come from?
 - Sampling strategy
 - Questionnaire and survey protocol

Fundamental Critiques

► Evidence

- Where did the dataset come from?
 - Sampling strategy
 - Questionnaire and survey protocol
 - Measurement error

Fundamental Critiques

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Fundamental Critiques

► Evidence

- Where did the dataset come from?
 - Sampling strategy
 - Questionnaire and survey protocol
 - Measurement error
 - Data entry, cleaning
 - Statistics/statistical model chosen
- What was the "Data Generating Process"?
- How does this data help us answer the question?

Fundamental Critiques

- **Methodologies** for gathering evidence:

Fundamental Critiques

- ▶ **Methodologies** for gathering evidence:
- ▶ Observational Studies:
 - ▶ Comparative Cases

Fundamental Critiques

- ▶ **Methodologies** for gathering evidence:
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 - ▶ Regression with controls

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Methodology

- Methodologies for gathering evidence:

Methodology

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Methodology

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Methodology

► Small-N Studies:

Methodology

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Methodology

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