Data Paper
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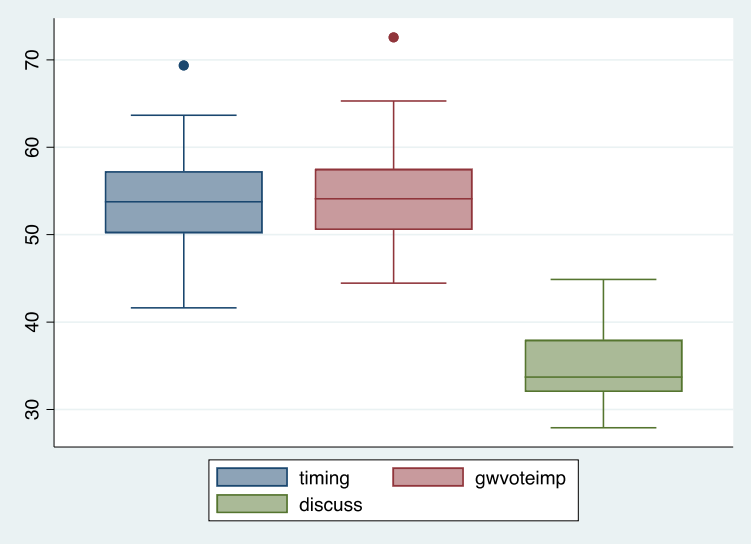
Evolving Consensus: An analysis of US opinions on climate change using Yale survey 2020

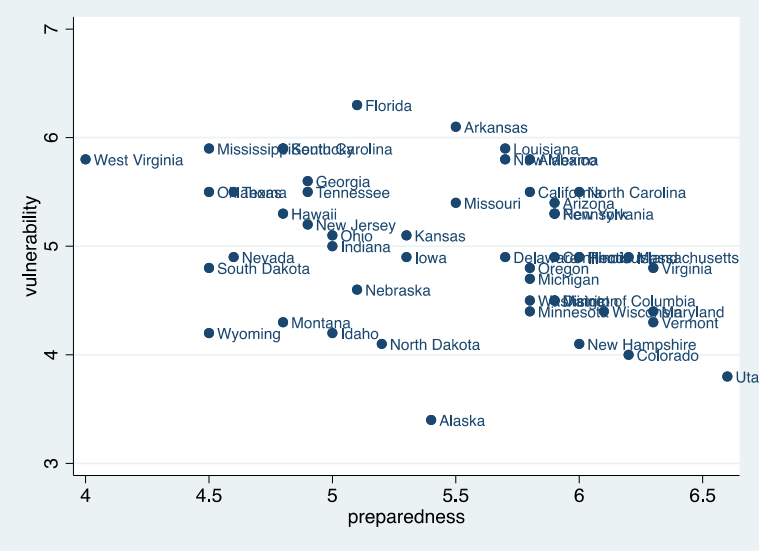
Climate catastrophe is unfolding in many forms around the world and even the developed countries have felt the pinch of the climate emergency. United States of America is a key player in the international negotiation regime on climate change. While USA has the resources and skill-power that can lead the world out of climate change, its policy actions on the international stage have often stalled progress on majority of climate action. This does not mean that climate change's impact would spare USA. Different states are projected to experience different intensities of climate change and some states are better equipped and\or prepared to face the harsh reality of climate change. In this paper, I will try to determine whether there is a relationship between public opinion in a state on certain climate change related questions and the state's vulnerability and preparedness to handle climate change. The ideal pattern should be that states that are more vulnerable should have voters that care more about climate change and states that are better equipped at tackling climate change should have voters who care more about climate change as well.



Data:
My primary data source was the Yale 2020 Climate Opinions Dataset. It initially had 4 different levels of survey responses: Country, State level, County Level, and Urban Center level data. I only kept state level data. I tried getting my hands on the latest 2021 round, but the people at Yale refused to give me access to it. I chose to three questions because they were of varying degree of climate change. The first question asked if the respondent belives whether the effects of climate change would be visible in United States within the next decade or so. The second question asks whether the respondent considers a candidate's view on climate change is important when they cast their vote. The third question inquired whether the respondent discusses global warming with their families and friends at least once a week. I plotted the responses' boxplots in the figure below. We can see that the median of the 'timing' and 'gwvoteimportant' question is around 55 percent while the discuss question has a lower success rate at 35 percent. The total number of observations in the dataset is 50.

I merged a dataset from "Climate Change and Health" which gives a rating for each state's vulnerability to climate change and perceived preparedness to handle climate change's public health problem (I used this index as a proxy for vulnerability and preparedness to climate change because I could not find the indexes we saw in class for subnational units). I plotted the following scatter plot of preparedness on the x-axis and vulnerability on the y-axis(I could not figure out a way to make the state-name labels jitter out).

Methodology:
I mapped the two datasets onto each other so that for each state so that for each state, we have the survey question results and the rankings for the vulnerability and preparedness. For each of the survey questions, I ran three regressions using the following variables respectively: vulnerability, preparedness, and vulnerability & preparedness. I considered introducing state fixed effects but decided against it because the state effects are already included.



Results and Discussion:

The first regression table shows us the results for the three regressions on the discussion question. The results for the first two regressions are statistically significant to alpha 0.001 while the third regression is statistically significant to 0.05. We can see that a unit increase in vulnerability results in approximately 3 and 2.1 decrease in polling results for regression 1 and regression 3, while a similar increase in perceived preparedness results in an approximately 3.3- and 2.5-point increase in the polling results for the question.

"Discuss"	(1) Vulnerability	(2) Preparedness	(3) vulnerability and Preparedness
vulnerability	-2.968***		-2.155*
	(-3.56)		(-2.59)
preparedness		3.264***	2.466**
		(3.73)	(2.79)

_cons	49.75***	17.15***	32.26***
	(11.85)	(3.58)	(4.36)
Observations	51	51	51
R-squared	0.206	0.221	0.316
F-stat	12.68	13.92	11.11

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results for this show that people in more vulnerable states are less likely to discuss climate change. This shows an information failure on part of state to disperse information about climate change to lay-people in states. Similarly, the preparedness of a state positive effects the number of times people discuss the climate change. I think this shows that certain states are tackling the issue of climate change as a public nuisance, and it results in those states having a higher public concern over climate change as well. Whereas certain states prefer the ostrich strategy which combined with the results from the first regression show that public is less likely.

The second regression table shows us the results for the three regressions on the timing question. The results for the first regressions are statistically significant to alpha 0.001, while the preparedness's coefficients are not statistically significant. We can see that a unit increase in preparedness results in approximately 4.1 and 4.936 decrease in polling results for regression 1 and regression 3, while a similar increase in vulnerability results in an approximately 0.578- and 2.21-point increase in the polling results for the question.

"Timing"	(1) Prepardness	(2) Vulnerability	(3) vulnerability and Preparedness
preparedness	4.120***		4.936***
	(3.64)		(4.20)
vulnerability		0.578	2.205
		(0.48)	(1.99)
_cons	31.53***	51.08***	16.07
	(5.08)	(8.44)	(1.63)
Observations	51	51	51
R-squared	0.212	0.00470	0.273
F-stat	13.22	0.231	8.990

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results for the timing again show a pattern that states that acknowledge climate change as a problem have a higher percentage of voters who are aware of the problem.

The following table shows the results for the regression of states' percent yes responses to "how important the candidate's climate change views are" on vulnerability and preparedness. The results on the preparedness in the first and the third regression are statistically significant to 0.01 significance level. It shows that as the preparedness increase by one unit, the yes response increase by 3.84 units and 4.2 units respectively. The results for vulnerability showed that as vulnerability increase by one unit, the percentage of voters saying yes decrease by -0.419 in the simple regression and increase by 0.966 in the third regression.

"Importance to vote"	(1) Preparedness	(2) Vulnerability	(3) vulnerability and Preparedness
preparedness	3.843**		4.201**
	(3.38)		(3.45)
vulnerability		-0.419	0.966
		(-0.35)	(0.84)
_cons	33.50***	56.52***	26.73*
	(5.38)	(9.44)	(2.62)
Observations	51	51	51
R-squared	0.189	0.00252	0.201
F-stat	11.44	0.124	6.043

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results for this regression again imply that states with states that are more vulnerable have residents that care less about climate change politics while states that are more prepared have residents that vote according to climate change concerns.

Discussion:
The results for regression do not match up with our ideal distribution postulated in the introduction. We found that preparedness does match some of those patterns with climate change perceptions, but vulnerability does not follow those patterns as much. While further research is needed to investigate the reasons behind this, I think the answer lies in whether the political leadership of those states portrays climate change as a problem bring these issues into public limelight. States that avoid talking about climate change or dismiss it as unproved science perhaps have ulterior motives. An example would be the state of Texas whose oil industry drives climate change.

References:

JHU center School of Public Health. (2020). Climate Change and Health. *UpToDate*. Retrieved, from https://www.tfah.org/wp-content/uploads/2020/12/ClimateChange_HealthRpt_FINAL.pdf

Yale Climate Change Communications, Yale Climate Opinions Survey, 2020, retrived from : https://climatecommunication.yale.edu/visualizations-data/ycom-us/

Do file:

```
hammad Ghazi Randhawa
*Final Project

clear
set more off
capture restore
capture log close

*--------------------
* Directory Configuration
*--------------------



*Ghazi Randhawa
if "`c(username)'" == "ghazi" {
   global root = "/Users/ghazi/Desktop/Final_Project_GEG"
   }


global data = "$root/Data"
global output = "$root/Output"
global logs = "$root/Log"

**read in the file

import delimited "$data/survey_data.csv",clear

*convert variables of interest to numerics

encode geotype, gen(geotype_nu)
*drop non-state unit data
drop if geotype_nu != 4
```

```
*merge with the new dataset
encode geoname, gen(states)
merge m:1 states using "$data/rankings_states.dta"


*regression of discussing climate change with vulnerability
reg discuss vulnerability
eststo reg1a
reg discuss preparedness
eststo reg1b
reg discuss preparedness vulnerability
eststo reg1c

*esttab reg1a reg1b reg1c using "$output/discuss.rtf", mtitles("Vulnerability"
"Preparedness" "vulnerability and Preparedness") stats(N r2 F, labels("Observations" "R-
squared" "F-stat"))


*regression of voting pattern and preparedness
reg gwvoteimp preparedness
eststo reg2a

reg gwvoteimp vulnerability
eststo reg2b

reg gwvoteimp vulnerability preparedness
eststo reg2c

*esttab reg2a reg2b reg2c using "$output/voter.rtf", mtitles("Vulnerability"
"Preparedness" "vulnerability and Preparedness") stats(N r2 F, labels("Observations" "R-
squared" "F-stat"))


*regression of timing of CC on vulnerability and preparedness
reg timing preparedness
eststo reg3a

reg timing vulnerability
eststo reg3b

reg timing vulnerability preparedness
eststo reg3c
```

*esttab reg3a reg3b reg3c using "$output/Climate_change.rtf", mtitles("Vulnerability" "Preparedness" "vulnerability and Preparedness") stats(N r2 F, labels("Observations" "R-squared" "F-stat"))