Gov52 Replication Project

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4/16/2021

Replication of Political Disaster: Unilateral Powers, Electoral Incentives,

and Presidential Disaster Declarations

In the following report, I replicate Andrew Reeves's 2011 paper "Political Disaster: Unilateral Powers, Electoral Incentives,and Presidential Disaster Declarations." I first provide an overview of the original paper, then explain my replication process, and finally propose an extension to Reeves's work. [1]

Overview

Reeves's work explores the relationship between presidential disaster declarations and electoral competitiveness. It seeks to find evidence that presidents disproportionately declare disasters and reward aid to electorally competitive states in an effort to gain votes for reelection. For context, a President can declare a disaster without the approval of other branches of government. Such a declaration makes states eligible for grants and other sorts of aid. In his analysis, Reeves utilizes a data set of all presidential disaster declarations in the United States from 1981 to 2004. The unit of analysis is the amount of disaster declarations in a state per year. Reeves purposefully split his analysis into two parts: years before and after the Stafford Disaster Relief and Emergenccy Assistance Act of 1988. The Stafford Act expanded the powers of the president to provide disaster relief. Ultimately, Reeves finds that after 1988, there is a positive relationship between electoral competitiveness and number and disaster declarations. Additionally, Reeves finds evidence that there is a positive relationship between disaster declarations and electoral support, meaning that states who received more disaster declarations were more likely to support the incumbent president in the next election.

Replication

For the replication part of this report, I replicated the paper's one summary table, two models, and two figures. I will describe the specifics of each part of the replication below.

- Note on the data: I did not have to do any data cleaning for the replication, as the replication data had no missing values and was already transformed into its final state

[1] The data and code for this report can obtained at https://github.com/lindseygreenhill/Gov52_replication_project

Table 1

The first table I replicated is summary table of key variables used in Reeves's analysis. The variables are as follows:

- Presidential Disaster Declarations: how many disasters declared a state for that year
- Actual Disasters: objective count of disasters according to the Property Claims Service, a branch of the Insurance Services Office (a private company contracted by insurance companies)
- Electoral Votes
- Competitiveness: measured by the average of the loser's vote margin in the last three elections
- Logged Per Capita Personal Income
- Logged Insurance Dollars: the inflation-adjusted dollar value of the actual disasters recorded by the ISO.
- Congressional Delegation Same party as the President: whether or not a state congressional delegation's partisanship is the same as the president's
- Governor Same Party as the President: whether or not the governor's partisanship is the same as the president's

variable	Mean	Std_Dev	Min	Max
Presidential Disaster Declaration	0.8	1.0	0.0	6.0
Actual Disasters	2.7	2.7	0.0	17.0
Electoral Votes	10.7	9.2	3.0	54.0
Competitiveness	42.4	4.2	26.5	48.6
Per Capita Personal Income (logged)	10.2	0.2	9.6	10.7
InsuranceDollars (logged)	13.6	7.7	0.0	23.7
Congressional Delegation Same party as the President	0.5	0.3	0.0	1.0
Governor Same Party as the President	0.4	0.5	0.0	1.0

Discussion

There is significant variation across many of the variables, especially within actual disasters and presidential disaster declarations.

Model 1

The first model I replicated is a Poisson regression. Reeves actually creates three different models: one with all of the data from 1981 - 2004, one with data pre stafford act (1981 to 1988), and one with data post Stafford act (1988 - 2004). I replicated all three models. They are shown in the table below.

As a reminder, the unit of analysis in the data set is a state-year. For example, Wyoming in 1981.

The dependent variable is **number of disaster declarations** in each state-year.

The independent variables are as follows:

- Competitiveness, actual disasters, logged insurance dolalrs, per capita income, electoral votes, congressional/presidential partisanship, gubernatorial/presidential partisanship, an indicator variable for year

of administration, and control variables for each administration from 1981 - 2004 (Reagan 1, Reagan 2, GHW Bush, Clinton, W Bush)

Model of Presidential Disaster Declarations

	Dependent variable:		
	fema.dis		
	full	pre	post
	(1)	(2)	(3)
Competitiveness	0.03**	−0.11	0.04**
	(0.02)	(0.10)	(0.02)
Actual Disasters	0.13***	0.19***	0.13***
	(0.02)	(0.05)	(0.02)
Insurance cost (logged)	0.02**	0.03	0.01
	(0.01)	(0.02)	(0.01)
Per capita income	1.33	1.52	−0.70
	(1.02)	(2.63)	(1.58)
Electoral Votes	−0.02	−0.11	−0.06
	(0.03)	(0.10)	(0.05)
year 2 of admin	0.09	0.48**	0.05
	(0.10)	(0.23)	(0.12)
year 3 of admin	0.08	0.17	0.12
	(0.10)	(0.26)	(0.12)
year 4 of admin	0.26**	0.28	0.37***
	(0.11)	(0.29)	(0.13)
Congressional partisanship	0.04	0.62	0.03
	(0.16)	(1.13)	(0.17)
President / Governor same party	0.001	−0.26	0.03
	(0.07)	(0.22)	(0.08)
Reagan (term 1)	−0.42	−0.15	
	(0.30)	(0.30)	
Reagan (term 2)	−0.58***		
	(0.22)		
GHW Bush	−0.21		−0.46**
	(0.17)		(0.23)
W Bush	0.06		0.13
	(0.11)		(0.12)
Clinton (term 1)	−0.15		−0.32*
	(0.14)		(0.18)
Intercept	−15.19	−11.83	5.57
	(10.42)	(26.16)	(16.08)
Observations	1,200	400	800
Log Likelihood	−1,198.75	−280.21	−882.90
Akaike Inf. Crit.	2,527.50	682.43	1,891.80
Note:			*p<0.1; **p<0.05; ***p<0.01

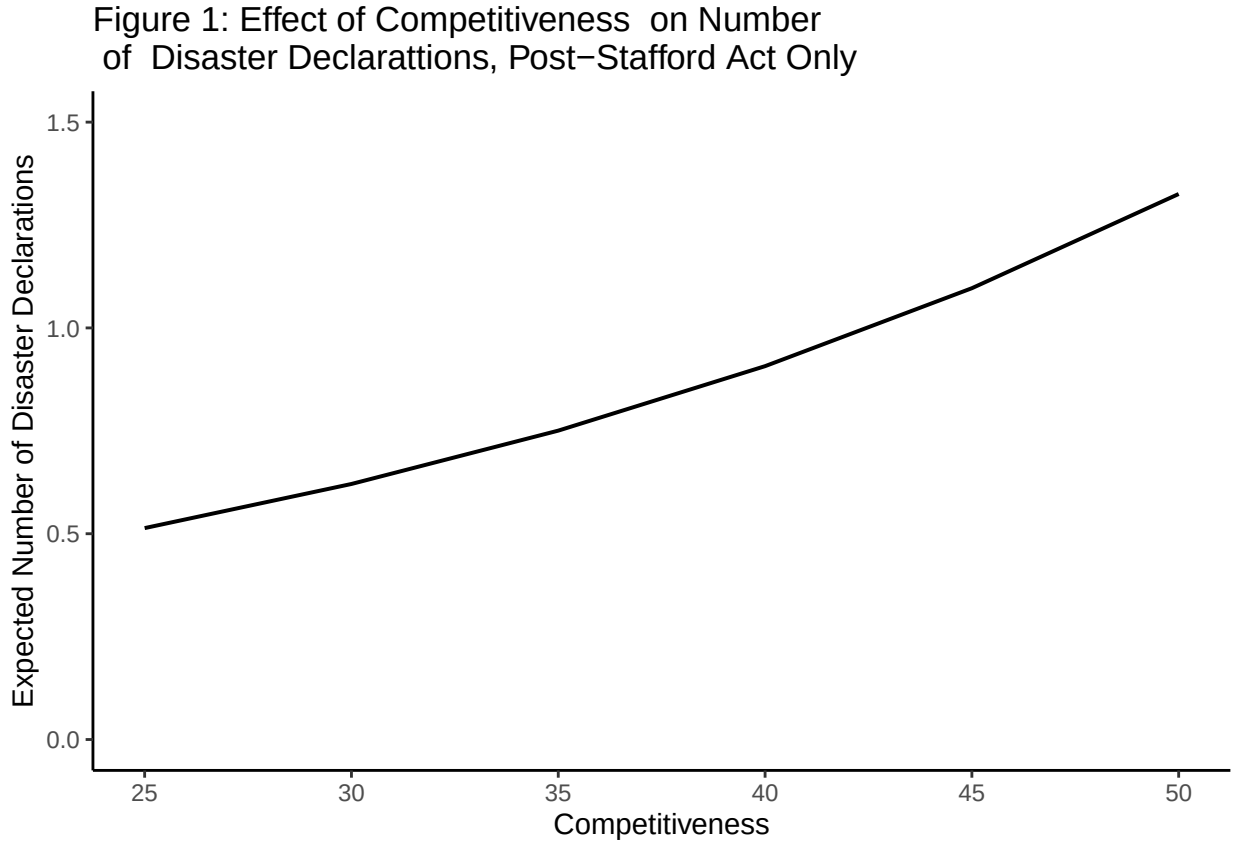
Discussion and Interpretation of Key Coefficients

- Interestingly, competitiveness is not statistically significant in the pre Stafford act model. However, in both the full and post Stafford model, the effect of competitiveness is positive and statistically significant. This makes sense, as presidents did not have the power to make as large of an impact pre stafford act. Post stafford act, it makes sense that presidents tried to leverage their new power in the hopes of gaining more electoral support.

- The effect of actual disasters is positive and statistically significant in all three models. It makes sense, and is perhaps obvious, that as actual disasters increase disaster declarations also increase.
- The effect of insurance dollars is positive in all models but only statistically significant for the full model. This suggests that the size of a disaster is not necessarily correlated with an increased likelihood in a disaster declaration.
- The effect of year of administration changes from pre Stafford to post Stafford. Pre Stafford act, the president (Reagan) declared the most disasters on average in year 2 of the administration. Post Stafford act, the presidents on average declared the most disasters in year 4 of administration. It makes sense that presidents were more likely to declare disasters near the end of their term, in election years, if they wanted to gain the most electoral support for their actions. It is similar to the way a president might enact more fiscal policy in year 4 in an effort to boost the economy before an election.

Figure 1

In the figure below, I show the marginal effect of competitiveness on predicted disaster declarations for the post Stafford era model. I used the sjPlot library for my analysis.

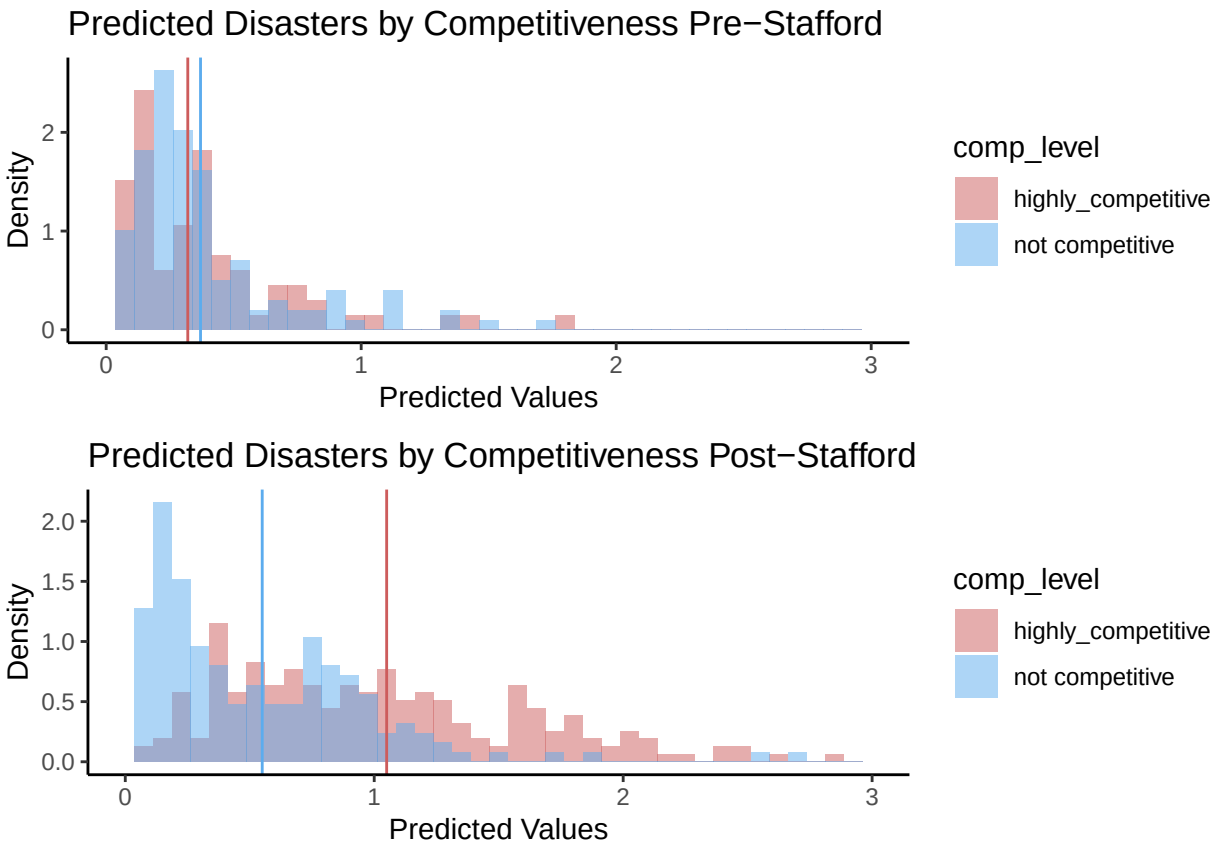


Discussion

As competitiveness increases, the model predicts that the expected number of disaster declarations also increases. Looking at the model above, the effect is statistically significant. Substantively, this finding suggests that presidents are more likely to give disaster support to key battleground states.

Figure 2

The following figure also shows the effect of competitiveness on expected disaster declarations. To produce the figure, I calculated the predicted y values for both the pre and post stafford models (using the predict function). I then classified the predicted y values by competitiveness. I defined a prediction as highly competitive if it came from a state in the top 25 percent of competitiveness. I defined a prediction as no competitive if it came from a state in the bottom 25 percent of competitiveness.



Discussion

This figures shows the different effects of competitiveness for the pre and post Stafford models. In the pre stafford model, the predicted y values for highly competitive and not competitive states are not systematically different. The average prediction values (shown by the vertical lines) for the two categories are very similar. Contrastingly, the predicted values for the post Stafford model vary significantly based on competitiveness. The average predicted value for highly competitive states is much higher than the average predicted value for not competitive states.

Model 2

This Least Squares Regression looks at the effect of presidential disaster declarations on election outcomes. Model 1 predicts election outcomes using number of disaster declarations and Model 2 predicts election outcomes using the square root transformation of the number of disaster declarations.

The dependent variable in this model is **presidential vote share**

The indepenent variables are as follows:

- number of presidential disaster declarations (sqrt of this in Model 2), party vote share in last election, logged per capita income, change in per capita income, whether or not the congressional delegation is the same party as the president, whether or not the governor is the same party as the president, competitiveness, electoral votes, whether or not the president is an incumbent, and an indicator variable for each state.

Model of State-Wide Presidential Election Outcomes

	Dependent variable:	
	curr.pct	
	Model 1	Model 2
	(1)	(2)
Presidential Disaster Declarations	1.29^{***}	
	(0.35)	
Presidential Disaster Declarations (sqrt)		2.17^{***}
		(0.55)
Previous Vote Share	0.75^{***}	0.75^{***}
	(0.05)	(0.05)
Personal Per Capita Income (logged)	-14.18^{***}	-14.35^{***}
	(3.43)	(3.42)
Change in Per Capita Income	0.67^{***}	0.70^{***}
	(0.25)	(0.25)
Congressional Partisanship	6.30^{***}	6.16^{***}
	(1.55)	(1.54)
Governor's Partisanship	-0.45	-0.31
	(0.86)	(0.85)
Competitiveness	-0.25^{**}	-0.26^{**}
	(0.13)	(0.13)
Electoral Votes	0.03	-0.01
	(0.31)	(0.31)
Incumbent	0.47	0.31
	(0.67)	(0.67)
Intercept	162.23^{***}	163.62^{***}
	(33.87)	(33.73)
Observations	300	300
R^2	0.70	0.70
Adjusted R^2	0.63	0.63
Note:	*p<0.1; **p<0.05; ***p<0.01	

Discussion and Interpretation of Key Coefficients

- There is a statistically significant and positive relationship between disaster declarations and vote share. Model 1 predicts that for every additional disaster declaration, the presidential vote share increases by 1.29 points on average, holding all else constant. Model 2 predicts that the first disaster declaration results in an additional 2.17 point addition to the presidential vote share on average, holding all else constant. Because Model 2 includes the square root of disaster declarations, the second disaster declaration will have a smaller marginal effect of vote share, and the third declaration will have a smaller effect than the second, and so on. These findings suggest that presidential disaster declarations are effective in garnering support in elections.
- The rest of the variables are meant for control and are not surprising. Previous vote share, per capita income, change in per capita income, congressional partisanship, and competitiveness are statistically significant.

Extension: predictions

In this section, I will look at how well Model 1 performed in certain states. I chose to look at the states with the 5 largest variations in competitiveness across 1981 to 2004. Those states ended up being Arizona, Georgia, Massachusetts, Nevada, and New Hampshire. Looking at the visualization below, we can see that MA grew considerably less competitive over time. NV, NH, GA, and AZ all grew considerably more competitive over time.

I looked at the predictions relative to 3 of the most significant coefficients in the model, competitiveness, actual disasters, and fourth year in term.

All predictions before 1989 were made with the pre-Stafford era model. All predictions after 1988 were made with the post-Stafford model.

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## `summarise()` ungrouping output (override with `.groups` argument)
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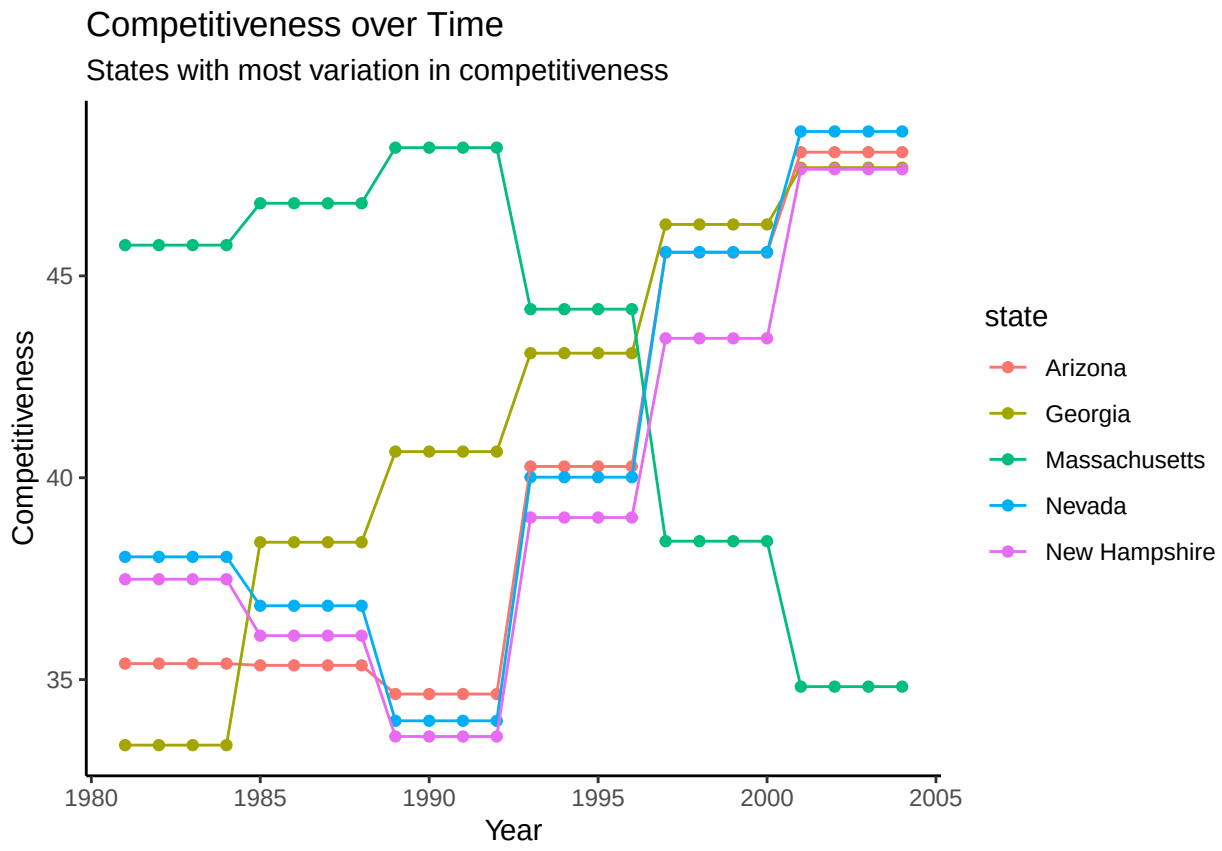
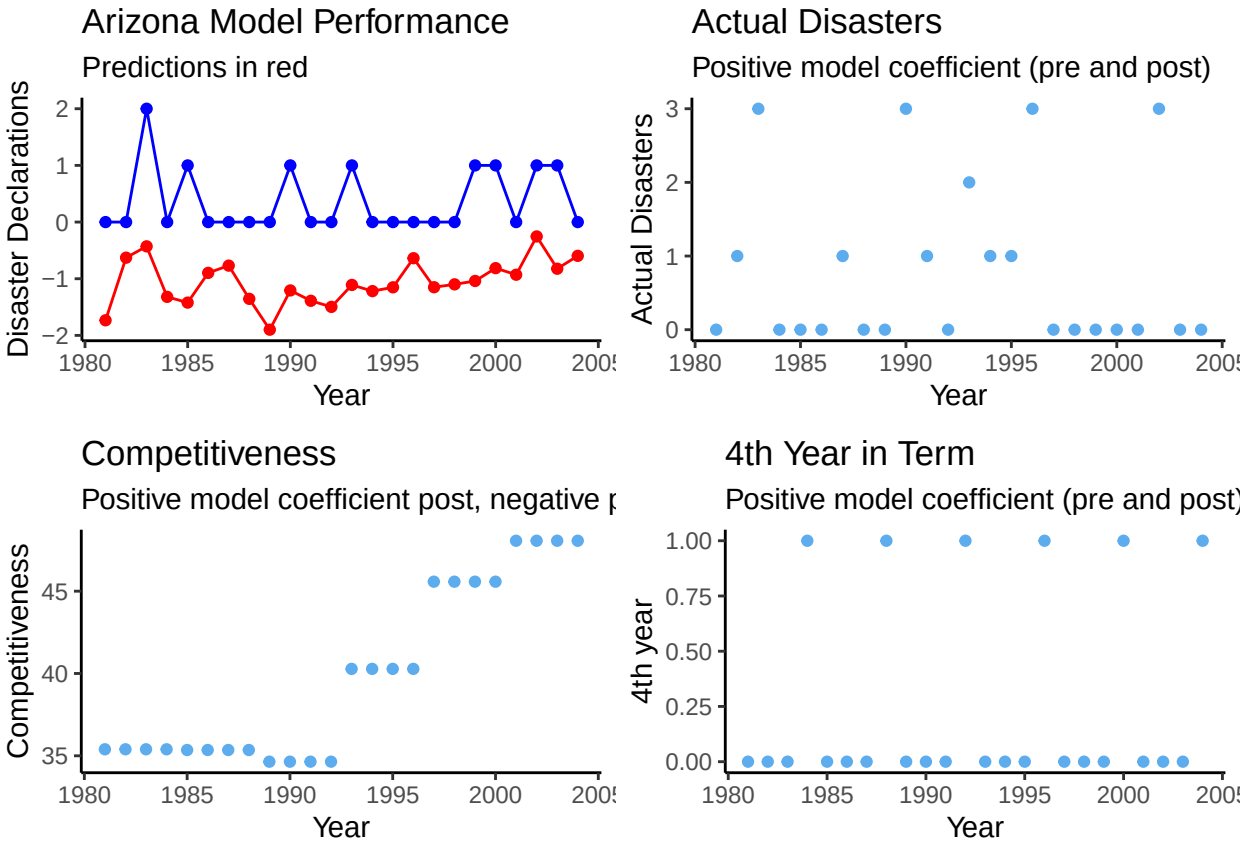


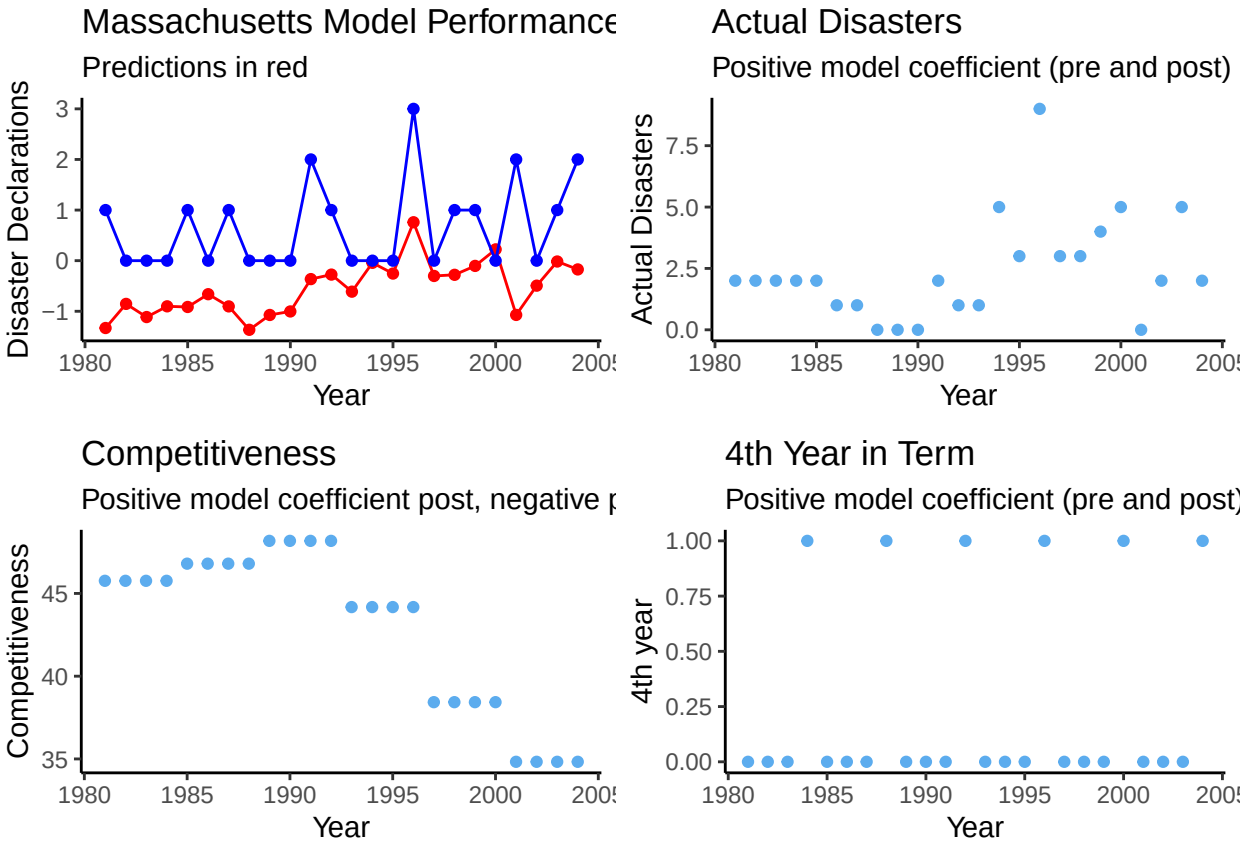
Arizona

Looking at the graphs below, the model consistently under-predicted disaster declarations in Arizona. However, we do see the model spike when the number of actual disasters increased, which is consistent with the model. Interestingly, we do not see the predictions substantively rise as competitiveness rise, although the predictions do rise slightly with competitiveness. Similarly, predicted disaster declarations do not seem to rise in the 4th term expect for one instance in 1996. In fact, they decrease in most fourth term years.



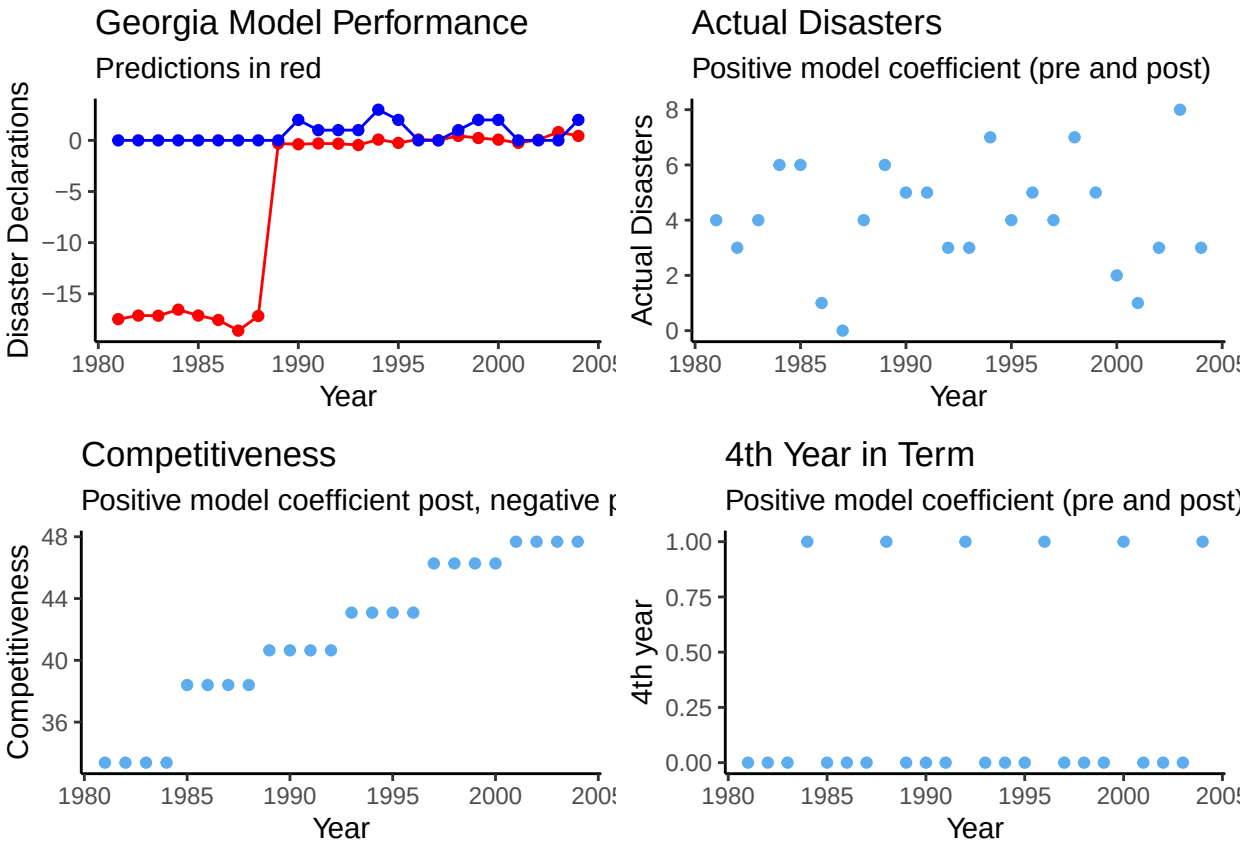
Massachusetts

Similar to the Arizona situation, the model consistently under-predicted disaster declarations in Massachusetts. We do not see the predictions lower considerably with the competitiveness decreasing. As with the Arizona predictions, the model seems to react more to actual disasters. We do see more of a reaction for the fourth year in term for Massachusetts.



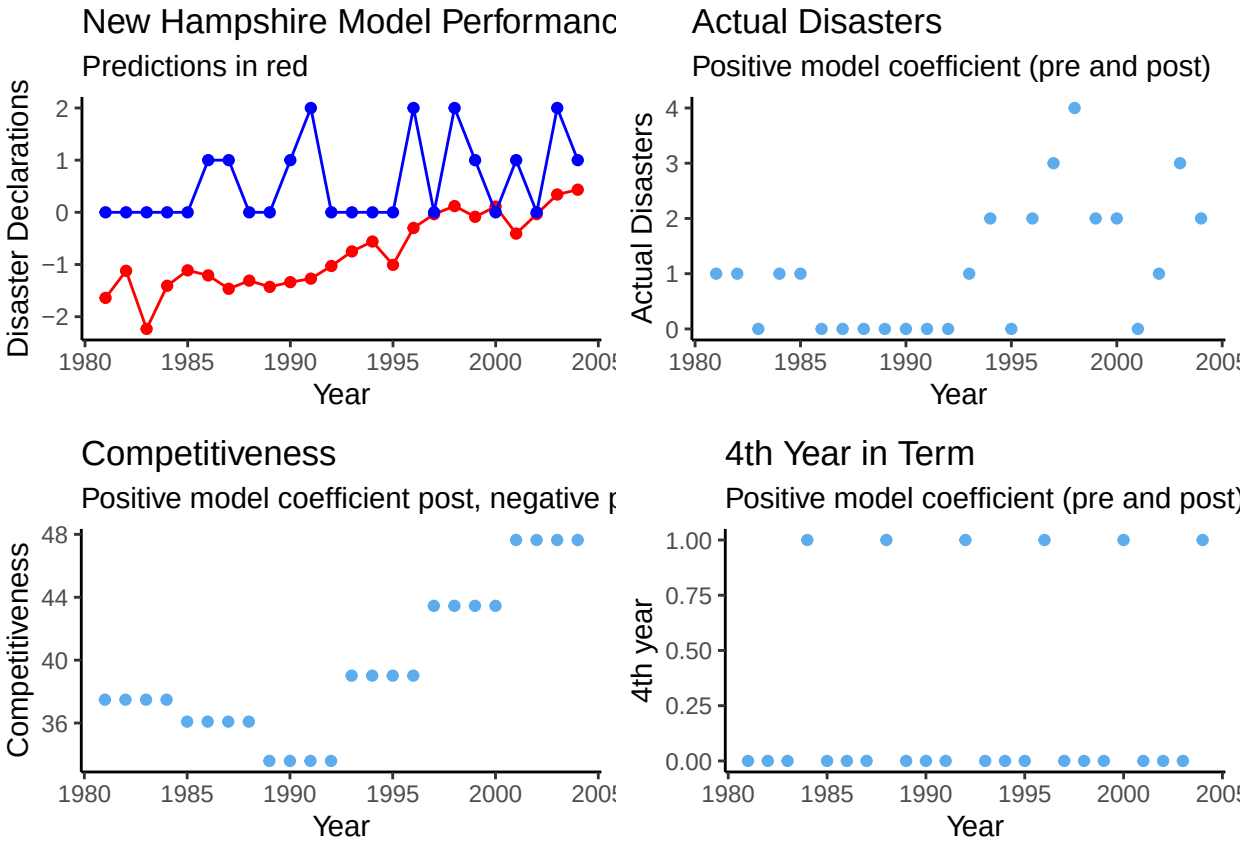
Georgia

The model massively underpredicts most years in Georgia, especially before the Stafford Act. I'm not sure what is leading to these drastic numbers, but it is worth looking further into. The model predictions do not seem to react in any real way to an increase in competitiveness, actual disasters, or it being the fourth year in term.



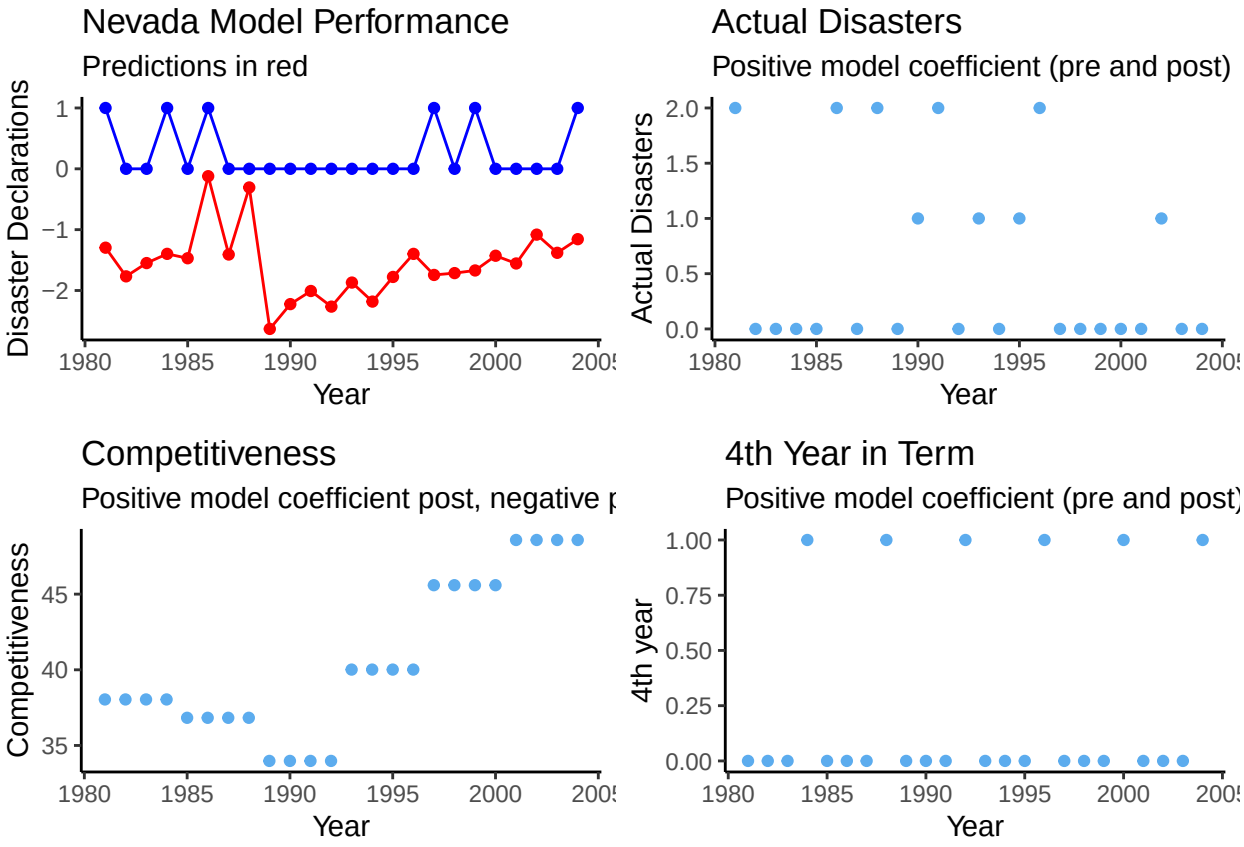
New Hampshire

The model seems to do a better job for New Hampshire. The predictions start to increase steadily from about 1990, when both competittiveness and actual disasters tended to increase. The predictions also seem to react very mildly to it being the fourth year in term.



Nevada

As is the pattern in the previous states, the model consistently underpredicts the number of disaster declarations in Nevada. However, We do see an steady increase in the predictions as competitiveness increases. The model also seems to react to the actual disasters, but not by as much I would expect it to.



Summary

Looking the the model performance in these 5 key states gives us insight into how the model reacts to changes in significant predictors. Evidently, the model consistently underpredicts the number of disaster declarations in these states. Moreover, the model seems to react very slightly, if at all, to competitiveness, actual disasters, and it being the fourth year in term.

Another Proposed Extension

Another possible extension to this model (which I will not look too far into in this report) would be to extend the concepts of electoral incentives to Covid-19 relief. It is well documented in political science research that politicians tend to give "incentives, or"political pork" to especially important regions in the country and that this extra federal spending often results in an increase in vote share. [2] Thus, it is possible that differing levels of COVID-19 relief could have affected the 2020 election. On the other hand, there is a good possibility that this federal spending did not affect the election, as more recent research has suggested that presidential approval has become increasingly less motivated by economic activity. [3] With this is mind, it is also possible that the effects and concepts Reeves found in his paper are no longer applicable today. Further research should dive into the durability of Reeves's model in the 2010's and 2020's.

Conclusion

[2]Kriner, Douglas., and Andrew Reeves. "The Influence of Federal Spending on Presidential Elections." The American Political Science Review 106, no. 2 (2012): 348-66. Accessed May 6, 2021. http://www.jstor.org/stable/41495082.

[3]Donovan, Kathleen, Kellstedt, Paul M, Key, Ellen M, and Lebo, Matthew J. "Motivated Reasoning, Public Opinion, and Presidential Approval." Political Behavior 42, no. 4 (2020): 1201-221