

# Understanding Support for Inefficient Environmental Policy Instruments

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# Motivation

- **Market-based environmental policies cost effective**
- **Standards important to environmental policy**
  - U.S. Clean Air Act
  - U.S. Clean Water Act
  - U.S. Safe Drinking Water Act
  - China War on Pollution
  - India air/water policies
  - Vehicle exhaust standards in Brazil, Europe, Japan, Russia, etc.
  - Deforestation policy in Brazil, Indonesia, etc.
  - Trillions to address energy transition, climate

# Economists' Statement on Carbon Dividends

The Largest Public Statement of Economists in History

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## SIGNATORIES INCLUDE

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3623

U.S. Economists

4

Former Chairs of the Federal  
Reserve

28

Nobel Laureate Economists

15

Former Chairs of the Council of  
Economic Advisers

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Global climate change is a serious problem calling for immediate national action. Guided by sound economic principles, we are united in the following policy recommendations.

- I. A carbon tax offers the most cost-effective lever to reduce carbon emissions at the scale and speed that is necessary. By correcting a well-known market failure, a carbon tax will send a powerful price signal that harnesses the invisible hand of the marketplace to steer economic actors towards a low-carbon future.

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# Carbon Tax, Beloved Policy to Fix Climate Change, Is Dead at 47

# Overview

- **Approach**

- Probability-based survey (AmeriSpeak; simultaneous Prolific); expert survey
- Educational videos (allocative efficiency, pass-through)

- **Results**

- People believe taxes cost more than standards; experts believe opposite
  - ▶ Policymakers face tradeoffs between policy stringency and cost-effectiveness
- Videos move respondent beliefs and preferences closer to experts
- Mechanisms: economic literacy, possibly some expert persuasion
  - ▶ Strong evidence against experimenter demand
- Survey sample selection important for complex economics

# What is New Here?

- **Climate change surveys and lab experiments** (Kallbekken et al. 2011; Cherry et al. 2012; Millner and Ollivier 2016; Carattini et al. 2018; Douenne and Fabre 2020; Tarduno 2020; Andre et al. 2024; Dechezleprêtre et al. 2025; Funke et al. 2025)
- **Policy misperceptions and support** (Bisin et al. 2015; Dal Bó et al. 2018; Sallee 2019; Goulder 2020; Tarduno 2020; Dreyfuss 2025)
  - National beliefs about market-based policies, holding policy stringency fixed
  - Respondents versus experts
  - Videos: “can we do anything about it” and mechanisms
- **Survey sample selection** (Mullinix et al. 2015; Boas, Christenson, and Glick 2018; Coppock et al. 2018; Tang et al. 2022; Merecer and Lau 2023; Jordan et al. 2025)
  - Selection matters for complex economic concepts

# Talk Overview

## Survey Design

Support for Environmental Policy Instruments

Effects of Information

# Representative and Convenience Samples Have Different Selection



- Probability-based sample
  - Common in political polls (e.g., AP)
  - $\approx$  \$20 per respondent
  - NORC provides device if needed
  - $N \approx 2000$
- Convenience sample
  - Common in economics research
  - $\approx$  \$3.50 per respondent
  - Requires usable phone/tablet/computer
  - $N \approx 2000$
- Run simultaneously (Spring 2023), same survey (Qualtrics), same sample size

## Representative and Convenience Samples Differ on Observables

	AmeriSpeak (1)	Prolific (2)	Prolific (Auxiliary) (3)	AmeriSpeak (Weighted) (4)	CPS (5)	Gallup (6)
Male	51%	57%	41%	49%	49%	50%
Over age 60	29%	12%	8%	29%	30%	-
College grad	41%	55%	57%	37%	34%	35%
Married	52%	33%	37%	50%	48%	46%
Employed	64%	76%	76%	60%	60%	-
Income < \$35,000	22%	26%	23%	25%	24%	-
Income < \$60,000	42%	50%	44%	44%	41%	-
Income < \$100,000	68%	77%	72%	68%	63%	-
Self-identified liberal	27%	44%	41%	25%	-	25%
Govt. should protect enviro. more	69%	77%	78%	68%	-	56%
Human activity causes climate change	61%	77%	76%	59%	-	62%
Median age	45	38	38	47	47	-

# We Conduct Additional Surveys

- **Expert survey**
  - NBER/CEPR
  - Recently published in JEEM/JAERE or presented at summer AERE
  
- **Expert survey statistics**
  - Overall response rate: 33%
  - One-third of NBER EEE affiliates
  - 90% of respondents have academic appointments
  - 98% have published a paper in environmental economics
  
- **Auxiliary survey**
  - Text for experimenter demand: randomize degree to which participants felt observed
  - Validate effectiveness of the manipulation

# Survey Explains Policy Instruments

We consider four policies:

- A **tax on power plants** requires power plants to pay for each unit of greenhouse gas emissions they emit.
- A **tax on consumers** requires consumers to pay for each unit of electricity they purchase; the tax reflects the greenhouse gas emissions from producing the electricity.
- A **standard** sets a maximum limit on each plant's emissions rate so that each plant must emit less than what the standard indicates.
- A **cap-and-trade** market lets power plants buy and sell pollution permits to cover their total pollution emissions each year. The government reduces pollution by determining the total number of permits allocated to firms (the "cap"). Each permit gives the firm the right to emit one ton of pollution. So if one power plant wants to increase its pollution emissions, it must find another power plant willing to sell permits and the other plant must decrease its emissions.

# Survey Tests Understanding of Policy Instruments

Which policy does the statement below describe?

**Consumers are required to pay for each unit of electricity they purchase; the tax reflects the greenhouse gas emissions from producing the electricity.**

- A tax on power plants
- A cap-and-trade market
- Standard
- A tax on consumers

- We also create and use two videos about economic principles (screenshots later)

## We Exclude Low-Quality Responses

- **Eligibility checks: exclude respondents who. . .**
  - twice fail test of policy definitions (Prolific 5%, AmeriSpeak 29%)
  - can't see or hear video (Prolific 0.0%, AmeriSpeak 6.4%)
  - have survey duration less than a third of median
  - answered less than half of environmental policy questions
  
- **Data quality checks**
  - Survey somewhat/very easy to understand: 88%
  - Video somewhat/very trustworthy: 81%
  - Researchers no bias/unsure: 81%

# Talk Overview

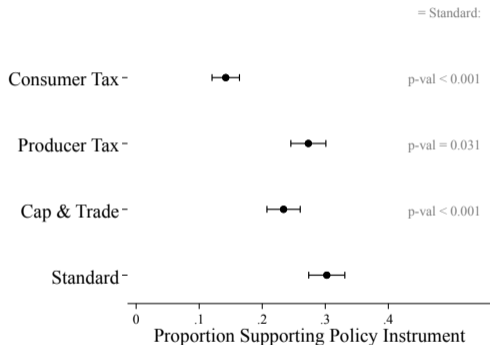
Survey Design

**Support for Environmental Policy Instruments**

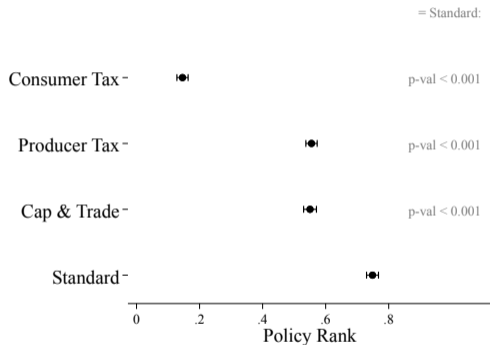
Effects of Information

# People Support Standards and Dislike Consumer Taxes

(A) Support for Policy



(B) Rank of Each Policy [Scaled 0-1]



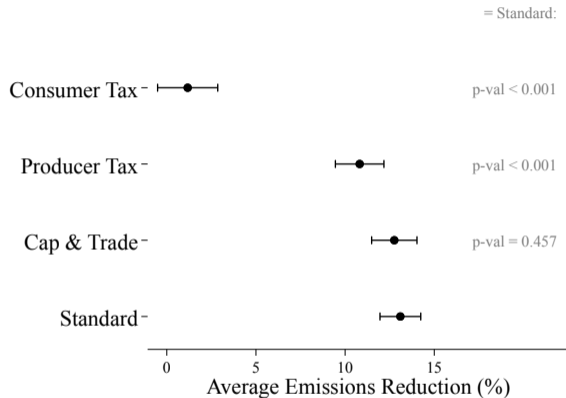
- Consumer taxes worst
- Cap-and-trade closer to standards

# The Survey Elicits Preferred Emissions Reductions

Now suppose you can set the maximum limit on each plant's emissions rate. The standard set will change the total greenhouse gas emissions from power plants. All changes in emissions will occur by the year 2025 and are calculated relative to current emission levels. What change in emissions would you choose?

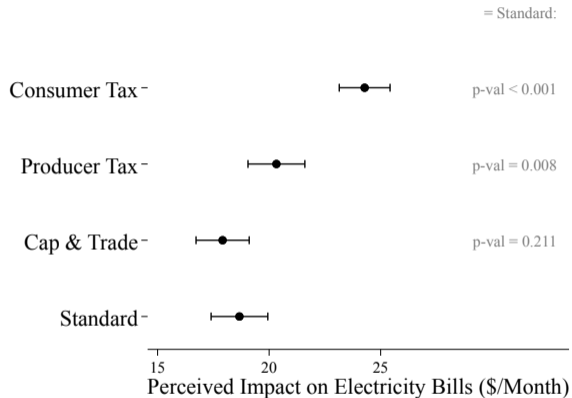
- An increase in emissions
- No reduction in emissions
- A reduction in emissions of 5%
- A reduction in emissions of 10%
- A reduction in emissions of 15%
- A reduction in emissions of 20%
- A reduction in emissions of 25%
- A reduction in emissions of 30%
- A reduction in emissions of 35%
- A reduction in emissions of 40% or more

# People Prefer Greater Emissions Reductions Under Standards



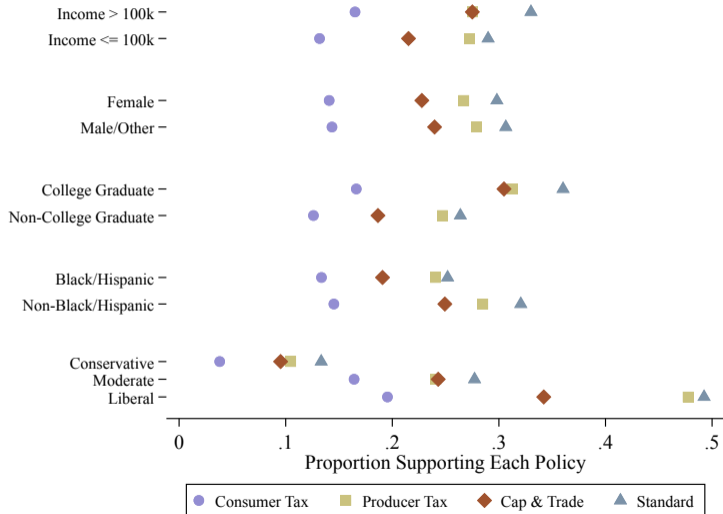
- Can't reject equality for cap & trade
- Relevant for policymakers, environmental groups

# People Think Taxes Cost More Than Standards



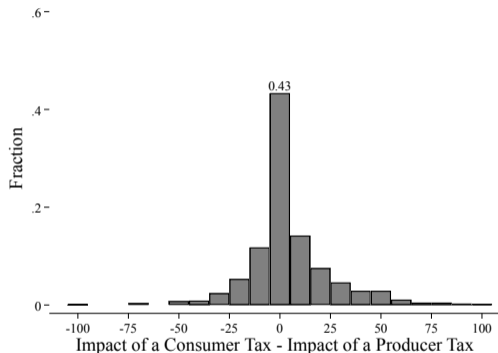
- Pilot: electricity bills are top concern
- Explains preference for standards?

# Demographic Groups Rank Policy Instruments Similarly



# Disagreement #1: Do Consumer/Producer Taxes Differ?

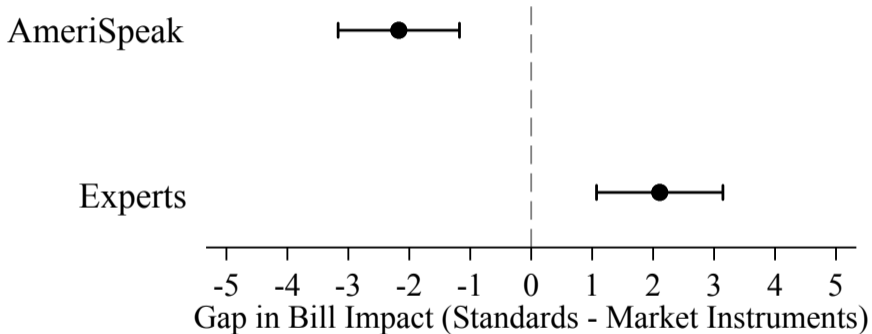
(A) AmeriSpeak



(B) Experts



## Disagreement #2: Do Standards Increase Electricity Bills More?



- Videos assess each disagreement

# Talk Overview

Survey Design

Support for Environmental Policy Instruments

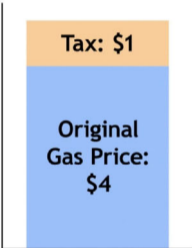
**Effects of Information**

# We Randomize Exposure to a Video on Pass-Through (Tax Incidence)

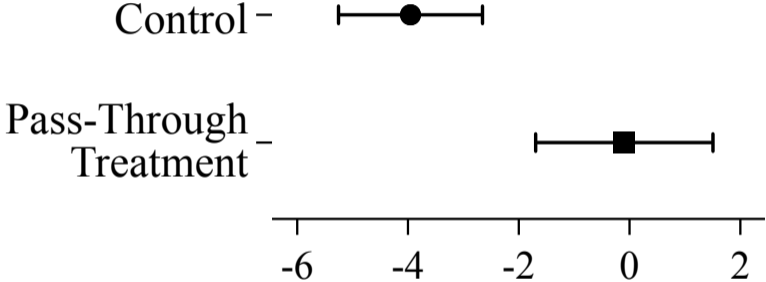
Tax gas stations \$1



Tax households \$1



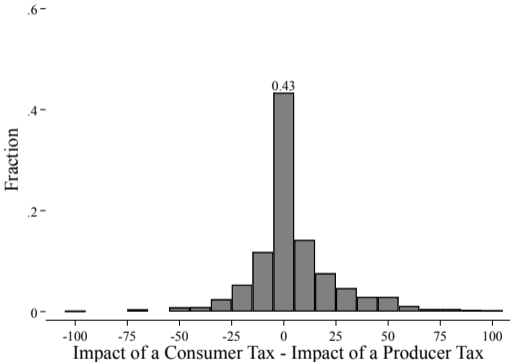
# Pass-Through Video Equalizes Beliefs About Energy Bills (1/2)



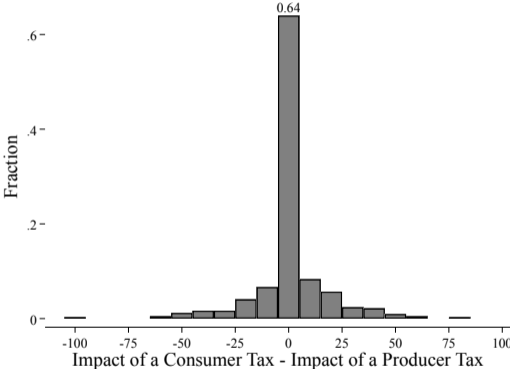
Average Difference in Perceived Impact (\$/Month):  
Producer Tax - Consumer Tax

# Pass-Through Video Equalizes Beliefs About Energy Bills (2/2)

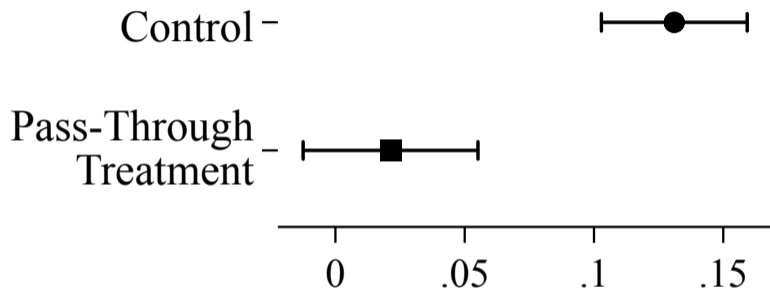
(A) AmeriSpeak control group



(B) AmeriSpeak pass-through video

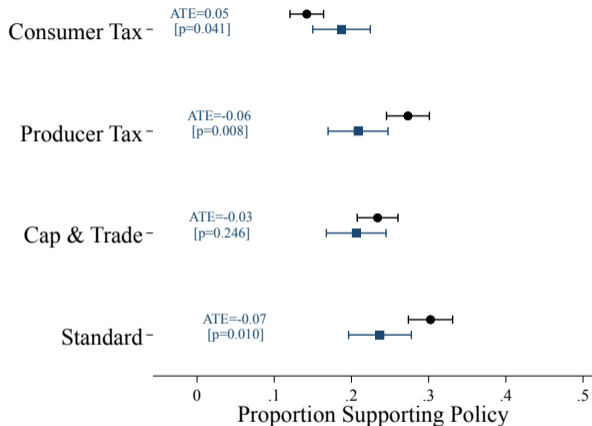


# Pass-Through Video Equalizes Support for Producer v Consumer Tax



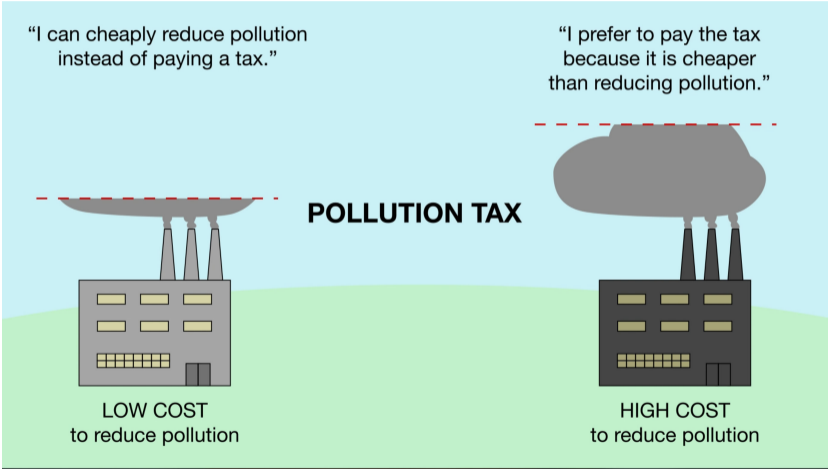
Average Difference in Proportion Supporting:  
Producer - Consumer Tax:

# Pass-Through Video Shifts Support for Policy Instruments



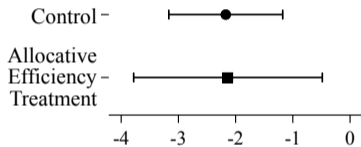
● Control Group    ■ Treatment: Pass-Through

# We Randomize Exposure to a Video on Allocative Efficiency (Cost-Effectiveness)



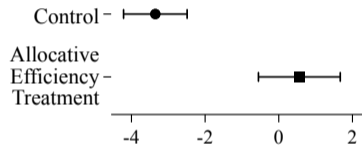
# Allocative Efficiency Video Changes Beliefs in Prolific

(A) AmeriSpeak



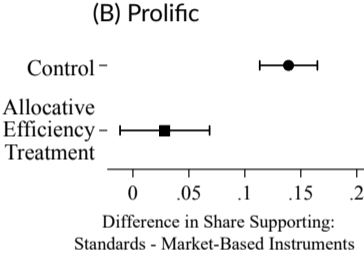
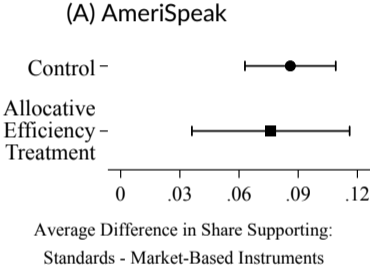
Average Difference in Perceived Bill Impact (\$/Month):  
Standard - Market-Based Instruments

(B) Prolific



Average Difference in Perceived Impact (\$/Month):  
Standard - Market-Based Instruments

# Allocative Efficiency Video Changes Preferences in Prolific

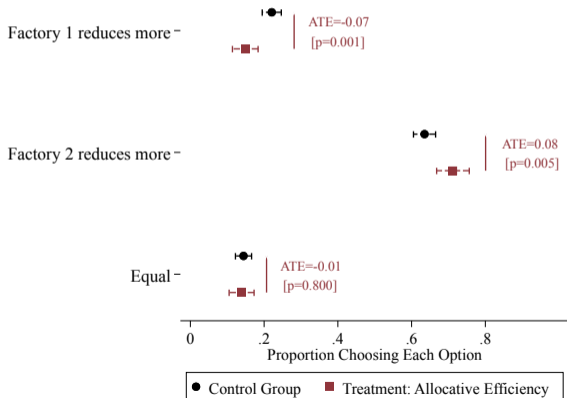


# Three Mechanisms Can Explain Videos' Effects

- **Economic literacy**
  - Knowledge: learn principles of video
  - Salience: decrease equilibrium neglect (Dreyfuss 2025)
  
- **Expert persuasion:** Participants don't understand details but believe main message
  
- **Experimenter demand:** Participants repeat ideas from videos to please researchers.
  
- **Implications differ**
  - If experimenter demand, limited external relevance.
  - If economic literacy or persuasion, can increase support for cost-effective policies (classes, ads, media)

## Economic Literacy (1/3): Video Improves Knowledge

- Two factories face a pollution tax. Factory 2 has lower marginal abatement costs. Who reduces pollution more?
  - Allocative efficiency video increases correct answer 64%→71%



## Economic Literacy (2/3): Open-Ended Responses Show Learning

- Survey: “In one or two sentences, describe what the video is about.”
- Rate video understanding as poor, partial, or sufficient (Claude Opus 4.6)

<b>(A) Pass-Through Video</b>			
	Poor	Partial	Sufficient
AmeriSpeak	19.58%	24.91%	55.50%
Prolific	12.51%	18.87%	68.61%

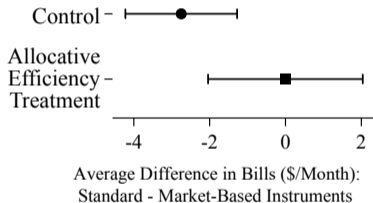
  

<b>(B) Allocative Efficiency Video</b>			
	Poor	Partial	Sufficient
AmeriSpeak	45.42%	41.68%	12.90%
Prolific	29.94%	42.49%	27.58%

- Results: Pass-through better understood; Prolific understood better

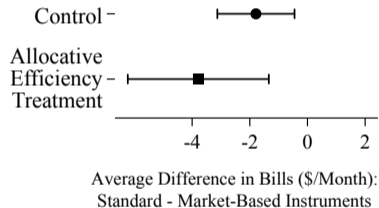
# Economic Literacy (3/3): Educated Respondents Learned More

(A) College or Above



[p-value of difference in ATE: 0.03]

(B) Non-College



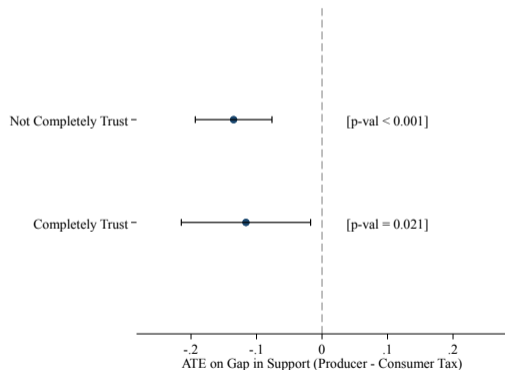
[p-value of difference in ATE: 0.16]

- Pass-through video: college and non-college more similar

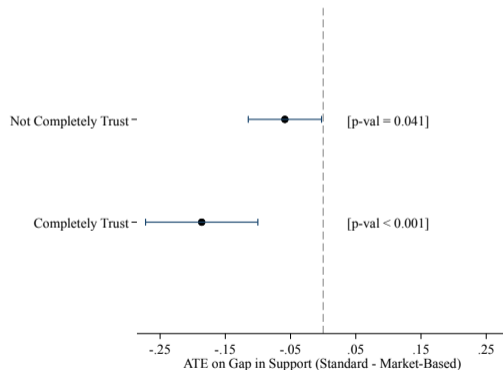
# Expert Persuasion (1/1): Responses Vary With Trust in Experts?

- Do you trust experts completely? Effects of videos:

(a) Pass-through video



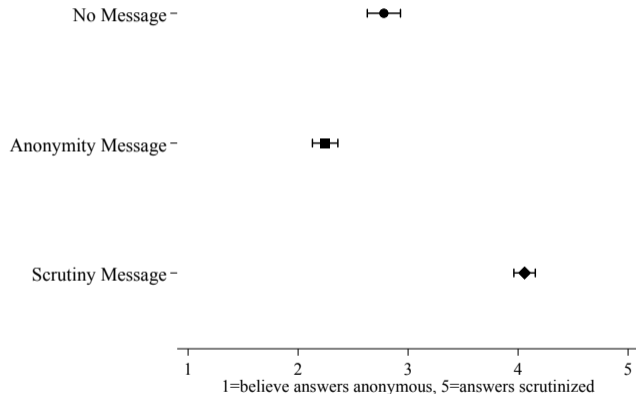
(b) Allocative efficiency video



## Experimenter Demand (1/4): We Randomize a Cue for Scrutiny

- **Scrutiny treatment:**
  - “[R]esearchers will precisely and carefully scrutinize your answers”
- **Anonymity treatment:**
  - “The answers you give to the survey will be completely anonymous”
- **Question at end:** to what extent will the researchers observe your answers and carefully scrutinize them?
  - 1=“My answers are completely anonymous. No one, not even the researchers, will be able to match my answers to my name”
  - 5=“The researchers will precisely and carefully scrutinize my answers”
  - Note, no deception, so options 1/5 do not contradict
- Builds on Bursztyn et al. (2020)

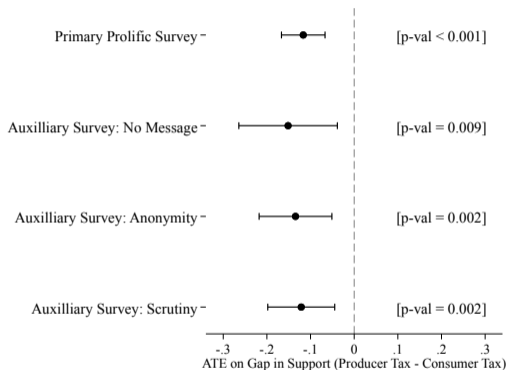
## Experimenter Demand (2/4): We Validate the Scrutiny Cue



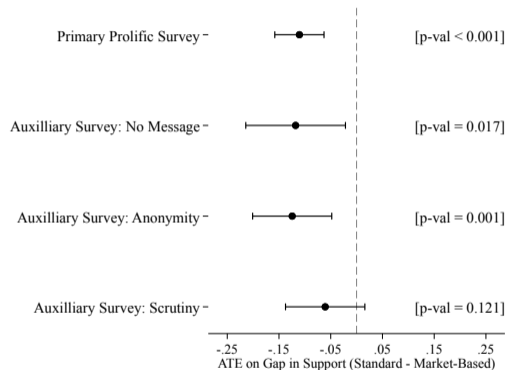
- People believed the scrutiny treatment, remembered it after the full survey

# Experimenter Demand (3/4): Scrutiny Did Not Change Preferences

(a) Effect of Pass-Through Video



(b) Effect of Allocative Efficiency Video



## Experimenter Demand (4/4): Largely Not in Free-Entry Responses

- **Open-ended:** “What do you think was the purpose of the survey?”
  - 16/2000 (0.008%) suggest experimenter demand (Claude Opus 4.6)

# Mechanisms Synopsis: Economic Literacy; Some Expert Persuasion?

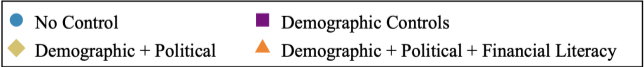
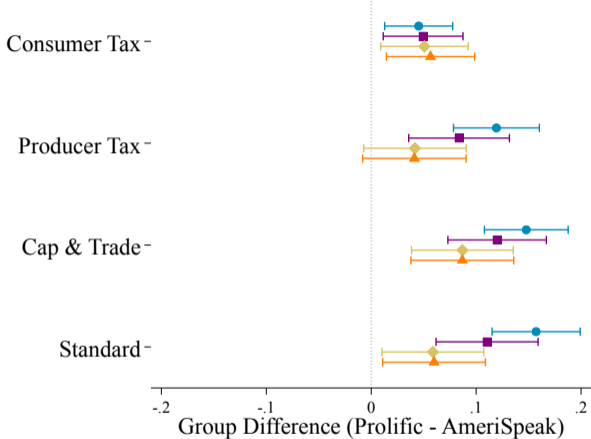
- **Economic literacy:** direct evidence
  - Comprehension question (2 factories)
  - Open-ended: understanding of videos
  - College v. non-college
  
- **Expert persuasion**
  - Limited evidence, for allocative efficiency only
  
- **Experimenter demand**
  - Scrutiny treatment
  - Open-ended responses

# Conclusions

- **Large gap between economists and the public**
  - Key driver: beliefs about energy bills
  - Tradeoff: policy stringency vs. perceived costs
- **Information can shift policy support**
  - Pass-through video: changes beliefs, equalizes support across taxes
  - Allocative efficiency video: less consistent effects
- **Mechanisms: economic literacy matters**
  - Evidence of learning; strong evidence against experimenter demand
  - Modest evidence on expert persuasion
- **Policy implications**
  - Misperceptions help explain resistance to efficient policies
  - Targeted communication can improve support



# Selection on Unobservables Affects Survey Responses



# People Think Taxes Are Worse for Inequality Than Standards

