

# Mixed-Method Causal Inference

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# Why Mixed-Method Research?

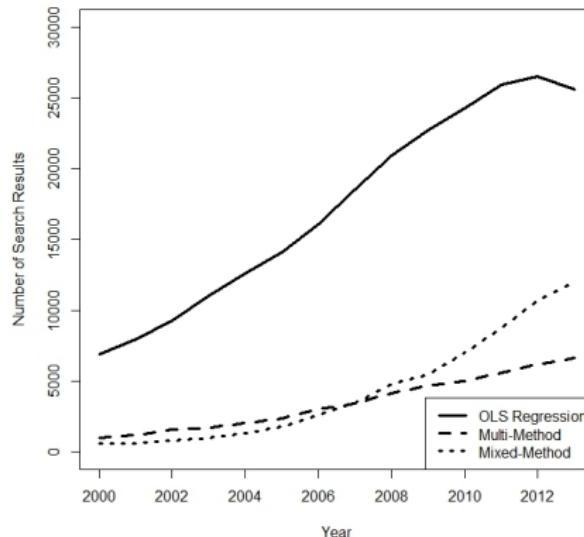


Figure: Google Scholar Search Results Related to Mixed-Method Research

# Why Mixed-Method Research?

In 2023:

- 17,100 instances of OLS regression
- 4,550 instances of multi-method
- 12,800 instances of mixed-method

# An Example

Why do some states in the U.S. have many fewer laws about labor than other states?

# Galvin and Seawright (2023)

Probably it has something to do with unions?

**Table I.** Relationship Between State-level Employment Laws and Union Density, 1974–2014.

Independent variable	Coefficient estimate (standard error)
Union density decline	-6.491*** (1.634)
Baseline union density	5.916*** (1.024)
Legislative productivity	0.00475*** (0.000690)
CA	173.1*** (40.63)
Constant	-20.59 (21.61)
Observations	50
Adjusted R <sup>2</sup>	.7781

Note: Standard errors are given in parentheses. Dependent variable is the total number of employment laws enacted by state. *Union density decline* is the percentage point change in state-level union density, where a higher value indicates greater decline. *Baseline union density* is average union density in the five years prior. *Legislative productivity* is the total number of state laws enacted over the same period. *CA* dummies for the extreme outlier California.

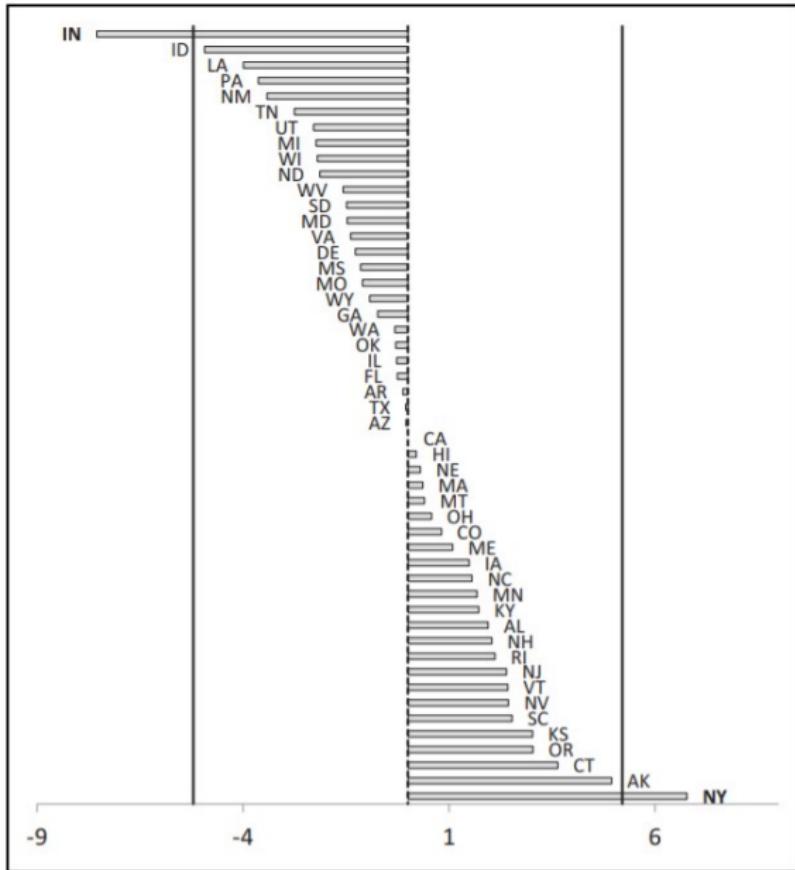
\* $p < .1$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

**Table 2.** Government Substitution Hypothesis Model.

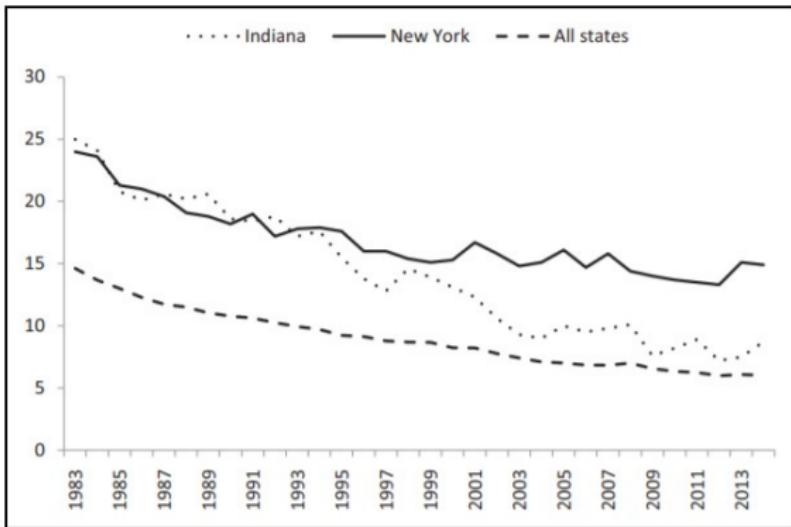
	(1)
Base union density	4.707*** (1.198)
Change in union density	-4.546** (1.836)
MFG	66.41 (97.81)
logMFGWage	-0.759 (5.449)
logEMPLCHG	14.70 (12.27)
Unemployment	-9.904** (4.896)
Right to work	-34.07*** (13.34)
Legislative productivity	0.00547*** (0.000788)
CA	159.2*** (40.05)
Constant	-22.34 (91.17)
Observations	50
Adjusted $R^2$	.798

Note: Standard errors are given in parentheses. CA = California.

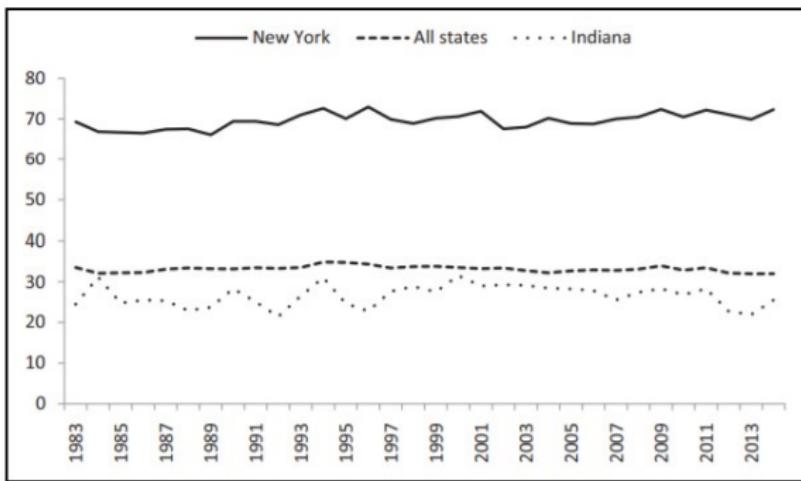
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**Figure 4.** Propensity-adjusted extreme values on change in union density. Note:



**Figure 5.** Private-sector union density.



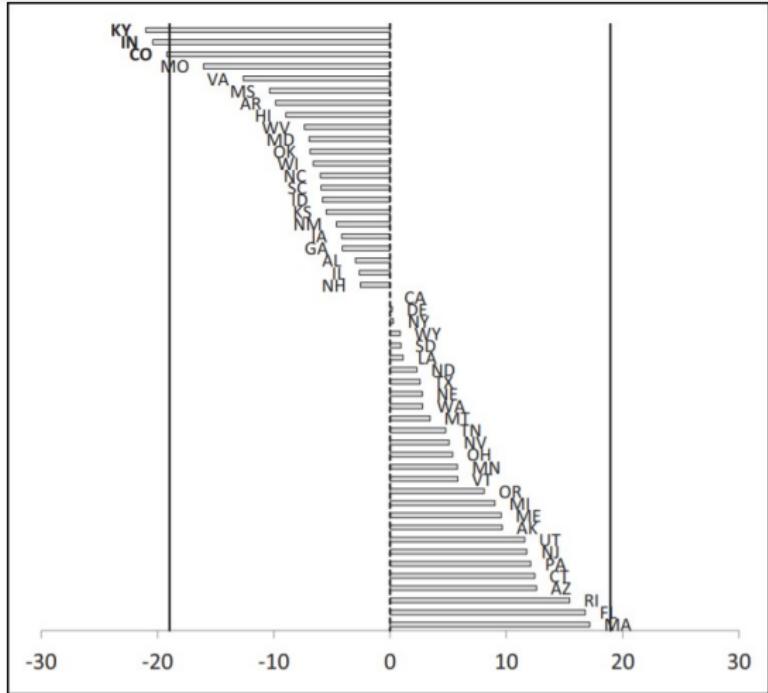
**Figure 6.** Public-sector union density.

**Table 3.** Disaggregated Union Density Measures.

	(1)	(2)	(3)
Baseline private-sector union density	3.336* (1.940)		-0.979 (2.324)
Change in private-sector union density	-3.815 (2.855)		1.227 (3.172)
Baseline public-sector union density		1.189*** (0.344)	1.307*** (0.451)
Change in public-sector union density		-0.709 (0.689)	-0.796 (0.738)
MFG	30.79 (105.4)	-31.38 (90.57)	-47.87 (102.6)
logMFGWage	-1.887 (5.324)	-1.914 (4.481)	-1.783 (5.013)
logEMPLCHG	11.48 (12.80)	16.13 (11.40)	16.39 (12.10)
Unemployment	-7.443 (4.806)	-2.990 (4.189)	-2.265 (4.819)
Right to work	-41.41*** (12.65)	-23.62* (13.05)	-23.17 (13.82)
Legislative productivity	0.00638*** (0.000938)	0.00575*** (0.000824)	0.00567*** (0.000903)
CA	129.6*** (38.87)	132.1*** (35.28)	133.5*** (36.29)
Constant	38.44 (84.40)	-19.65 (78.76)	-23.65 (81.28)
Observations	50	50	50
Adjusted R <sup>2</sup>	.709	.762	.750

Note: Standard errors are given in parentheses. CA = California.

\* $p < .1$ . \*\* $p < .05$ . \*\*\* $p < .01$ .



**Figure 7.** Propensity-adjusted extreme values on baseline public-sector union density. Note: Vertical lines represent  $\pm 2 \times SD$  from mean.

Of our three extreme states, neither Colorado, Indiana, nor Kentucky had enacted an RTW law before 1983. However, Colorado passed a strikingly similar law in 1943 (Labor Peace Act) which has been called a “precursor” to Taft Hartley that “clearly influenced” the latter’s design (Hogler and Shulman 1999:884-887), and both Indiana (2012) and Kentucky (2017) are among a handful of “late adopters” (Table 4). Whatever caused these three states to be unusual—unusually early (Colorado) or unusually late (Indiana and Kentucky)—may also explain their extreme propensity-adjusted values.

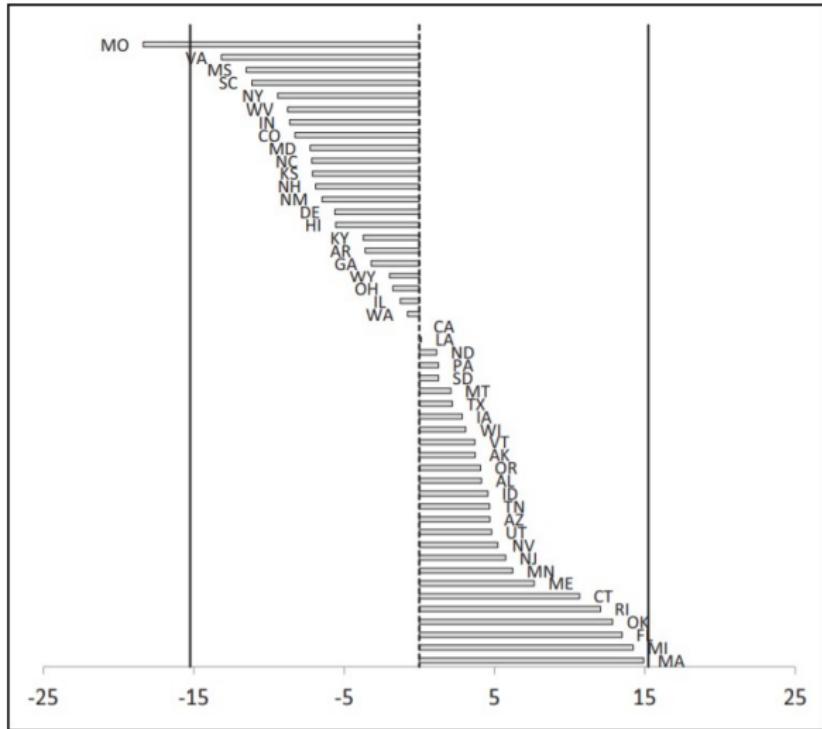
*Indiana*. Although Indiana enacted an RTW law in 1956, it was repealed in 1965 when Democrats regained control of state government. Indiana did not enact another RTW law until 2012, when the “Tea Party surge” of 2010 delivered Indiana Republicans their largest legislative majorities in decades (Cuarino 2012; Hansen 2010). As part of a nationwide conservative “revival” in which Republican lawmakers were said to be “dusting off the decades-old RTW legislation for a new millennium,” Indiana became the first state in over a decade, and the first in the industrial Midwest, to enact an RTW law (Pugh 2012). This move did not surprise observers who viewed Indiana as the “most conservative of the Rust Belt States, and one where residents identify more strongly with those in southern and western states where RTW laws have been in place” (Grimm 2012).

**Table 5.** Including Confounders.

	(I)
Baseline private-sector union density	0.272 (2.553)
Change in private-sector union density	-0.682 (3.558)
Baseline public-sector union density	1.317** (0.548)
Change in public-sector union density	-0.342 (0.884)
MFG	-21.77 (106.0)
logMFGWage	3.093 (5.291)
logEMPLCHG	12.38 (12.72)
Unemployment	-2.130 (4.885)
RTW	-33.22* (18.51)
Legislative productivity	0.00547*** (0.00100)
CA	115.5*** (37.22)
MassEconLib	-97.05* (51.42)
DemLeg	1.004 (0.620)
Constant	-107.4 (87.01)
Observations	49
Adjusted $R^2$	.767

Note: Standard errors are given in parentheses. CA = California.

\* $p < .1$ . \*\* $p < .05$ . \*\*\* $p < .01$ .



**Figure 9.** Propensity-adjusted extreme values on improved model. Note: Vertical lines represent  $\pm 2 \times SD$  from mean.

**Table 7.** Causal Process Observations.

Major Category	Policy Area	Year	Policy Type	Objective	Outcome	Evidence of Union Involvement?	Outcome Favorable to Unions?
Wages, hours, and leave	Minimum wage	1989–1990	Legislation	Raise minimum wage	Vetoed	Yes	No
Wages, hours, and leave	Minimum wage	1989–1990	Legislation	Raise minimum wage	Vetoed	Yes	No
Wages, hours, and leave	Minimum wage	1989–1990	Legislation	Raise minimum wage	Enacted	Yes	Yes
Wages, hours, and leave	Minimum wage	1996	Ballot initiative	Raise minimum wage	Failed	Yes	No
Wages, hours, and leave	Minimum wage	2006	Ballot initiative	Raise minimum wage	Passed	Yes	Yes
Wages, hours, and leave	Minimum wage	2018	Ballot initiative	Raise minimum wage	Passed	Yes	Yes
Discrimination and retaliation	Discrimination and whistleblower	2011	Legislation	Limit litigation and eliminate whistleblower protections	Vetoed	Yes	Yes
Discrimination and retaliation	Discrimination	2012	Legislation	Limit discrimination litigation	Vetoed	Yes	Yes
Discrimination and retaliation	Whistleblower	2012	Legislation	Limit whistleblower protections	Died in Senate	Yes	Yes
Discrimination and retaliation	Discrimination and whistleblower	2017	Legislation	Limit litigation and eliminate whistleblower protections	Enacted	Yes	No
Terms and conditions of employment	Child labor	1995	Legislation	Enhance state's enforcement capacity	Enacted	Yes	Yes
Terms and conditions of employment	Child labor	2011	Legislation	Eliminate child labor laws	Failed in senate	Yes	Yes

# Florida, 2000

- Brady (2004)

# Florida, 2000

- John Lott (2000) uses regression to estimate that early media calls in the Florida panhandle cost George W. Bush at least 10,000 votes.

# Florida, 2000

$$303,000 * \frac{1}{72} \approx 4,200$$

- Census data from 1996 suggest that about 1/12 of voters go to the polls during the last hour.
- The call was made with 10 minutes to go, so perhaps 1/72 of voters who would have voted had not yet arrived at the polls.

# Florida, 2000

$$303,000 * \frac{1}{72} * \frac{1}{5} \approx 840$$

- Research on media exposure suggests that 20% or fewer of people in the panhandle would have heard the media call during the 10 minutes before the polls closed.

# Florida, 2000

$$303,000 * \frac{1}{72} * \frac{1}{5} * \frac{2}{3} \approx 560$$

- Bush was supported by about 2/3 of panhandle voters.

# Florida, 2000

$$303,000 * \frac{1}{72} * \frac{1}{5} * \frac{2}{3} * \frac{1}{10} \approx 56$$

- Prior quantitative research suggests that about 10% of intended voters who hear an early call before they arrive at the polls may be dissuaded from voting.

# Rights and Liberties

- Survey research on tolerance, civil liberties, individual rights

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- Survey research on tolerance, civil liberties, individual rights
- In-depth analysis of 30 think-aloud transcripts from a survey pretest

# Rights and Liberties

- Do citizens anchor their opinions to what they understand of current law?

# Rights and Liberties

Q. Do you think that a person who is caught red-handed deserves a full blown trial?

A. Yeah, I think that's one of our rights. I think that's in the Bill of Rights that, uhh, you have the right to a trial. Uhh how, what defense the attorney would take I don't know. I mean it — but again it's a matter of making the punishment fit the crime which I think a trial, that's one purpose of a trial. I mean I don't think a man that's stealing a loaf of bread should be executed. And I think a trial would bring out, uh, how serious the crime was and maybe there were some mitigating circumstances. And I think all that's part of a trial. So I think anyone deserves a trial.



# Rights and Liberties

Q. What if the police stop someone for weaving dangerously in traffic. Do they have the right to search the glove compartment or trunk of the car if they suspect that he's on drugs?

A. I think the courts have said that they haven't, isn't that what the courts have said? Well, you hear verdicts where it's on and off but it, it seems to me that they, they probably shouldn't.

# One Last Example

Laitin and Fearon (2003) report statistical evidence of a connection between mountainous terrain and civil war.

# One Last Example

Logit coefficients for the relationship range between 0.12 and 0.42.

# One Last Example



# One Last Example

Colombia experienced civil war through much of the 19th century

# One Last Example



# One Last Example



# One Last Example



# One Last Example



# What Is Multi-Method Research?

## Definition

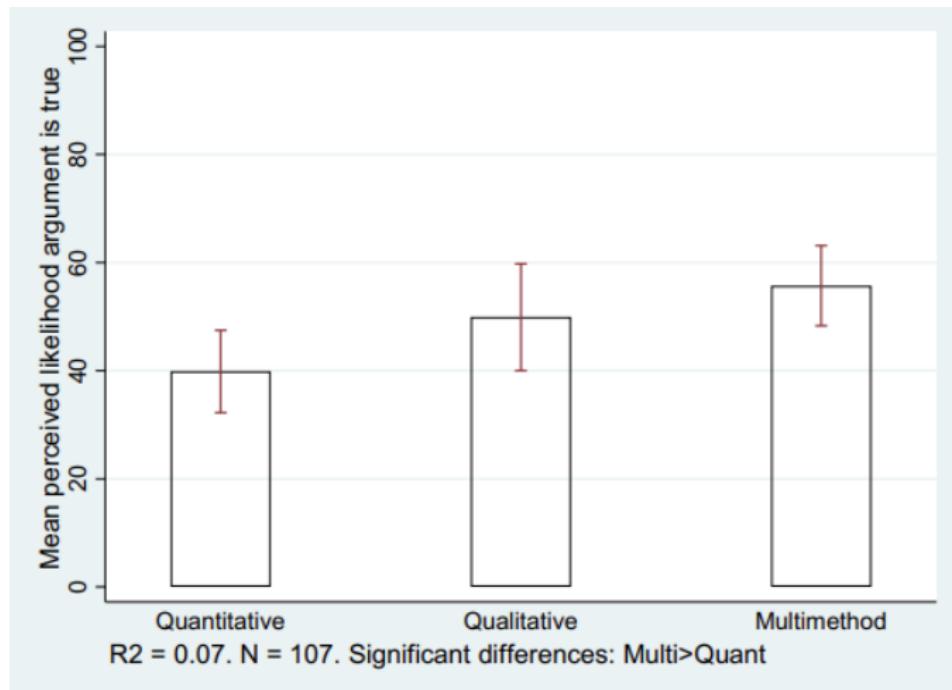
*Triangulation* is the combination of research designs drawn from more than one methodological family both or all of which are aimed at providing separate answers to a research question.

# What Is Multi-Method Research?

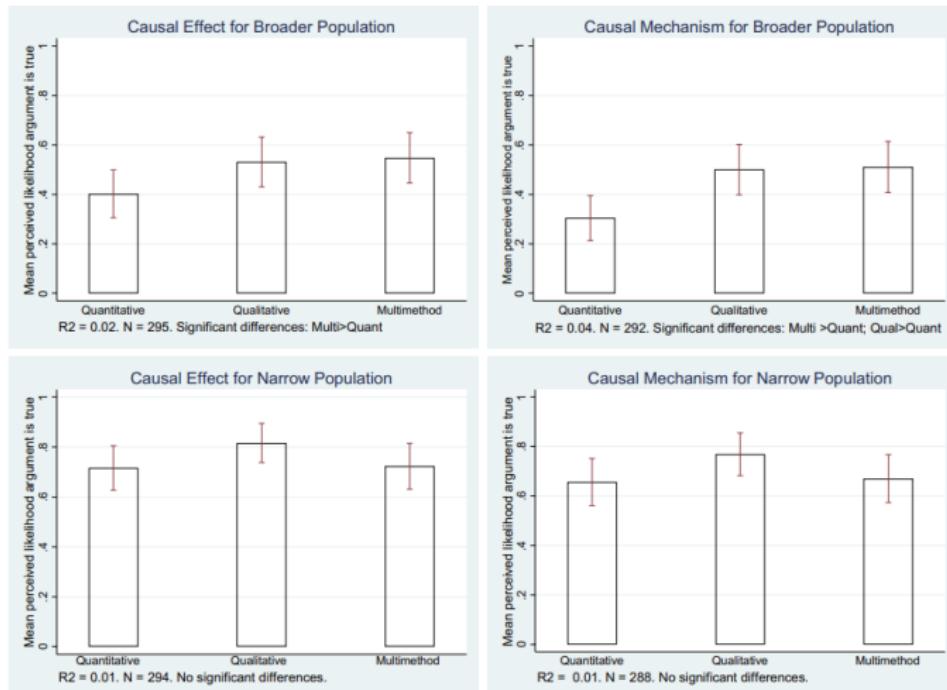
## Definition

*Integrative multi-method research* is research that uses techniques drawn from more than one methodological family in the course of answering a single integrated research question or testing a single overarching hypothesis.

# Costs of Triangulation



# Costs of Triangulation



# Agenda

- ## ① Integration and the potential outcomes framework

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- ② Causal inference and regression
- ③ How qualitative research contributes to causal inference
- ④ Case selection
- ⑤ Assumption-testing research designs for regression/case studies

# A Spectrum

- Social-science methods never teach us anything
- One family of research is always better than the others
- Quantitative and qualitative research can never communicate
- Triangulation
- Integration

# Goertz and Mahoney

Qualitative and quantitative research speak different languages because of differences in ontology.

# Concepts of Causation

Potential Outcomes Framework

$$T_i, Y_{i,t}$$

# Four Traditions of Causal Thought

## Humean Regularity Theory

# Four Traditions of Causal Thought

Humean Regularity Theory  
Counterfactual Theory

# Four Traditions of Causal Thought

Humean Regularity Theory

Counterfactual Theory

Manipulation Theory

# Four Traditions of Causal Thought

Humean Regularity Theory

Counterfactual Theory

Manipulation Theory

Capacities and Mechanisms

# Concepts of Causation

## Necessary Causation

# Concepts of Causation

Necessary Causation

$$Y_{i,0} = 0 \text{ for all } i.$$

# Concepts of Causation

## Sufficient Causation

# Concepts of Causation

## Sufficient Causation

$Y_{i,1} = 1$  for all  $i$ .

# Concepts of Causation

## Causal Pathways

# Concepts of Causation

## Causal Pathways

$T_i$

$M_{i,t,1}, M_{i,t,m1,2}, M_{i,t,m1,m2,3}$ , etc

$Y_{i,t,m1,m2,m3}$