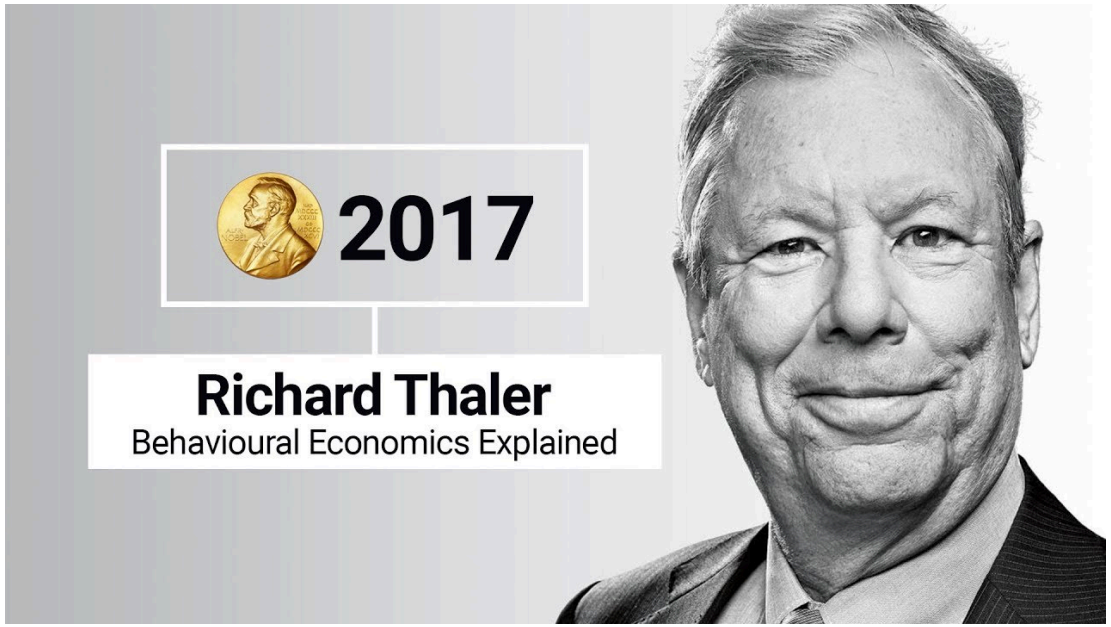
Behavioral Public Administration & Sustainability

Yixin Liu


2017
Richard Thaler
Behavioural Economics Explained


Abhijit Banerjee,
Esther Duflo,
Michael Kremer
CEPR
2019 Sveriges Riksbank Prize
in Economic Sciences in
Memory of Alfred Nobel

Now, assuming you are living in Boston

City government have found that:

Criminal rate is highly correlated with **ice cream sales** rate

WHY?

Because…

Hot weather -> increase human activities -> ice cream sales rate

Hot weather -> increase human activities -> criminal rate

At here, hot weather and human activities are confounding variables

So, we **cannot** establish causal relations between ice cream and criminal

Potential Problems

Endogeneity (correlation ≠ causality)

E.g. satisfaction of services -> trust in government

1. Unobserved confounders (omitted variable bias)
2. Reverse causality (simultaneity bias)
3. Selection effect (selection bias)

Then, what should we do?

- Collect data from multiple time periods
- Control multiple variables
- Sophisticated statistical tests, we so call…econometrics

TABLE 1–2. Determinants of the Domestic Public Sector

	Government Consumption			*Total Government Spending (+ Military Spending)*		
	Model 7	*Model 8*	*Model 9*	*Model 10*	*Model 11*	*Model 12*
D	1.970***	1.964***	2.634***	0.569	1.041	2.041*
	(0.430)	(0.445)	(0.559)	(0.671)	(0.672)	(0.876)
PD	0.658**	0.709*	0.896***	0.545^	1.060***	0.255
	(0.207)	(0.321)	(0.220)	(0.321)	(0.328)	(0.386)
Trade (log)	0.914	0.323		1.532^	2.045***	
	(0.743)	(0.487)		(0.793)	(0.592)	
FDI	–0.008		0.005	–0.128^		0.002
	(0.060)		(0.075)	(0.076)		(0.111)
D × trade (log)		1.498**			1.102	
		(0.572)			(1.026)	
PD × trade (log)		0.653			3.242***	
		(0.543)			(0.700)	
D × FDI			0.302			0.383
			(0.268)			(0.288)
PD × FDI			–0.023			0.088
			(0.073)			(0.123)
GDP per capita (log)	–0.198	0.360	0.029	2.417**	4.015***	3.607***
	(0.989)	(0.813)	(0.732)	(0.903)	(0.754)	(0.855)
GDP per capita $(\log)^2$	–0.165	–0.474	–1.012***	0.454	0.606^	0.614
	(0.336)	(0.299)	(0.236)	(0.570)	(0.363)	(0.447)
Growth rate	–0.021	–0.026^	–0.019	0.006	0.004	–0.018
	(0.018)	(0.014)	(0.018)	(0.030)	(0.025)	(0.041)
Total population (log)	–0.827*	–1.285***	–0.731*	–1.161**	–0.264	–2.172***
	(0.387)	(0.378)	(0.293)	(0.441)	(0.339)	(0.413)
Elderly population	0.815***	0.947***	1.148***	–1.002*	–0.573	–2.254***
	(0.232)	(0.194)	(0.188)	(0.430)	(0.602)	(0.489)
Youth population	0.106	0.093	0.155	–0.052	0.287*	–0.288*
	(0.134)	(0.098)	(0.097)	(0.105)	(0.117)	(0.115)
Financial crisis	–0.065	–0.025	0.002	–0.966	–0.932	–1.629*
	(0.313)	(0.296)	(0.350)	(0.629)	(0.630)	(0.790)
1st oil crisis	–0.598*	–0.021	–0.500	0.086	–0.488	0.033
	(0.272)	(0.193)	(0.315)	(0.628)	(0.486)	(1.074)
2nd oil crisis	–0.338	–0.283	–0.343	1.061*	0.509	0.803
	(0.207)	(0.188)	(0.221)	(0.439)	(0.507)	(0.620)
Oil exporter	0.123	0.264	0.207	1.987*	1.821*	2.061*
	(0.363)	(0.445)	(0.371)	(0.977)	(0.926)	(1.003)
Left totalitarian	2.233	5.115*	2.727	6.279*	6.487**	10.714***
	(3.336)	(2.546)	(3.220)	(3.145)	(2.533)	(2.828)
Federalism				2.036^	–1.447	3.260***
				(1.059)	(1.060)	(0.983)
Constant	16.169	23.681*	11.308	42.888***	14.000	73.927***
	(9.969)	(9.456)	(7.041)	(10.392)	(9.937)	(10.219)
R-squared	0.5757	0.5917	0.5393	0.8277	0.7277	0.7346
N of countries	17	17	17	14	15	14
N of observations	403	515	432	231	298	260

SOURCE: By author.
NOTE: ^p ≤ .10; *p ≤ .05; **p ≤ .01; ***p ≤ .001.

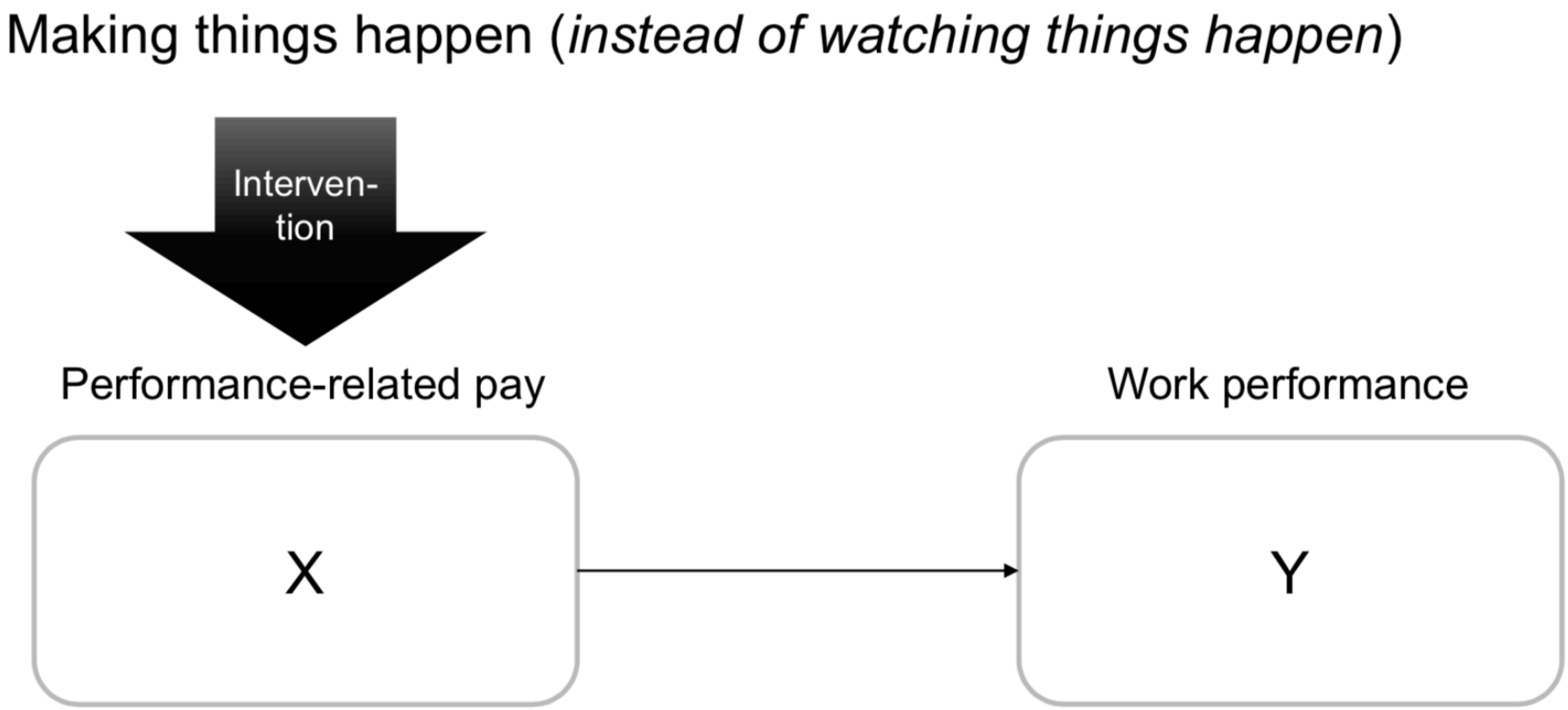
What about natural science?

Why do we need experiment ?

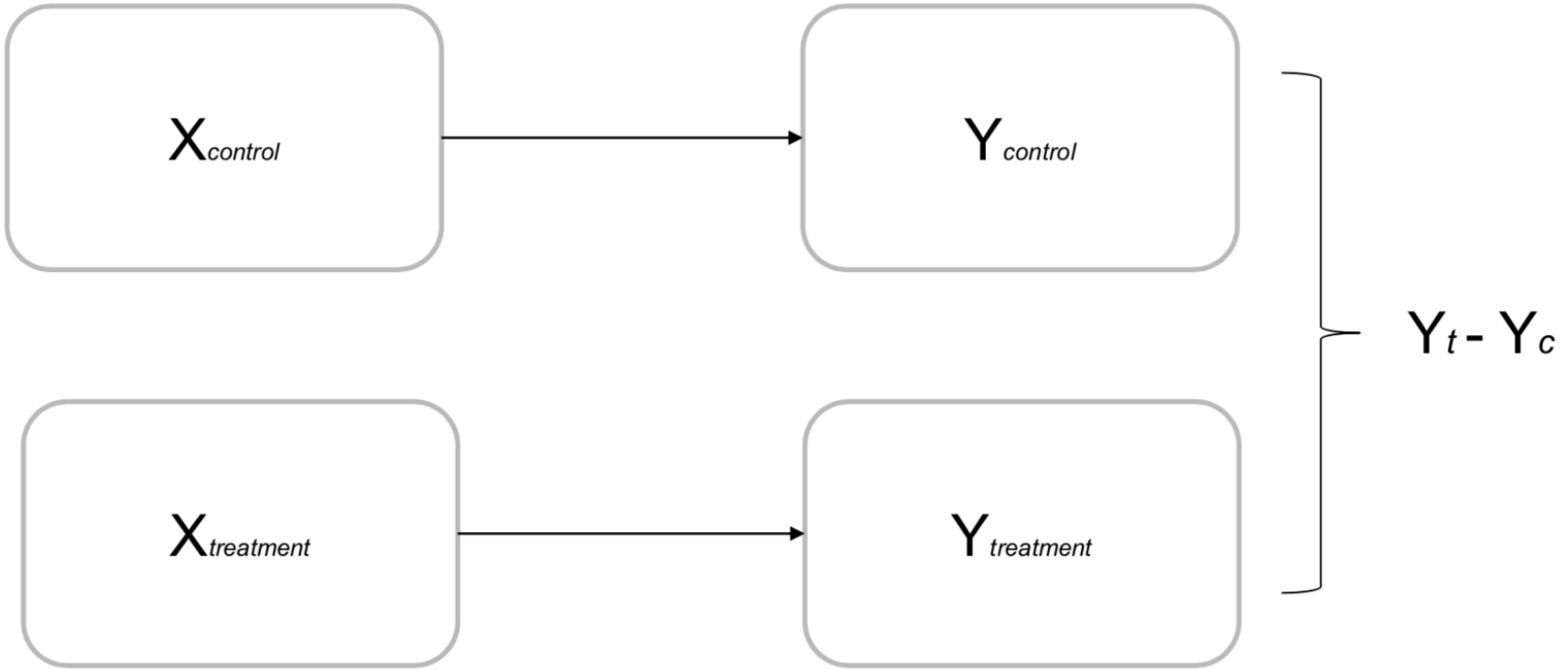
Experiment provide clear-cut solution to these problem via:

1. Intervention
2. Comparison
3. Randomization

Elements in an experiment: 1) intervention



Elements in an experiment: 2) Comparison

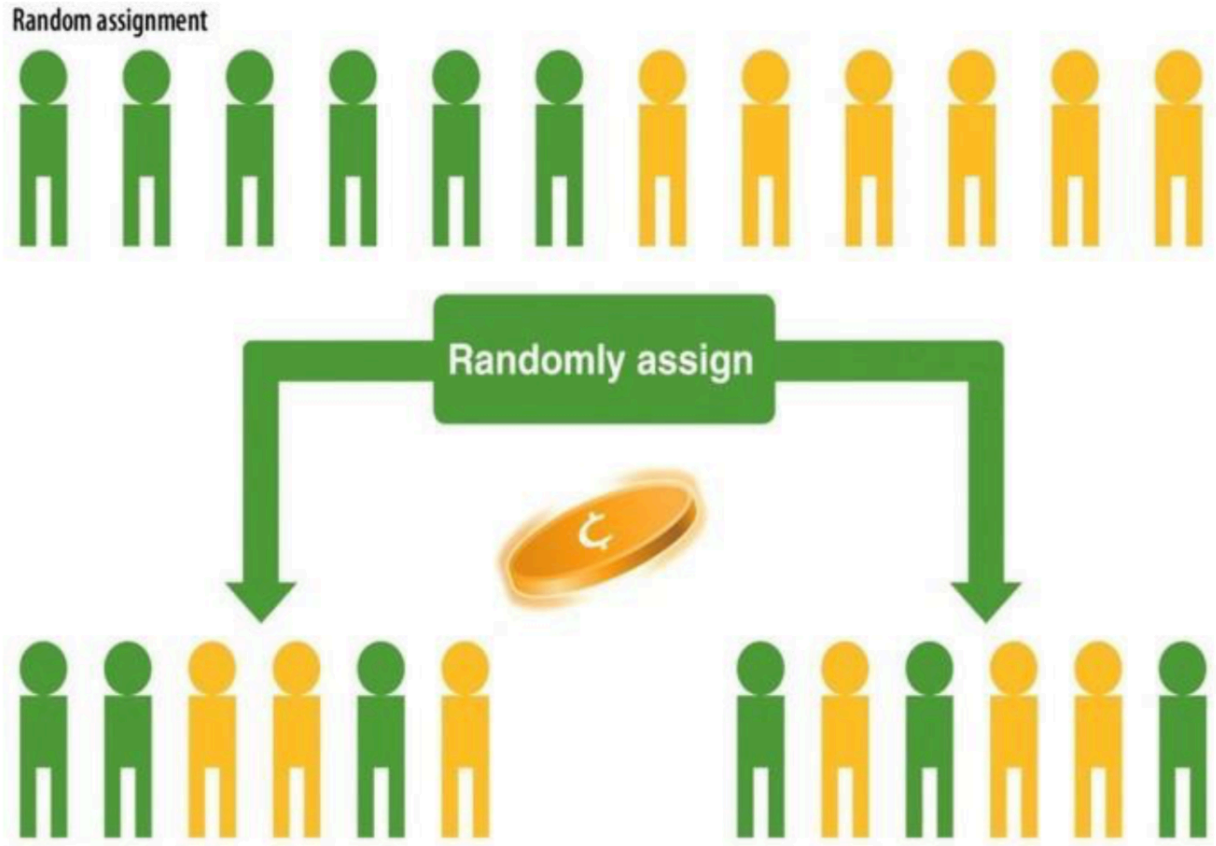


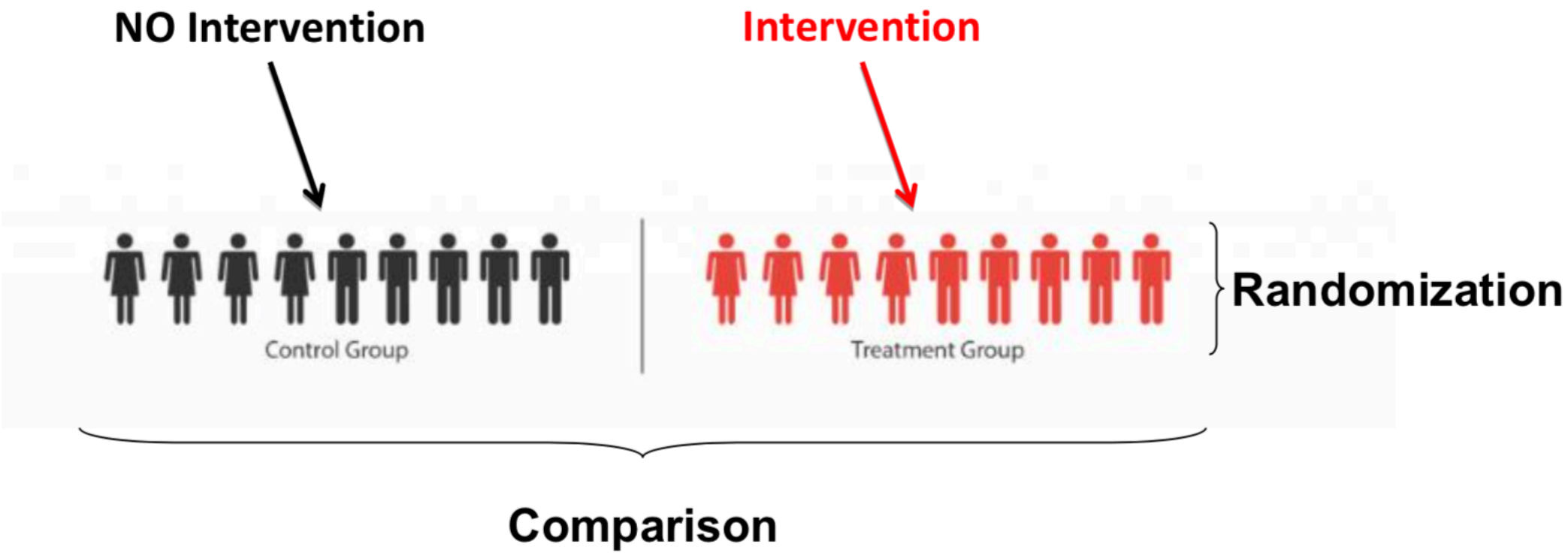
Elements in an experiment: 3) Randomization

- No differences between groups (on observed and unobserved characteristics) statistical equivalence

	Treatment group	Control group
Observables		
Age	38.1	38.9
Gender (female)	58%	57%
University educated	43%	41%
Political ideology (1-10)	5.1	5.3
Unobservables		
Likes German beer	97%	95%
Mother was a psychopath	4%	3%
Prefers dogs to cats (as a pet)	54%	52%
Suffers from insomnia	10%	11%
Etc . . .	. . .	. . .

How to solve the fundamental problem of causal inference?




NO Intervention
Intervention
Control Group
Treatment Group
Randomization
Comparison

The Counterfactual Logic of Causality meets the Average Treatment Effect (ATE)

- Causal Effect = Factual – Counterfactual
- **ATE** = Mean(*treatment group*) – Mean(*control group*)

Experiment is the best method to capture

causality

—James Heckman

Experimental typology

	Intervention by researcher	Random allocation of intervention	Outcome measures	Naturalism domain
Lab experiment	Yes	Yes	Yes	No
Field experiment	Yes	Yes	Yes	Yes
Survey experiment	Yes	Yes	Yes	No
Natural experiment	No	No	Yes	Yes

Lab experiment

Pros

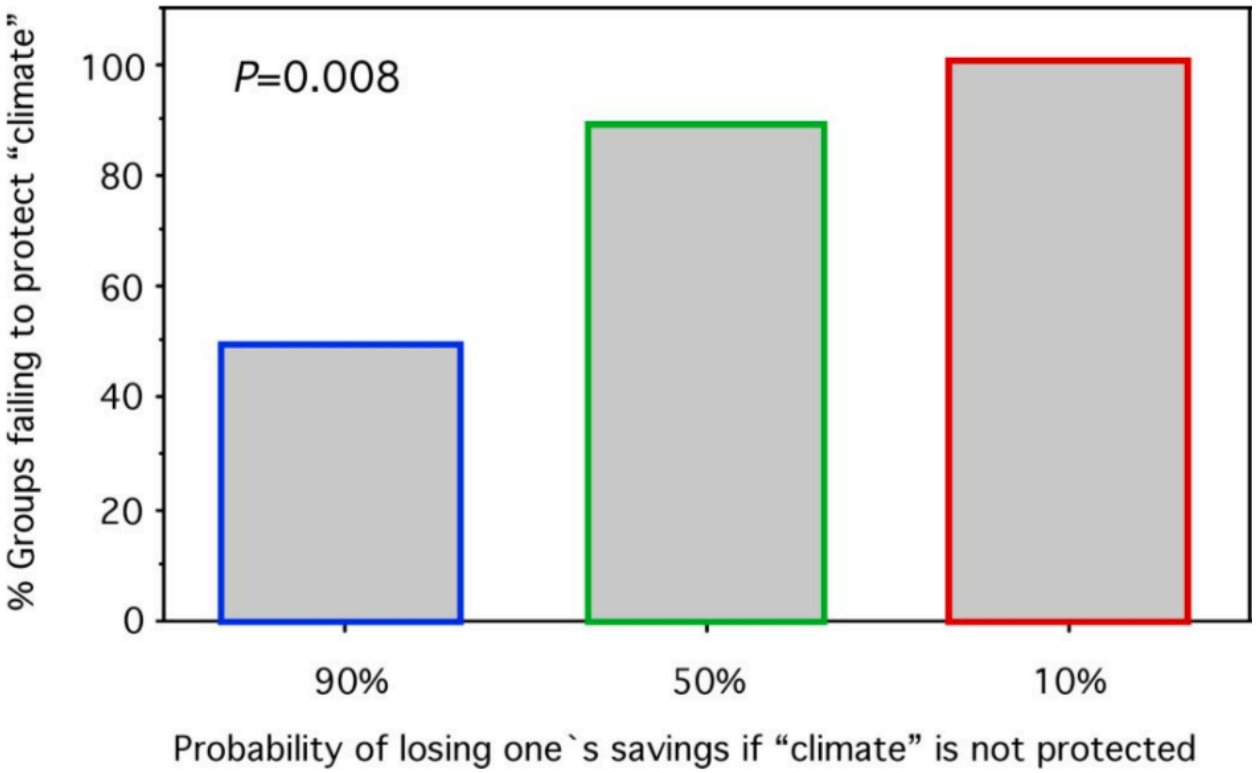
- Experimental Control
- Incentivization → revealed prefs
- Stylization → basic human nature
- Relatively easy to conduct (low *n* bcs of high control)

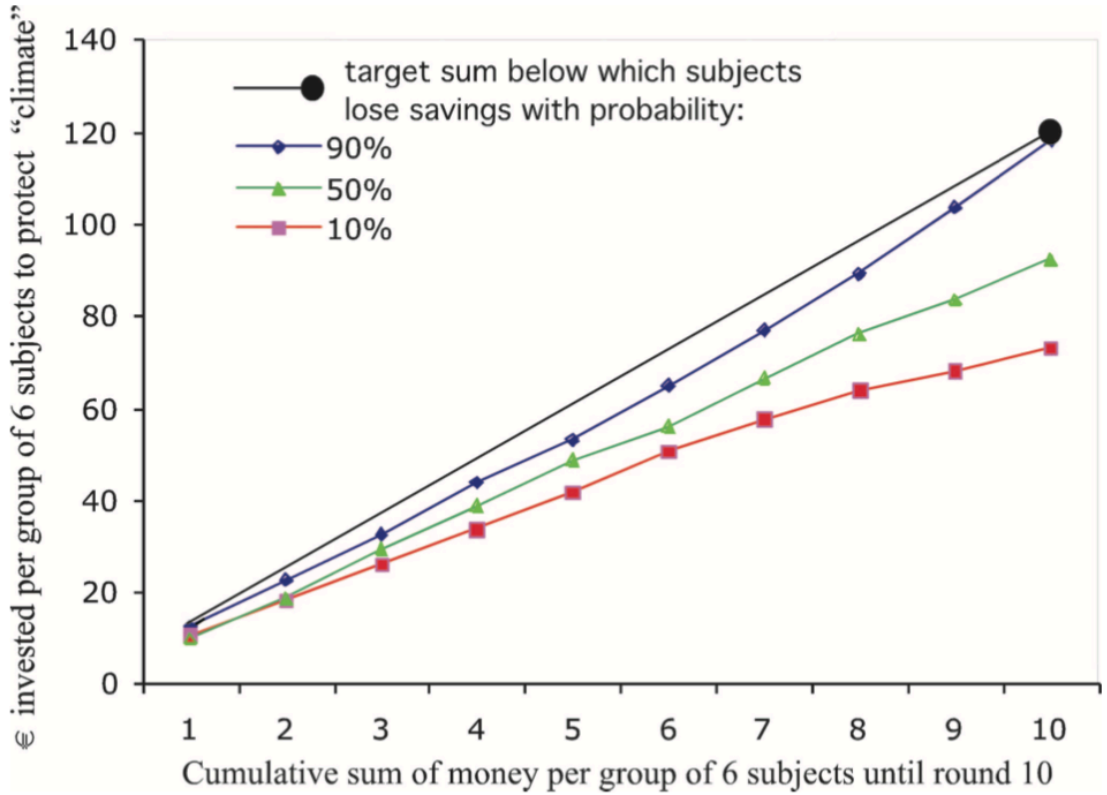
Cons

- Artificiality
- Generalizability
- Diversity (college students)

The collective-risk social dilemma and the prevention of simulated dangerous climate change

Manfred Milinski*†, Ralf D. Sommerfeld*, Hans-Jürgen Krambeck*, Floyd A. Reed‡, and Jochem Marotzke†§





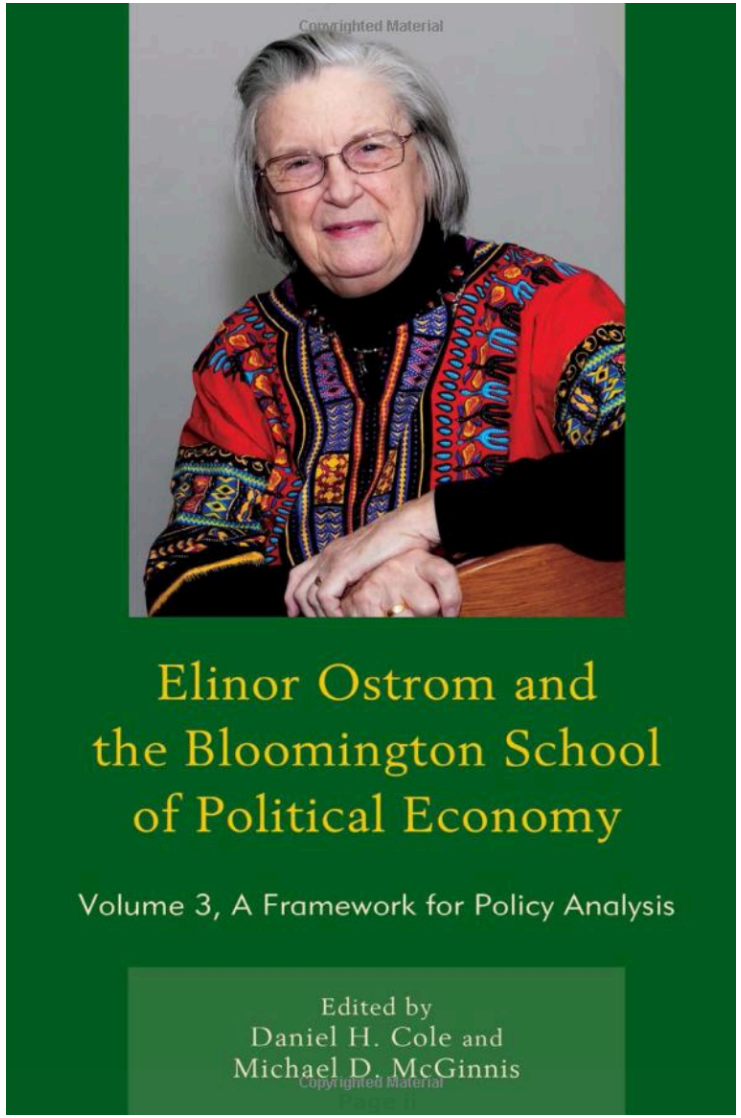
Field Experiment

Pros:

- External validity
- Real world implication

Cons:

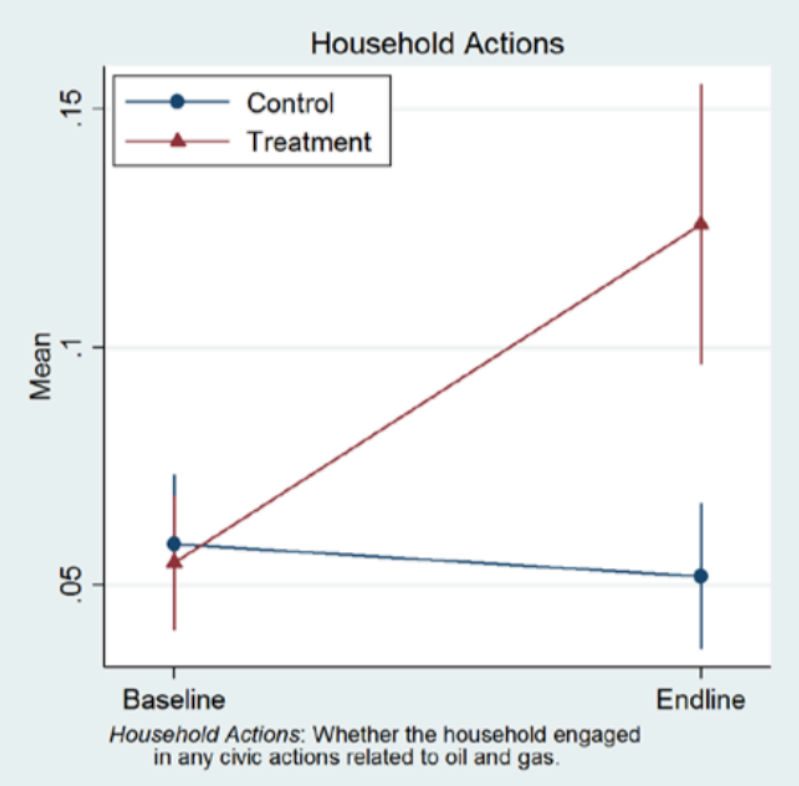
- Expensive
- Hard to control
- Moral problem



A Field Experiment of Stakeholder Collaboration in the Ugandan Extractives Sector (Coleman et al. 2018)

- Can government collaboration improve policy outcome?

$$(\bar{y}_{endline|treatment} - \bar{y}_{baseline|treatment}) - (\bar{y}_{endline|control} - \bar{y}_{baseline|control})$$



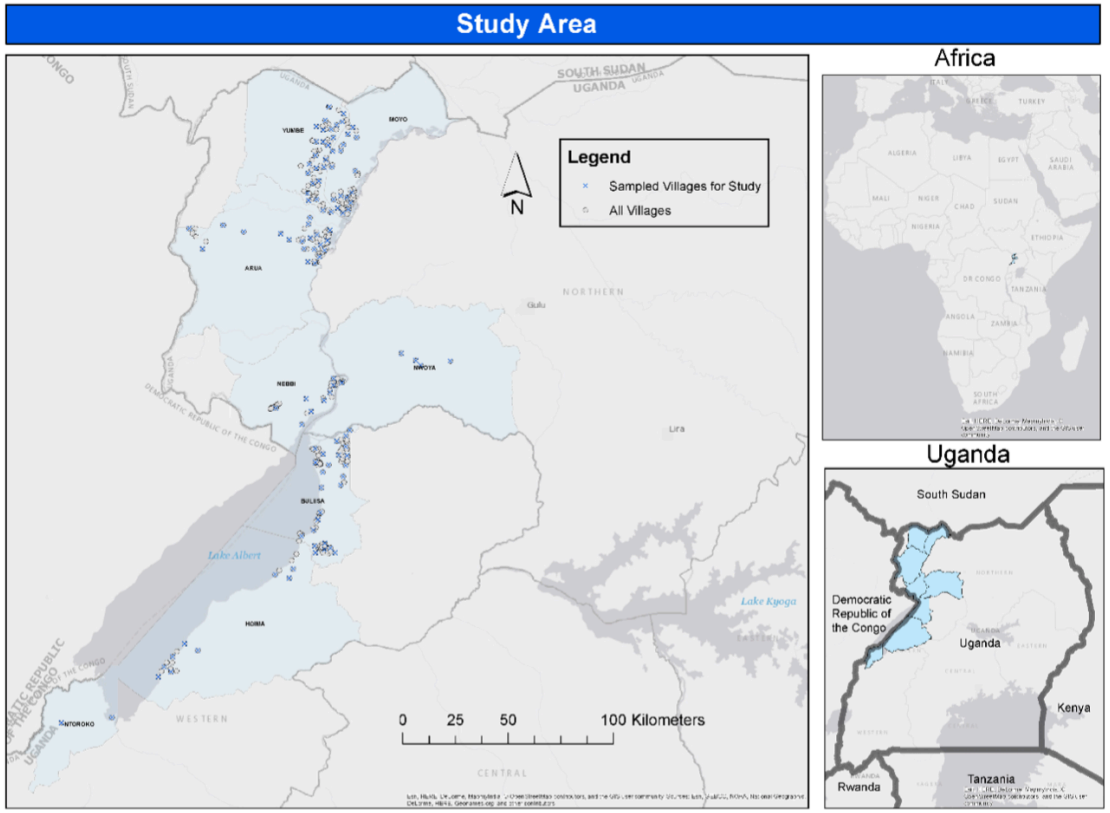


Figure 1. Map of sampled communities.

Non-Governmental Monitoring of Local Governments Increases Compliance with Central Mandates: A National-Scale Field Experiment in China

Rank cities' air pollution performance on an NGO platform -> improve cities future performances

FIGURE 1 Assignment of Treatment and Control among Experimental Sample of Cities

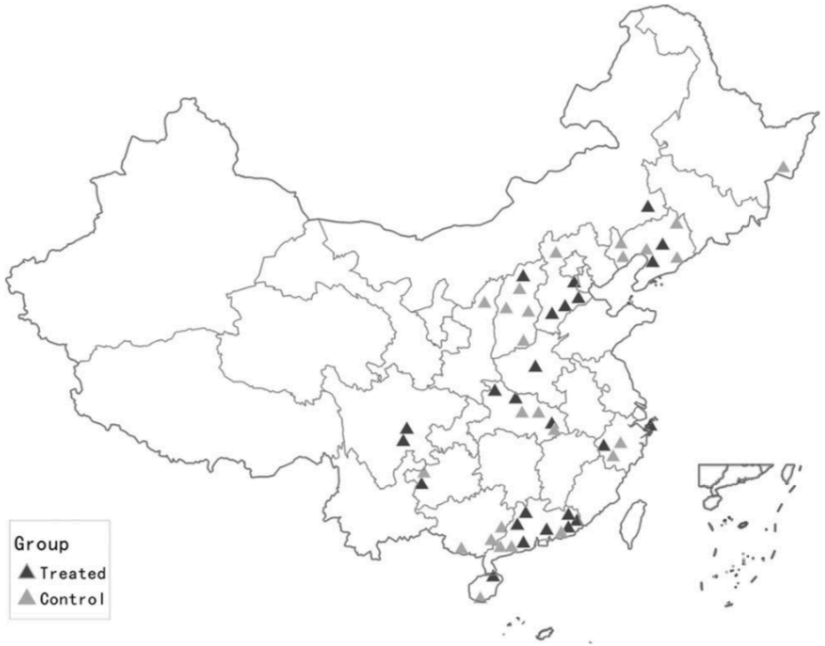
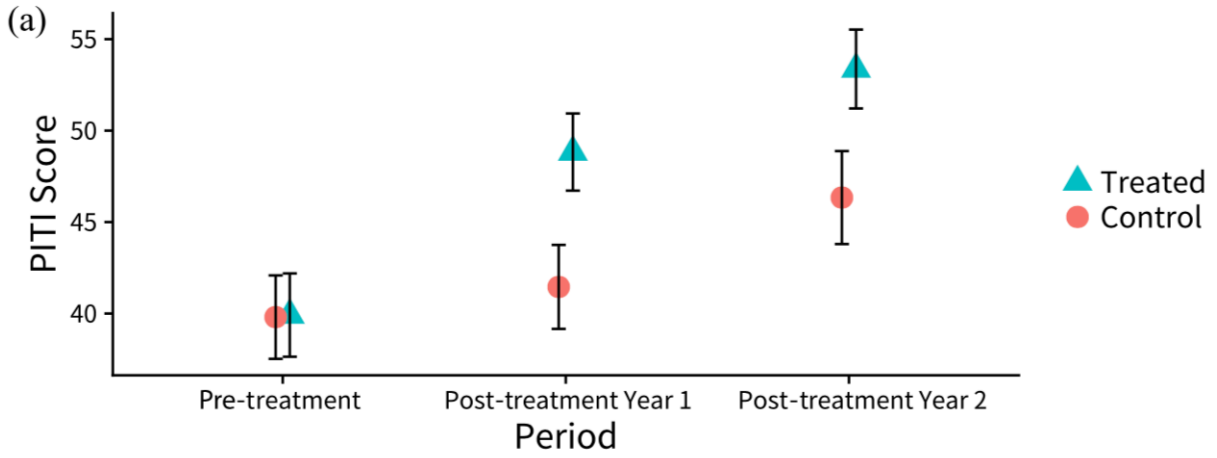


FIGURE 2 Treatment Effect on PITI Aggregate and Component Scores



Midground: Survey Experiment

Cons

- Duration of effects
- Survey satisficing/ bots
- Sometimes no real control
- Intentions is not real behavior (stated vs. revealed preferences)
- Hypothetical scenarios - so what?

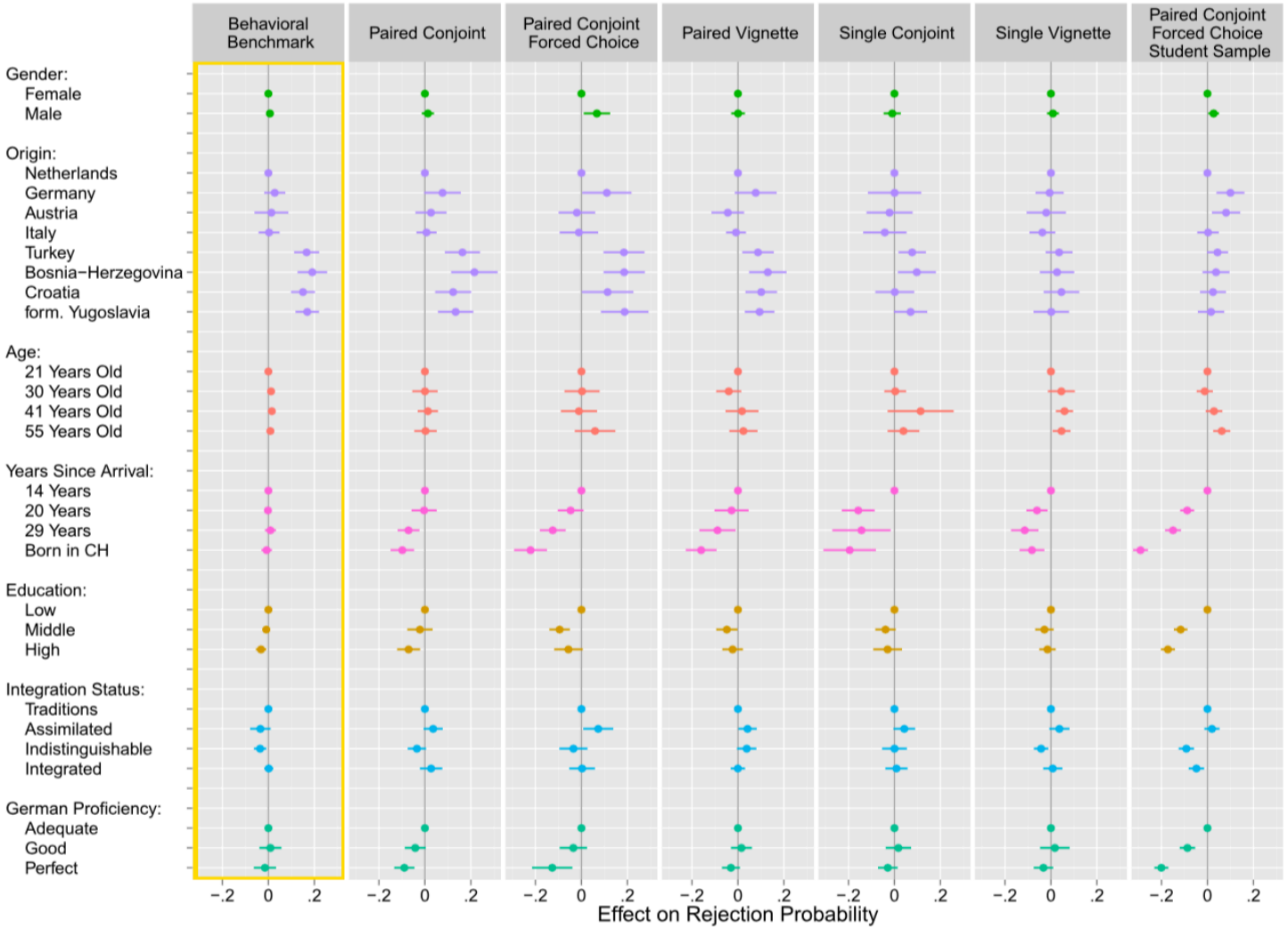
Pros

- Cheap (e.g., MTurk)
- Easy to implement (NEA example)
- Can be used to generalize effects (if needed)
- Large samples: Easy to estimate heterogeneous treatment effects

Validating vignette and conjoint survey experiments against real-world behavior

Jens Hainmueller[a], Dominik Hangartner[b,c], and Teppei Yamamoto[d,1]

Some municipalities used referendums to vote on the naturalization applications of immigrants



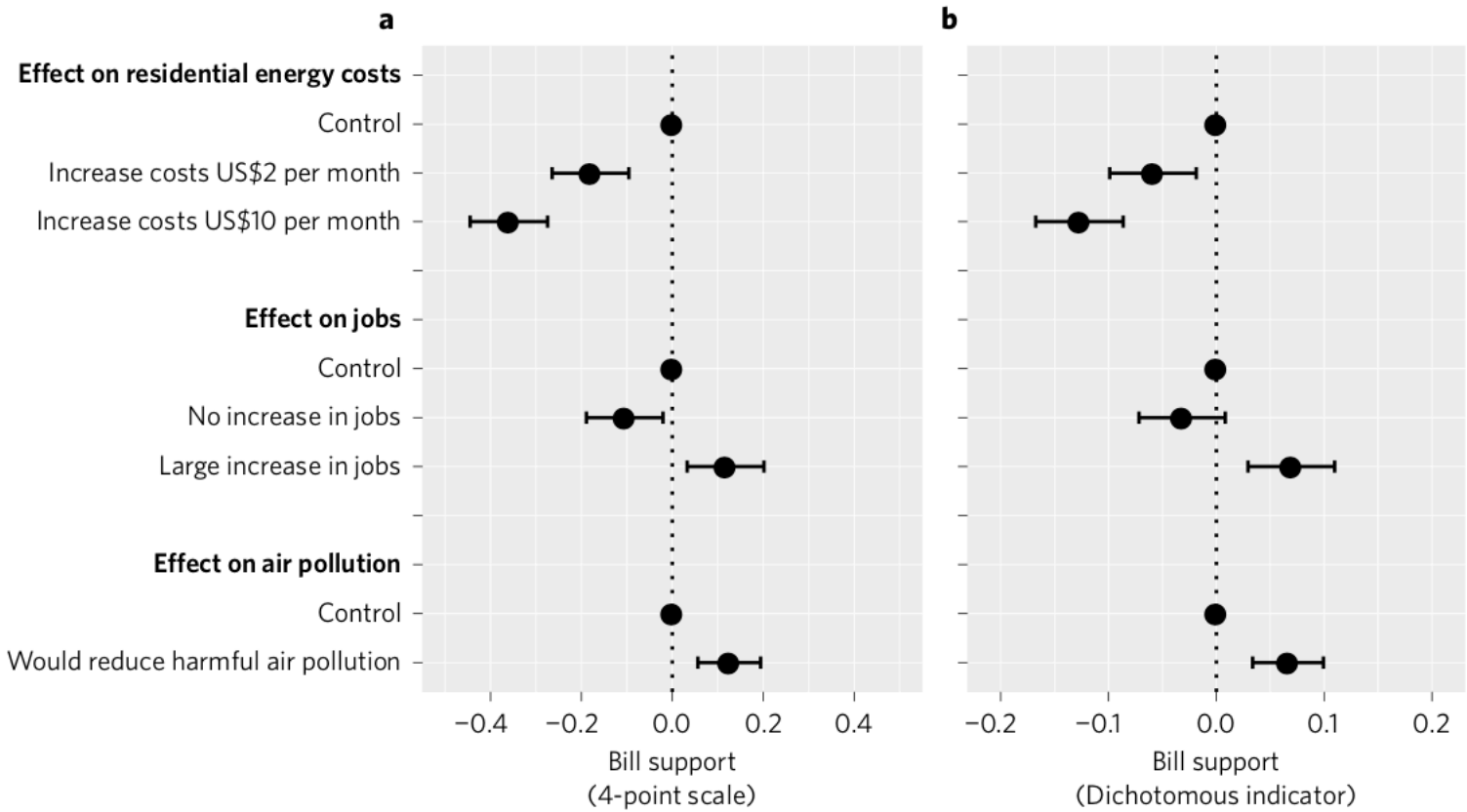
nature energy

ARTICLES

PUBLISHED: 30 JUNE 2017 | VOLUME: 2 | ARTICLE NUMBER: 17107

Renewable energy policy design and framing influence public support in the United States

Leah C. Stokes[1] and Christopher Warshaw[2*]



Institution or Performance: What Policy Information Do Citizens Focus on More and When?

Yixin Liu, Heewon Lee, Richard Feiock

APPAM Conference Paper (10/30/2019)

Pre-registration: Open Science Foundation. DOI: 10.17605/OSF.IO/HFPA3

Research Questions

Scholars studied citizens' performance information use to understand how individuals perceive policy outcomes in various situations.

1. However, do citizens only care about the policy outcome?
2. How do they perceive policy in real world when the information environment is complex?
3. When do they care more about performance, and when do they care more about institution?

Institution -> Policy Evaluation

Theory:

1. According to the representative democracy literature, organized interests on a policy are likely to champion their own goals to be reflected in the policy decisions.
2. Monitoring by a third party which is independent of the political power or authority enhances the transparency of government operation and leads to more accountable policy implementation.

Hypotheses:

H1a: Individuals prefer their government collaborating with local communities or pro-environmental nonprofits rather than the state government in local sustainability program implementation.

H1b: Individuals prefer their local government sustainability program being monitored by residents or an individual scientific team rather than the government itself.

Performance -> Policy Evaluation

Theory:

Better performances (environmental and economic) means better policy

Hypotheses:

H2a: Individuals prefer higher performance rather than lower performance in the local sustainability program.

H2b: In a complex information environment, performance information will have larger effect sizes than institutional information for explaining individuals' policy preferences.

Moderator: Trust

Theory:

If distrust…

- public performance information loses its accountability.
- we need eyes from different perspectives to control government behaviors

Hypotheses:

H3a: The positive effects of performances on individuals' policy preferences would be moderated when they distrust their government.

H3b: Individuals are more likely to choose a policy having local community or nonprofit involvements when they distrust their government.

H3c: Individuals are more likely to choose a policy with a transparent process to citizens or an independent science team when they distrust in government.

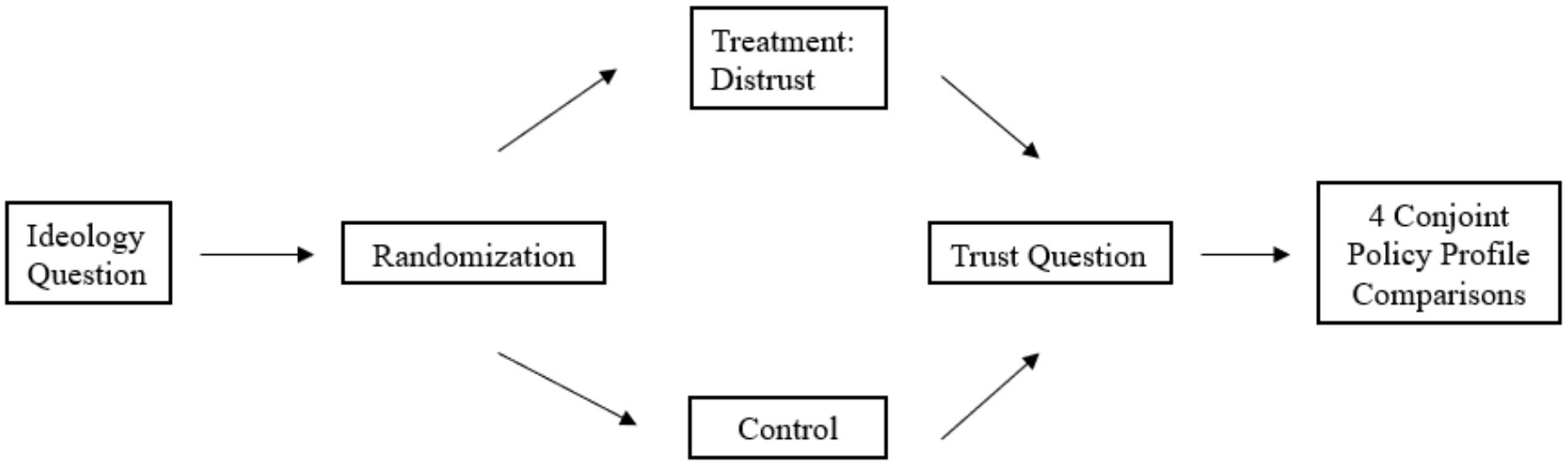
Research Design

Sample:

After pretests on 125 undergrad students and 200 Mturk workers ($0.1 each)

- We recruited 901 respondents ($0.5 each) from Amazon Mechanical Turk (MTurk)
- Dropped 30 subjects (use VPS or outside USA)
- Dropped 22 subjects failed attention tests (Q: 17 + 63 = ?)
- Dropped 110 subjects failed manipulation checks (avoid treatment non-compliance)
- Finally: **739** effective responses (**5,912** policy profile observations)

Research Design

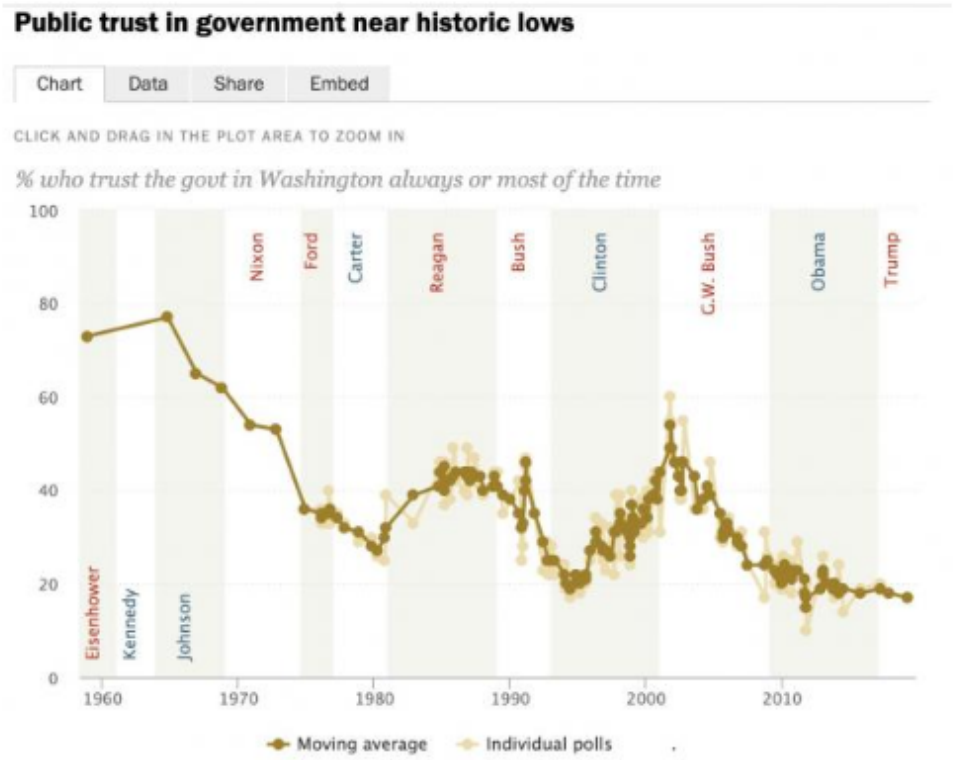


Treatment: Distrust-in-Government

1.

According to Pew Center report, public trust in the government decline from 1958-2019. Today, only **17%** of American today say they can trust the government.

https://www.people-press.org/2019/04/11/public-trust-in-government-1958-2019/



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Treatment: Distrust-in-Government

2.

Local and state governments have **more corruptions** than we assumed. According to a recent report from HARVARD POLITICAL REVIEW, more than **20,000** public officials and private individuals were convicted for crimes related to corruption in the last two decades. The graph below shows 10 exemplary states from the original report.

https://harvardpolitics.com/united-states/stealing-in-the-shadows-state-level-political-corruption/

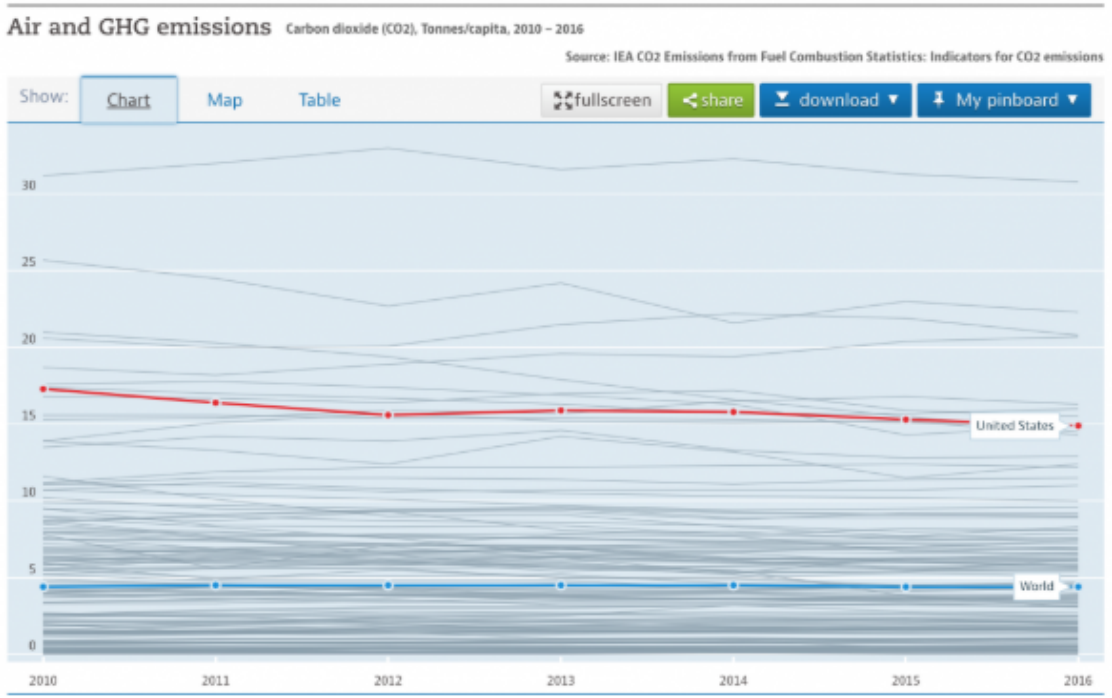
→

Treatment: Distrust-in-Government

3.

Although American local and state governments claim that they collaboratively put much effort into dealing with air pollution and greenhouse gas (GHG) emissions, **the United States is very inefficient on preventing air pollution than the world's average** and most of other countries.

Data source: Organization for Economic Co-operation and Development (OECD): https://data.oecd.org/air/air-and-ghg-emissions.htm



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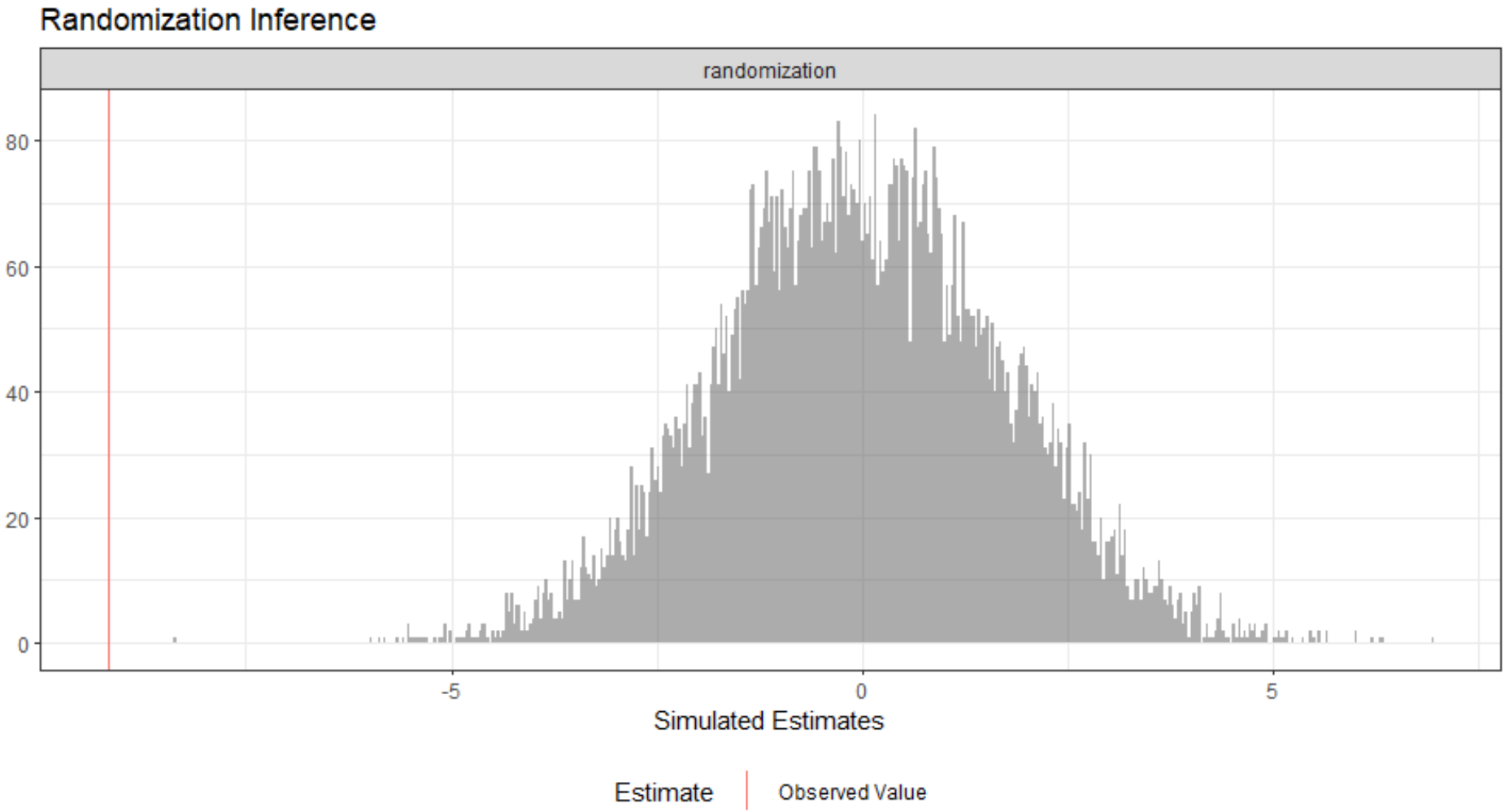
Randomization Inference for Trust: (Coef: 9.17, $p = 0.000$, Cohen'd = 0.40)



Vignette: The Solar School Project

1. It has multiple options under different institutions, such as collaborating with different organizations for fundraising and implementation reasons.
2. Involving broader local representation can help residents to understand its technical advantages.
3. As a multi-purpose sustainability program, the solar school project has both environmental and economic considerations

Table 1. Attributes for policy profile in conjoint experiment

Attributes	Values
In this project, your government will:	
Institution features	
Collaboration	(1) The state government
(Collaborate with)	(2) Pro-environmental nonprofits
	(3) Local communities
Transparency	(1) The government
(Will report its process to)	(2) An independent science team
	(3) Residents
Performance features	
Environmental performance	(1) 187 tons
(Reduce annual CO_2 emission)	(2) 320 tons
	(3) 715 tons
Economic performance	(1) $201k
(Save schools' annual expense)	(2) $359k
	(3) $720k

Please indicate Which project you prefer:

In this project, your government will:	Project A	Project B
save schools' annual expense	$201K	$359K
reduce annual CO2 emission (metric tones)	715 tons	187 tons
report its process to	Residents	An independent science team
collaborate with	Pro-environmental nonprofits	Local communities

- ○ Project A
- ○ Project B

One a scale from 0 to 100, where 0 indicates that you do not like the project at all and 100 indicates that you are totally in favor of your government adopting the project, how would you rate each project?

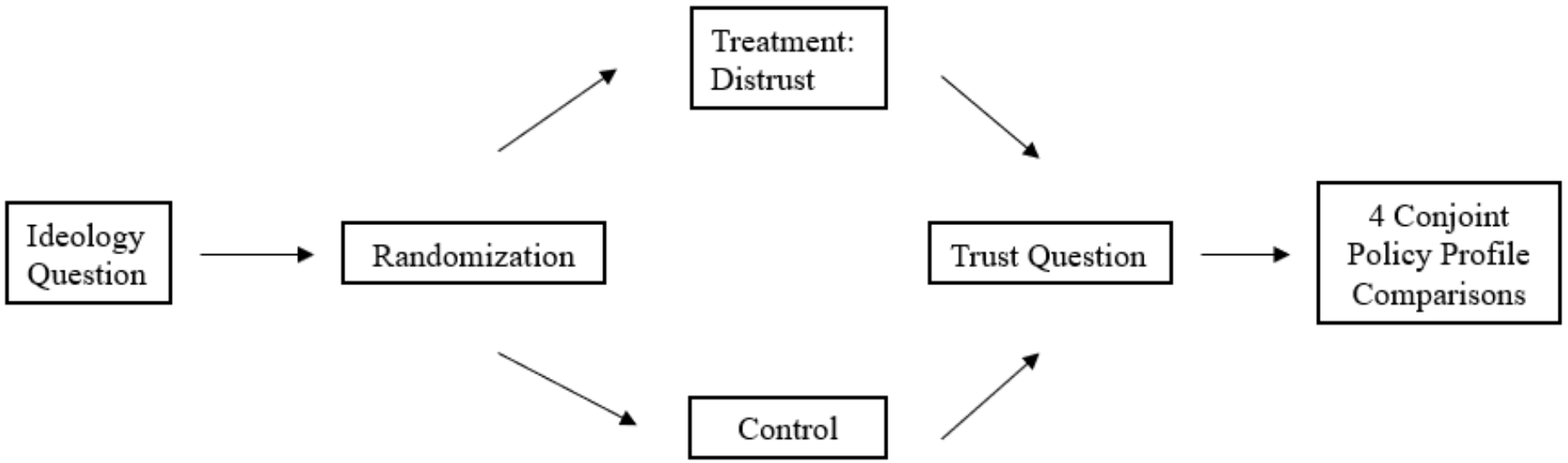
Totally dislike — Totally favor

0 10 20 30 40 50 60 70 80 90 100

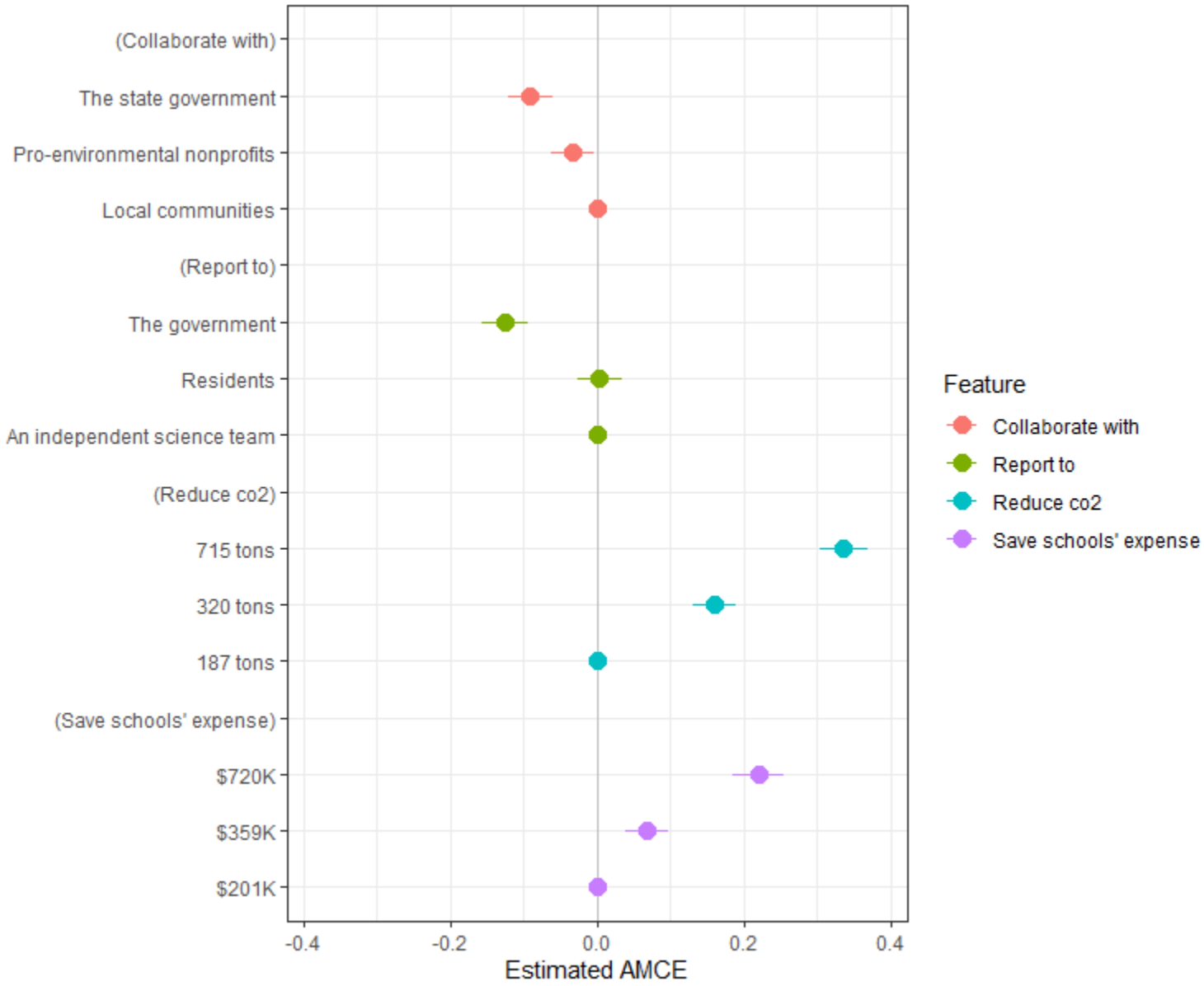
Project A

Project B

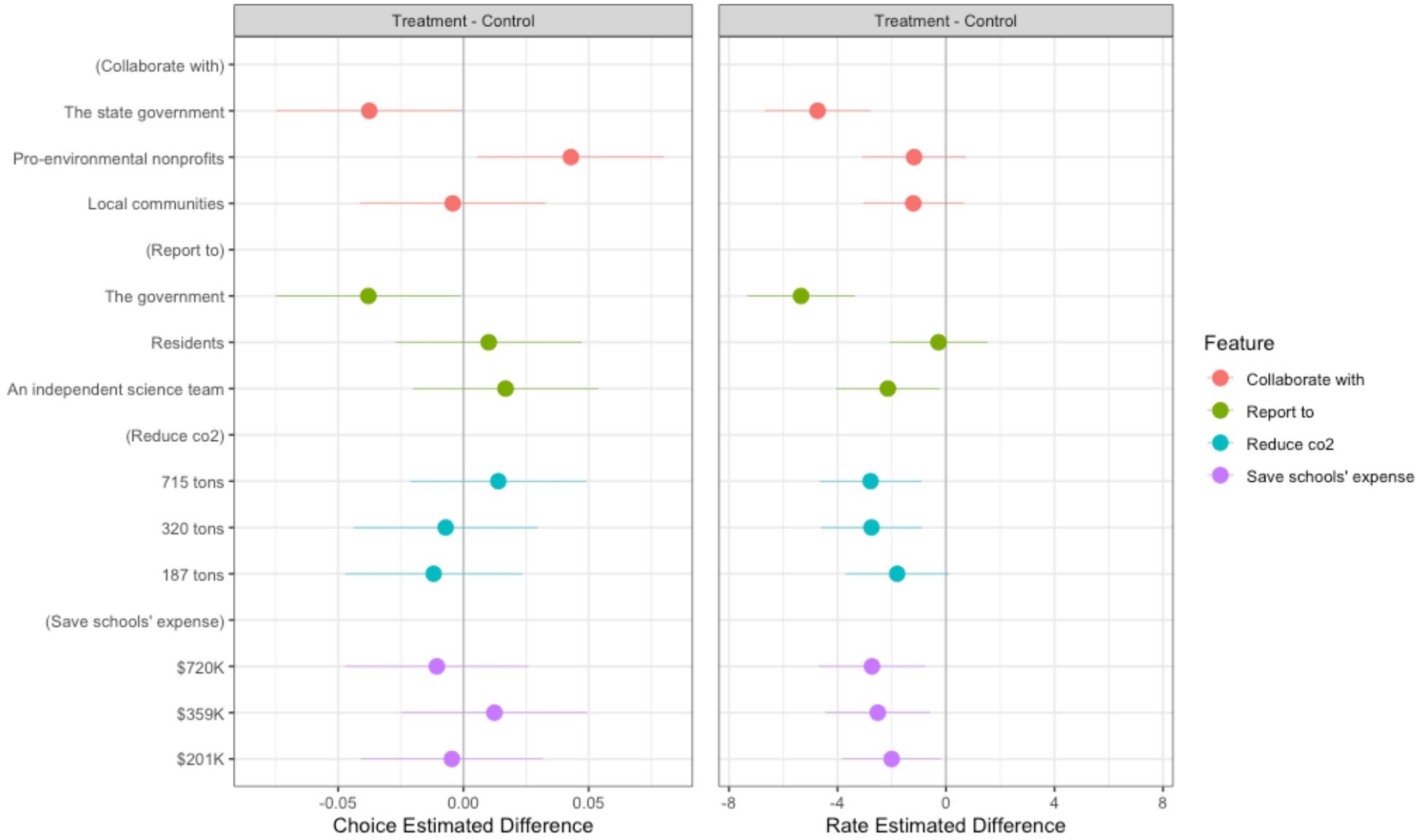
Research Design



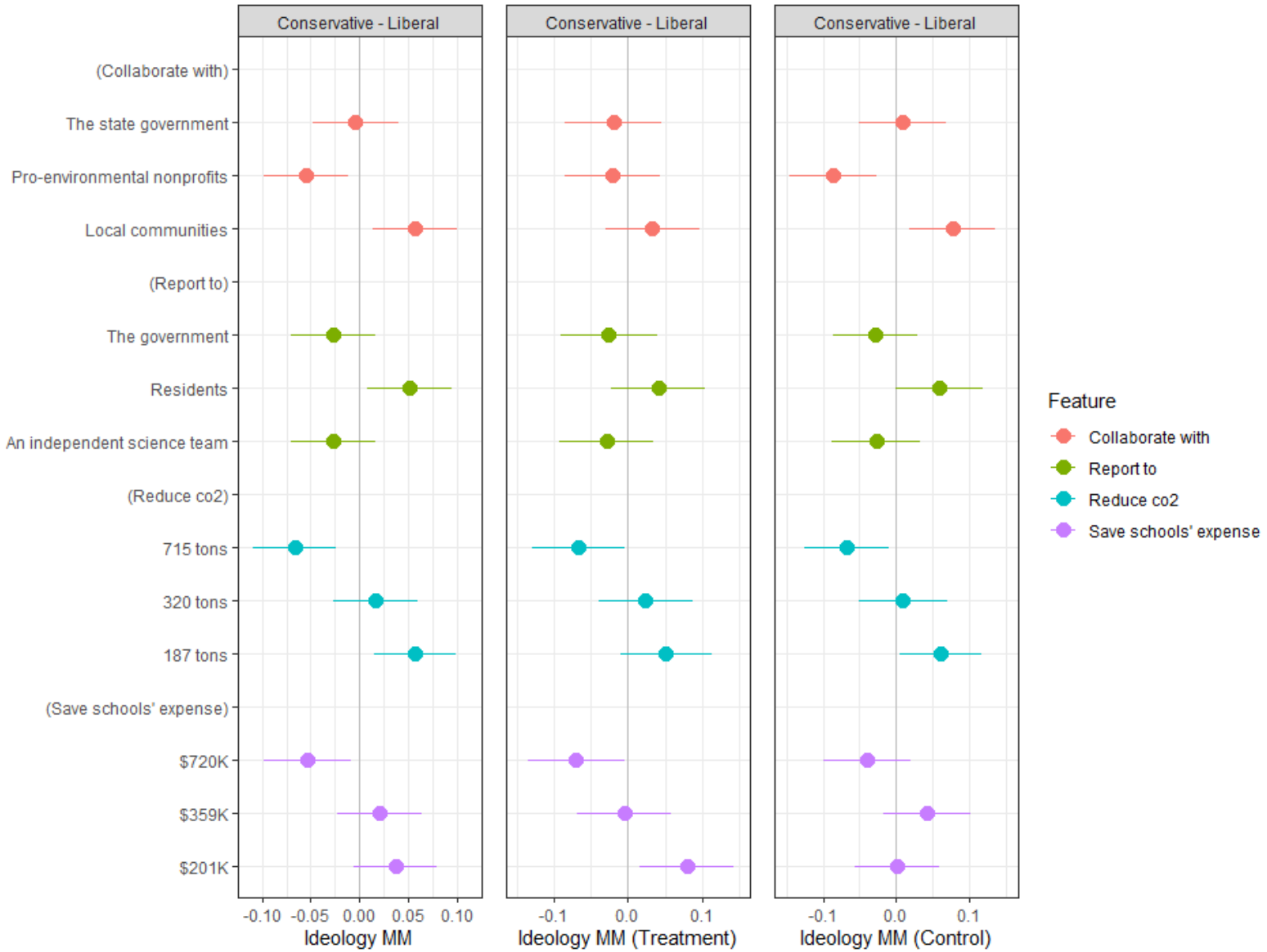
Main Effects: Average Marginal Component Effect (AMCE)



Marginal means: distrust-in-government treatment effects



Marginal means: ideology heterogeneous effects (outcome: choice)



Conclusion

In general:

- Higher performance -> higher evaluation (**YES**)
- Collaborative institution -> higher evaluation (**YES**)
- Transparency to residents -> higher evaluation (**YES**)
- Performance stronger than institution (**YES**)

When people distrust their government:

- Collaborative institutions and transparency become more important (**YES**)
- The effect of performance has been moderated (**NO**)

Implication

1. The importance of collaborative institutions and transparency have been significantly increased to explain citizens' policy preference when they distrust their government.
2. We encourage scholars in the future to emphasize on citizens preference toward public organizations and programs withhold their complexity.
3. Based on the importance of performance information, we should advance our theoretical practices from surveys to fields.
4. We recommend practitioners to not only promoting their performances, but also make efforts on inclusiveness to reduce social friction.

THANK YOU