



# New Challenges to International Cooperation: Automation and Climate Change

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MacMillan Center

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## This class: PE of climate change

- ▶ Climate change has diffuse, long-term impacts, hamstringing cooperation :
  - ▶ Cost v. benefits? Few incentives to adapt quickly (boiling frog).
  - ▶ Adaption and other actions when affected (myopia).
  - ▶ Citizens lack of information about impacts (knowledge).

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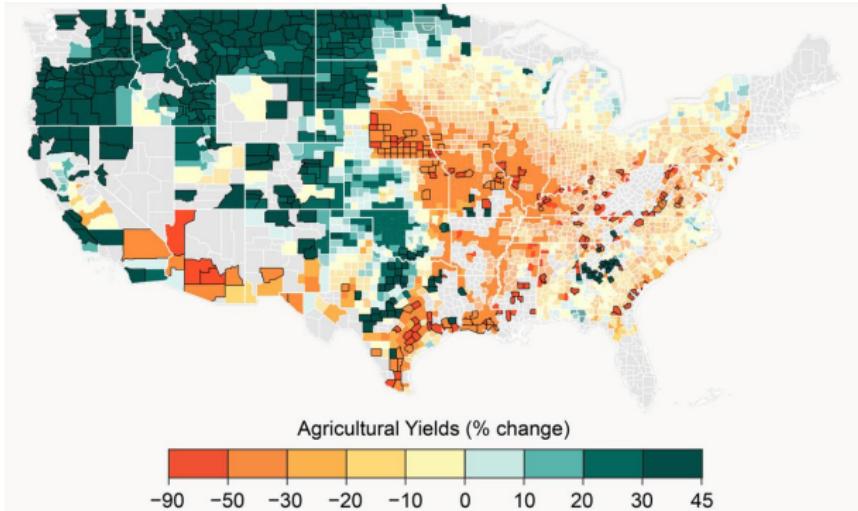
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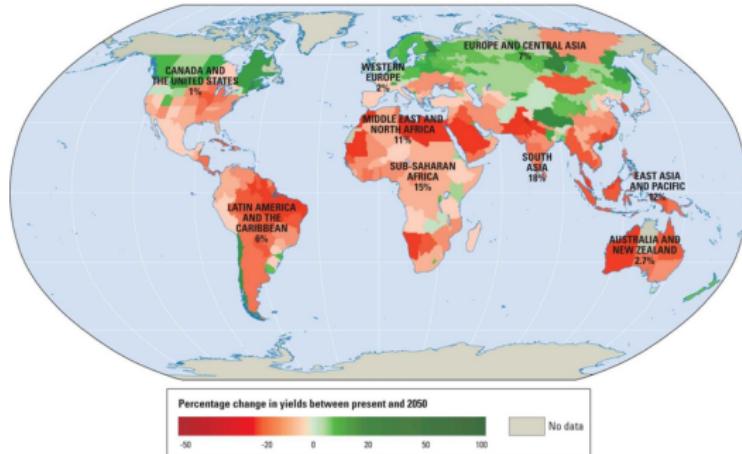
# Recall, climate change is important!



- ▶ Threatens agriculture: land, fisheries and water sources.
- ▶ Human/econ costs: wildfires, extreme weather, rising sealevels.
- ▶ Other more nuance societal costs: crime and even suicide!

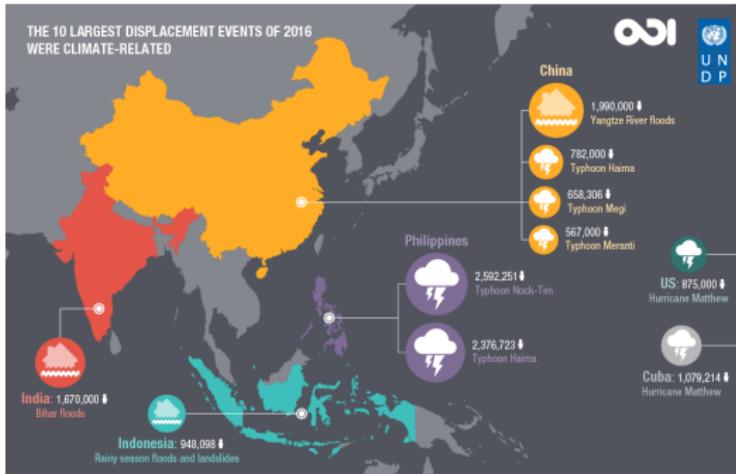
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Map 1 Climate change will depress agricultural yields in most countries in 2050, given current agricultural practices and crop varieties



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 HEADWATERS  
ECONOMICS

Research Tools About Us



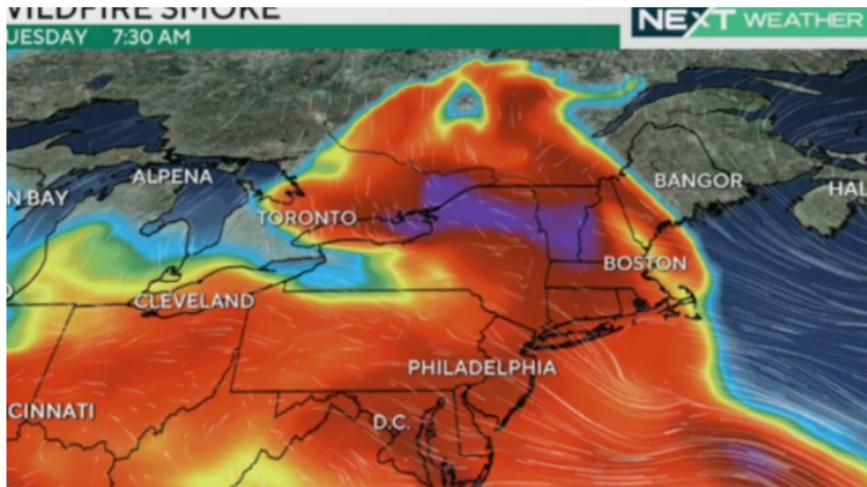
Wildfires destroy thousands of structures each year

November 2020  
Updated August 2023

Tens of thousands of structures have been destroyed by wildfires since 2005, resulting in an untold number of fatalities, evacuations, and injuries. The number of structures destroyed by wildfires, rather than the number of acres burned, is a more telling measure of the broad social, economic, and community impacts of wildfires.

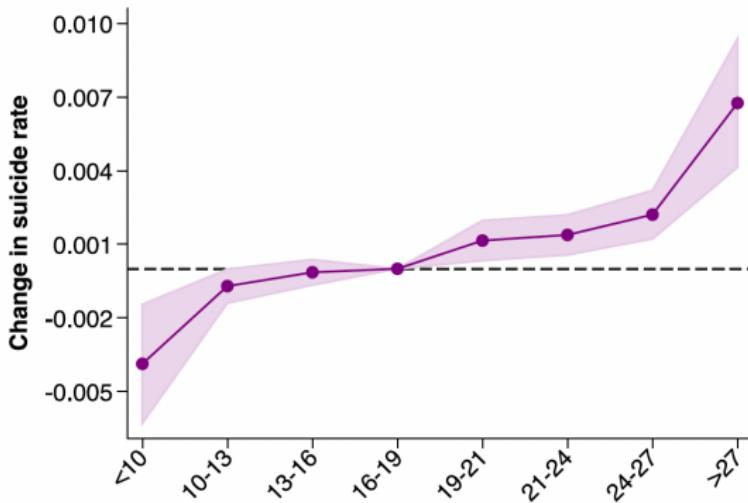
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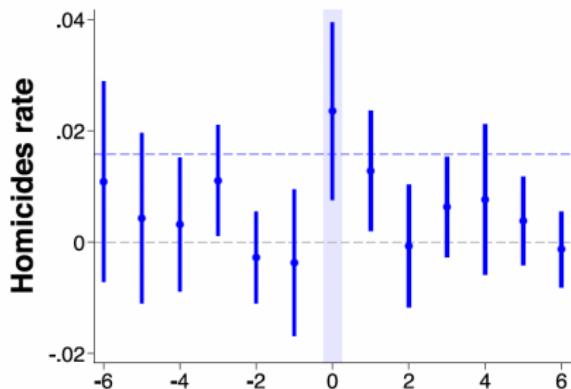
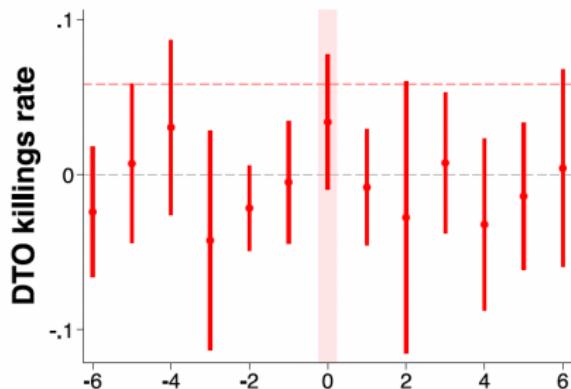
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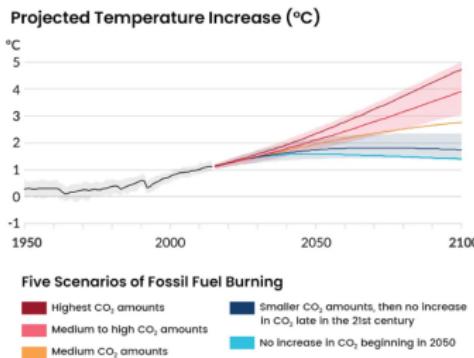
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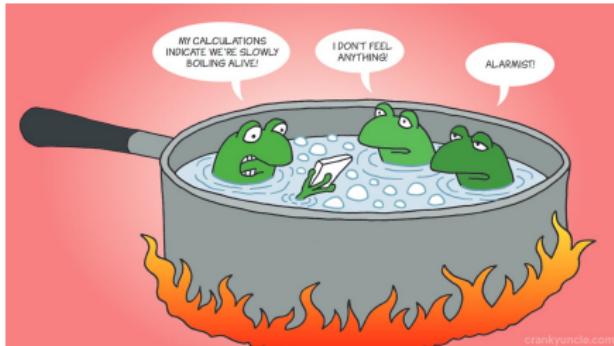
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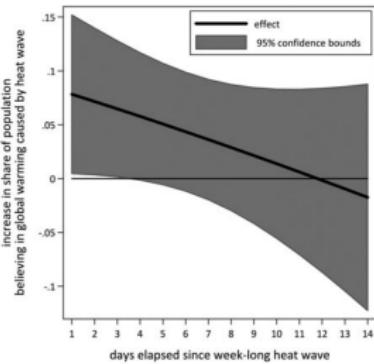
- ▶ Avg. climate increases slowly; hard to understand its impact.
- ▶ Climate shocks occur more often, but effect is temporary.
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- ▶ Trade-off of adaptation for tomorrow vs. consumption today.
- ▶ Adaptation world-wide is not very high!

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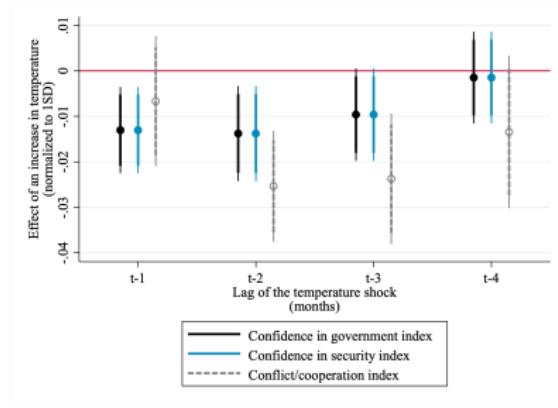
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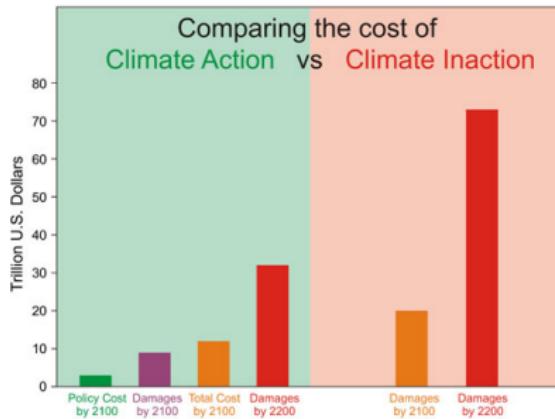
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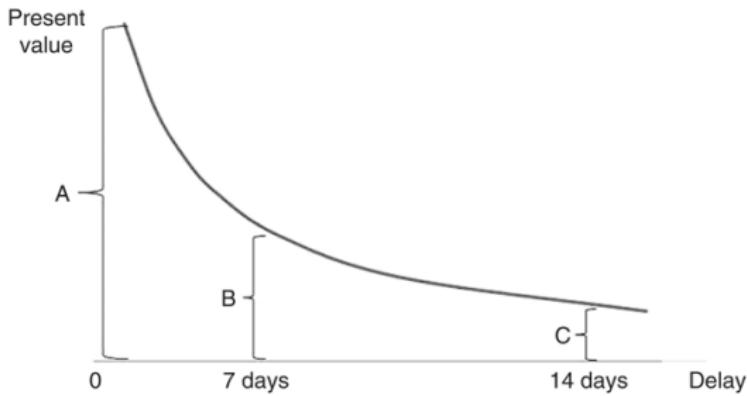
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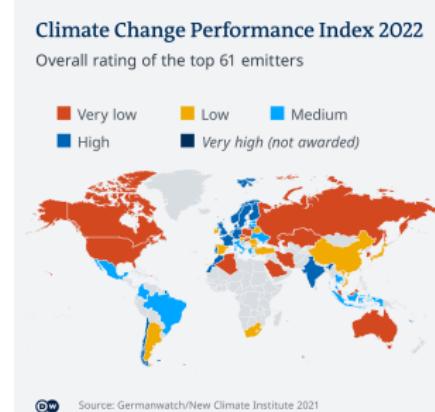
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Source: Authors' own elaboration

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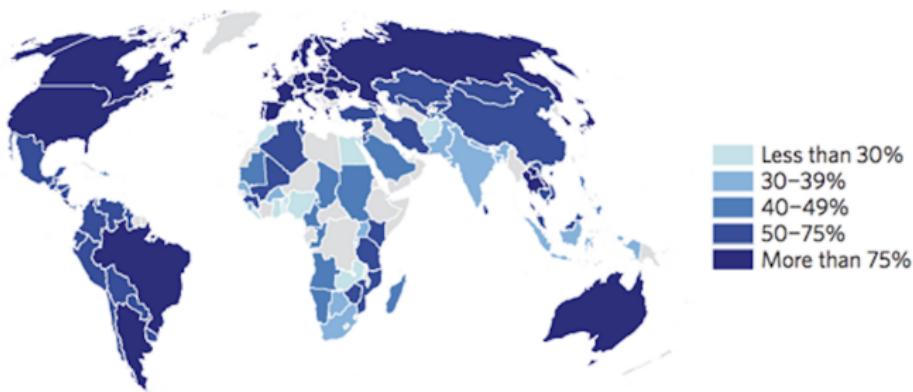


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# Knowledge/concern for climate change is still low

a

Aware of climate change



- ▶ Knowledge of climate change is low in developing world!
- ▶ Concern for climate change is low in the developed world!
- ▶ Diffuse impacts provide incentives to free-ride.
- ▶ Unequal impacts creates costs for cooperation/redistribution.

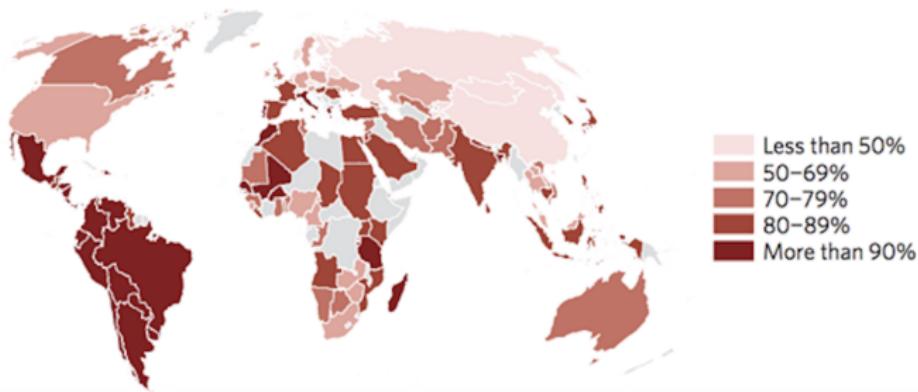
# Knowledge/concern for climate change is still low

Rank (of 119)	Country	Awareness (%)	Rank (of 119)	Country	Awareness (%)
1	Japan	98.9%	110	Morocco	30.1%
2	United States	97.7%	111	Togo	29.6%
3	Finland	97.6%	112	Nigeria	27.8%
4	Norway	97.5%	113	Zambia	26.5%
5	United Kingdom	97.4%	114	Ghana	26.4%
6	Australia	97.3%	115	Afghanistan	25.4%
7	Sweden	96.1%	116	Egypt	25.0%
8	Germany	96.0%	117	Burundi	21.7%
9	Netherlands	95.6%	118	Benin	20.7%
10	Canada	95.4%	119	Liberia	20.6%

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- b Of the 'Aware': climate change is a serious threat



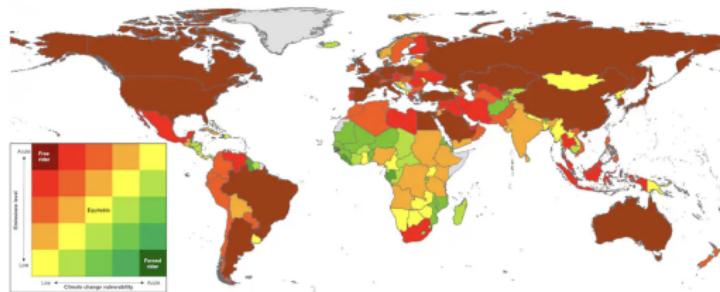
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# Knowledge/concern for climate change is still low

Rank (of 119)	Country	Concern (%)	Rank (of 119)	Country	Concern (%)
1	Ecuador	98.6%	110	Czech Republic	48.1%
2	Bangladesh	98.3%	111	Norway	45.4%
3	Trinidad & Tobago	98.2%	112	Denmark	45.4%
4	Venezuela	98.1%	113	Belarus	44.7%
5	Morocco	97.3%	114	Mongolia	42.9%
6	Costa Rica	96.9%	115	Latvia	42.2%
7	Colombia	96.8%	116	Finland	40.8%
8	Brazil	96.5%	117	Estonia	39.9%
9	Portugal	96.4%	118	Iceland	36.8%
10	Greece	96.3%	119	China	36.1%

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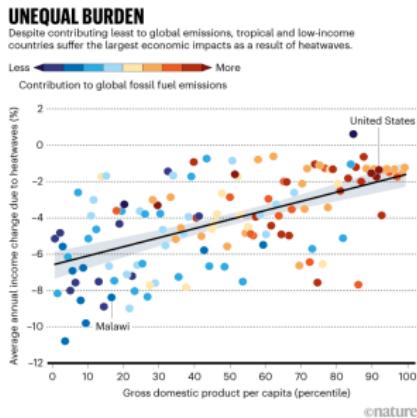
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A Map from our study, showing which countries produce the most greenhouse gases and experience the least effects of climate change (brown) and countries that produce the least greenhouse gases but experience the worst effects of climate change (green).

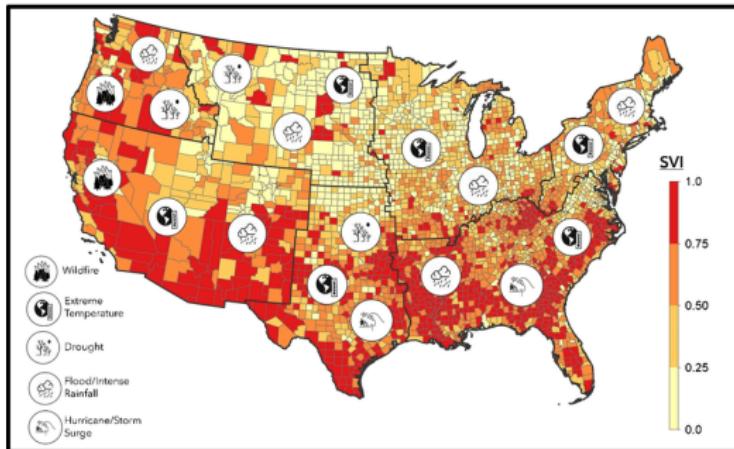
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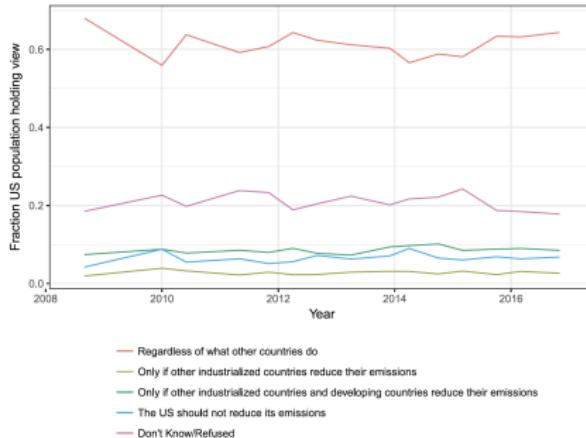
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## Class exercise: How can we address the lack of cooperation?

1. Make groups of 2/3 people.
2. Is education the alternative? How? Is it the only alternative?
3. How can we generate compliance from powerful actors?
4. 5 minutes.
  - ▶ Feel free to use the Internet.

reset

# Shark attacks and climate change

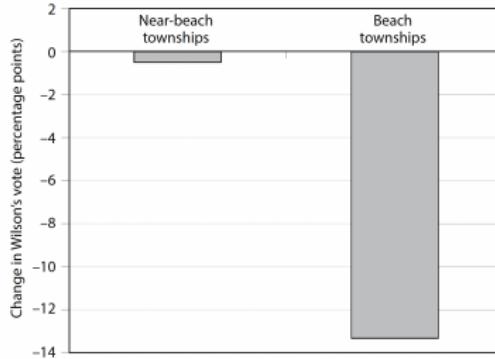
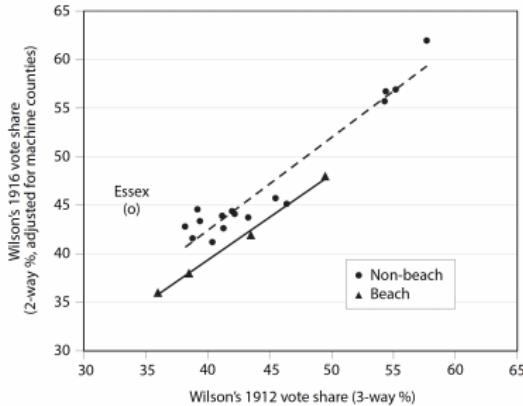


Figure 5.3. Change in Woodrow Wilson's Vote Share (1912–1916) in Ocean County Townships

- ▶ Shocks ⇒ impacts ⇒ blame government.
- ▶ Accountability ⇒ incentives for leaders to address issue.
- ▶ Adaptation can be done ex-ante (policy) or ex-post (relief).
- ▶ Constraints on the capacity to adapt/provide relief.
- ▶ Politicians' incentives can also affect adaptation/providing relief.

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	Drought index			Rural drought index		
	(1)	(2)	(3)	(4)	(5)	(6)
Election-year drought index	-0.060 (0.031)	-0.052 (0.034)	—	-0.176 (0.083)	-0.140 (0.082)	—
(Election-1) drought index	—	-0.043 (0.029)	—	—	-0.116 (0.088)	—
(Election-2) drought index	—	0.016 (0.036)	—	—	0.023 (0.042)	—
(Election-3) drought index	—	-0.043 (0.040)	—	—	-0.024 (0.042)	—
Time-weighted drought index	—	—	-0.104 (0.045)	—	—	-0.273 (0.122)
Standard error of regression	3.61	3.60	3.60	3.61	3.61	3.60
Adjusted R <sup>2</sup>	.88	.88	.88	.88	.88	.88
N	1,233	1,233	1,233	1,233	1,233	1,233

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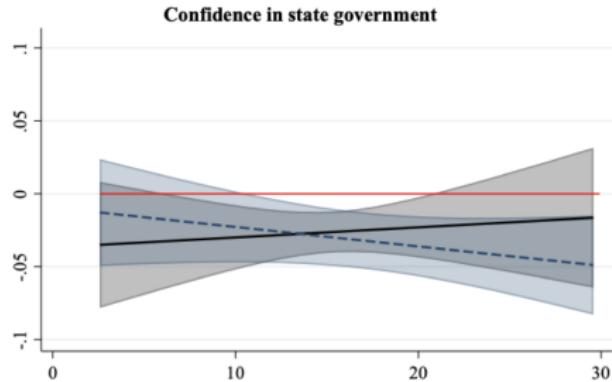
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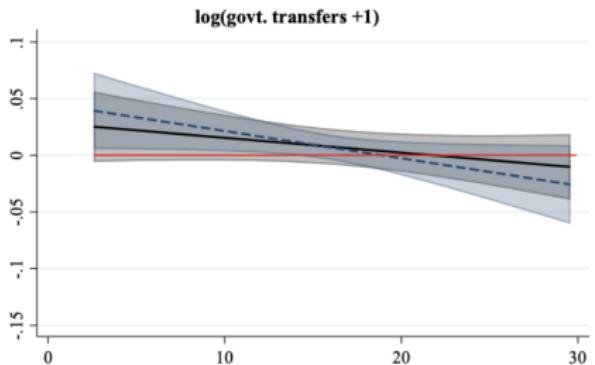
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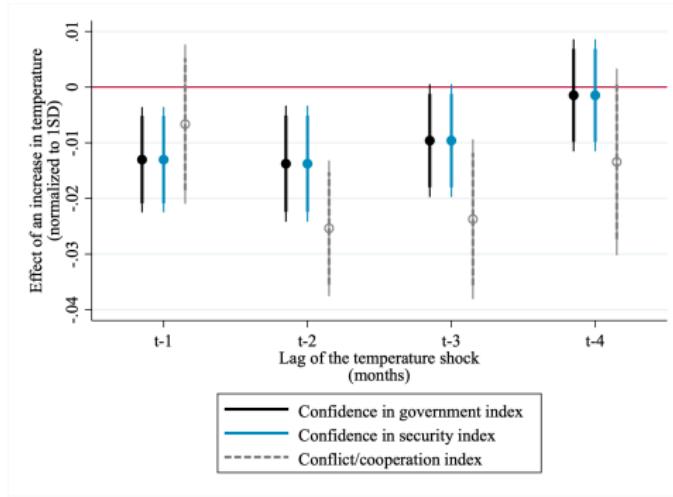
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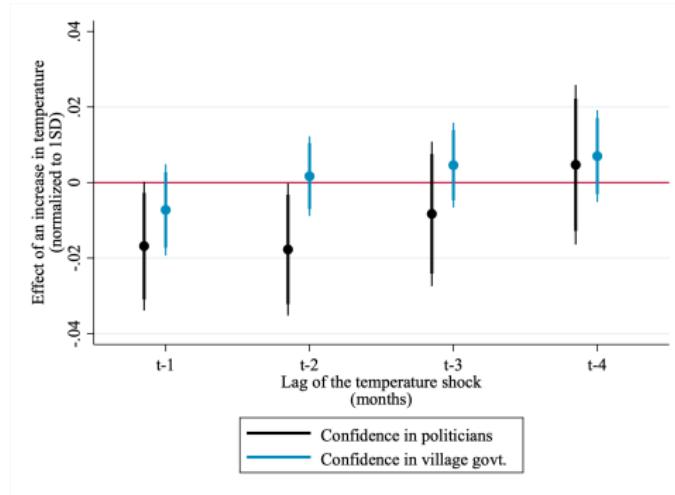
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# Not shark attacks but about lack of information



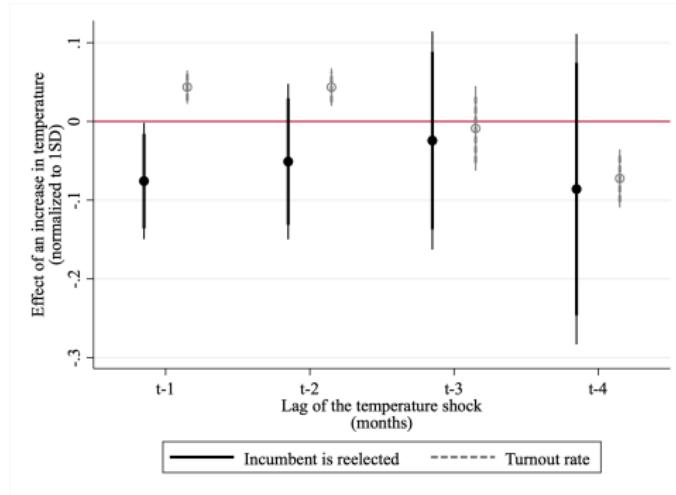
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- ▶ Informed citizens are less likely to blame the government!

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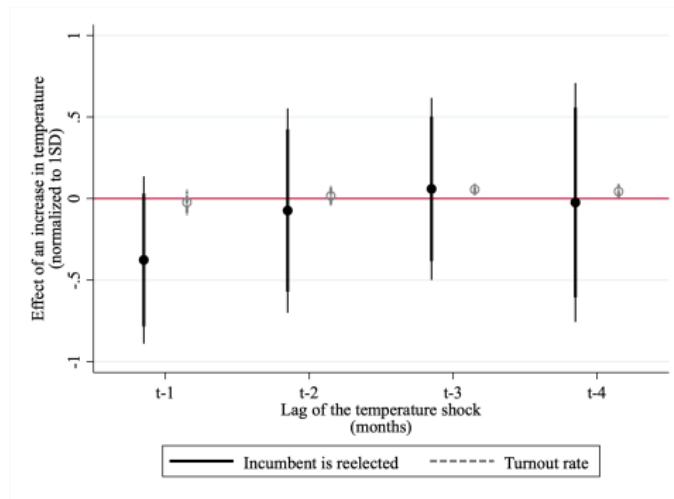
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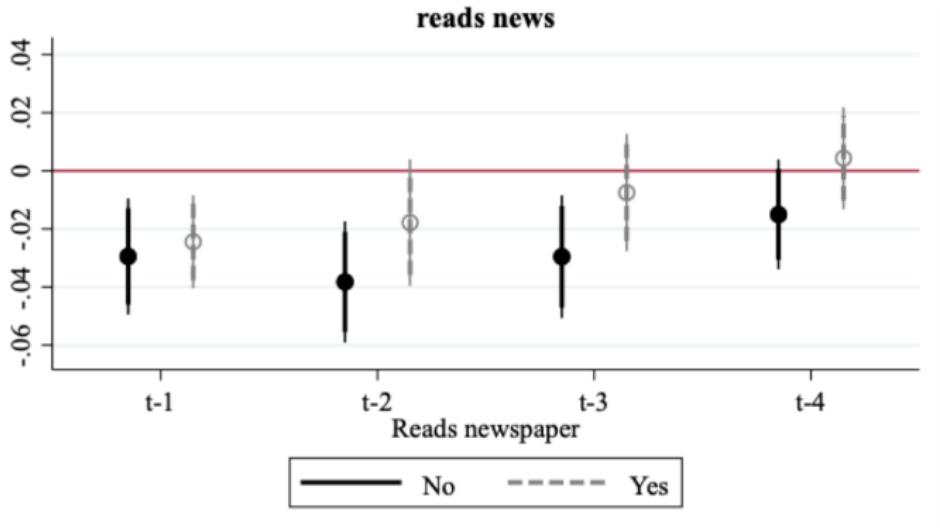
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## Class exercise: Is information enough to address problem of low cooperation?

1. Make groups of 2/3 people.
2. Can information lead to more accountability and thus adaptation?
3. Can we create domestic coalitions by providing information?
4. 5 minutes.
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reset

# The redistributive effect of adaptation



- ▶ Adaptation creates winners (e.g., solar) and losers (e.g., coal)!
- ▶ Losers oppose transition if transition benefits are low.
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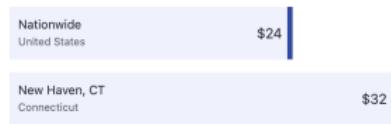


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Coal Mine Salary Comparison by Location

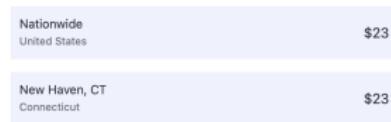


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Solar Panel Salary Comparison by Location



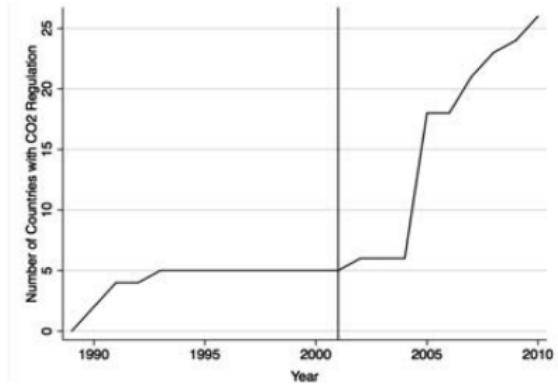
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# The redistributive effect of adaptation



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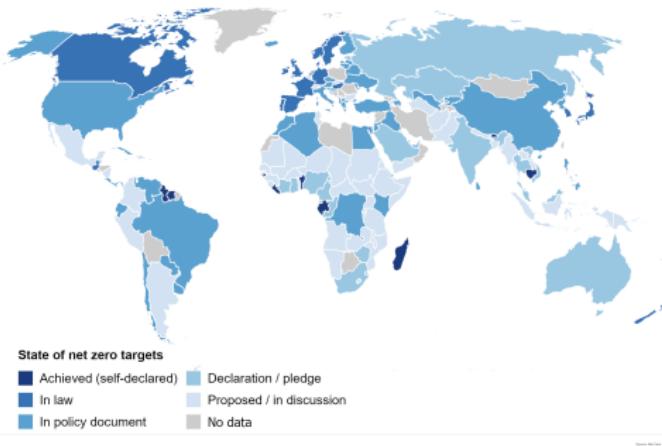
# The redistributive effect of adaptation



(a) Carbon tax/market

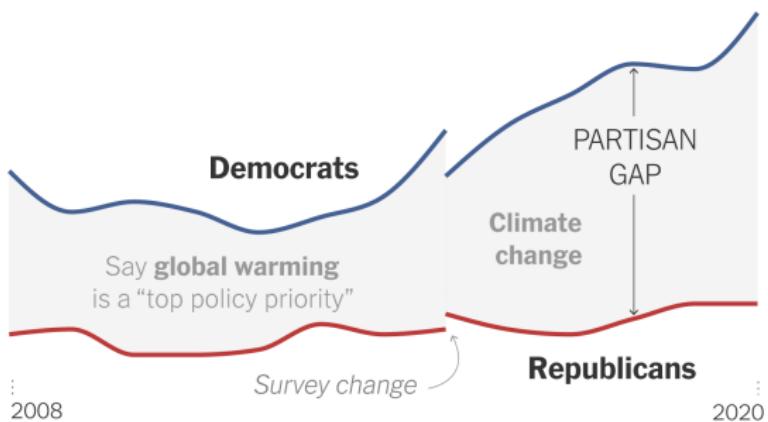
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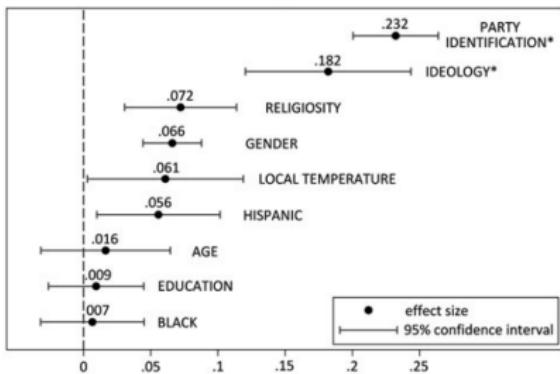
# The role of ideology creating coalitions for climate adaptation



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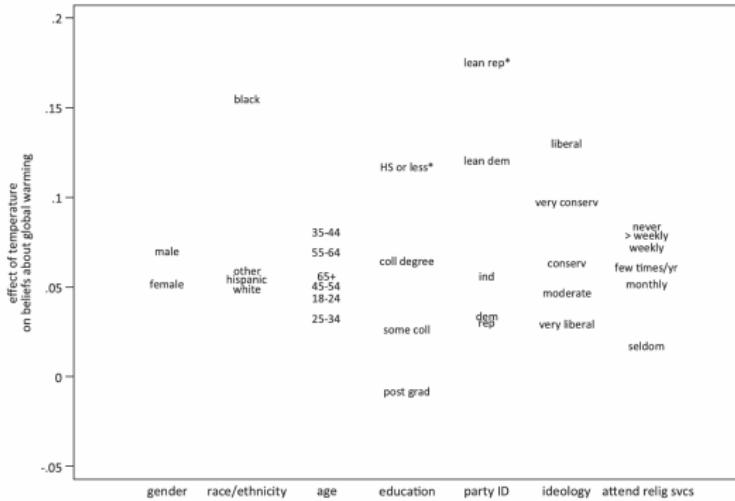
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FIGURE 2 Effects of Variables on Americans' Beliefs about the Evidence for Global Warming



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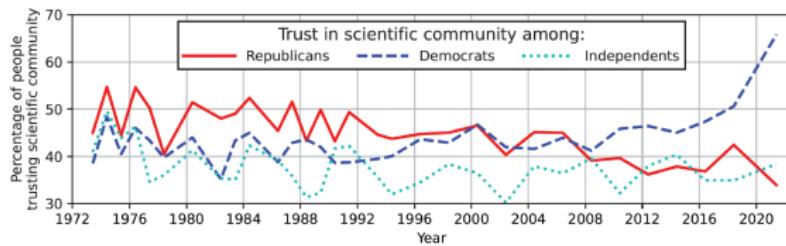


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# The role of ideology creating coalitions for climate adaptation

Figure 1

Level of Confidence in Science by Political Party, 1974 – 2022



Source : The General Social Survey, the latest conducted from December 1, 2020 – May 3, 2021. Auditors asked, “I am going to name some institutions in this country. As far as the people running these institutions are concerned, would you say you have a great deal of confidence, only some confidence, or hardly any confidence at all in them?” Figure by Alexander Kaurov.

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## Class exercise: can we address the ideological divide?

1. Make groups of 2/3 people.
2. Can compensation losers from energy transition increase support for climate action?
3. Under what circumstances will we be able to address the ideological divide?
4. 5 minutes.
  - ▶ Feel free to use the Internet.

reset

Next class...

**Climate change as a source of conflict and instability!**