Discrepancies in Student Voting Based on Course of Study

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Abstract: It is clear from the raw cross tabular data from the Tufts University NSLVE project that college students who major in STEM fields turnout at a much lower rate. There is not any real academic literature on this issue specifically. In this study, I explore potential reasons why this trend exists and then test these potential phenomenon with a logistic regression model. In doing so, I will be testing to see if these phenomena has and effect on voter turnout in the last election (2018 midterm) and whether is has an effect on voting intention for the 2020 general election.

A Brief Literature Review:

Theory is well established on what makes voters more likely to vote (Verba, Schlozman, and Brady, 1995). There are three main factors that are commonly thought of in this literature that outline why voters *don't* turnout. The main one that is relevant in the case of STEM students is that *they do not want to*. College campuses are rife with political activism and university sponsored recommendations and encouragements to get out the vote (this is certainly true at Iowas State). Ideas of peer influence on the perceived importance of voting is especially relevant on college campus (Glynn, Huge, and Lunney, 2009; McDevitt & Kiousis, 2007). Specifically at Iowa State, STEM students voted ~20 points below where the rest of students at Iowa State voted in 2016.

What the Students think the Problem is:

In a survey sent to all undergraduate and graduate students at Iowa State University via email, I ask respondents to answer a slew of questions designed to key in on trends in what differences there are in perspectives on particular things. It is unclear that STEM majors, in an abstract sense, think that it is valuable for them to vote.

Proportionally, STEM students do seem to think that their votes matter (at least relative to what non-STEM majors think) but they also, generally, are less apt to think that voting matters (but only slightly).

The part of this exploratory survey (1090 respondents of which 651 were stem majors) that I took the most away from was the qualitative analysis of the free response. I created a word cloud (*fig. 1*) that helped me narrow down what observations to look at. I then read through all of the responses with words that are large in the bubble to get more of a background on their meaning in context. “Lack” was used to describe “Interest” and “Time” and while both of these are notable, lack of interest is something that was also prevalent among non-stem majors. The lack of time, however, is something that many of the stem majors who took the survey cited as reason that they or their peers were not civically engaged. “Time” is, notably, one of the biggest words and in almost every instance was used to describe not having enough time in some way. “Busy” is another word that is of note as it can, perhaps, explain the reasons why there is a lack of time. Respondents commonly talked about how there isn’t enough time for political engagement because of the classes that they take. This is, seemingly, something that both stem and non-stem majors agree upon. There is a lot of mainstream writing on how STEM majors are far more difficult course load wise than other degree plans (Drew, 2011). I would imagine that this sort of idea is motivating the responses here. “Issues” and “Candidates” being present also seemingly stems from (pun intended) from this idea that STEM majors do not have the time to become informed on these issues. This, then, begs the question, do these concepts actually serve as a function of voter turnout and voting intention?

There was an additional question which offered four concepts that I had anecdotally read that I thought I would offer up. This was to see which of the reasons the students thought were most prevalent reasoning for why stem student turnout was so low. The concepts included: “The belief that mathematically speaking, any one individual vote doesn't matter”, “The belief that government and who is elected to it aren't important”, "Lack of time due to course load”, "Lack of discussion on these topics in classes”. Students were allowed to pick anywhere from all to none of these options. The most chosen

option was the response associated with the lack of time from the courses that they take.

Methodology:

I conducted a second survey (583 respondents of which 348 were stem majors) that asked questions regarding these issues. I then created a simple logistic regression model that would predict the relationship between the responses to the questions that are informed by the first survey. I ask the respondents to rate the difficulty of their classes from 1-10 (`class_difficulty`). In conducting a t test to compare the means of the distributions of this variable between stem and non-stem majors, it is statistically significant how much higher the stem majors' responses to this question are. In fact, all of the variables going forward are statistically significant in the "less civic" direction for stem students compared to their non-stem counterparts. The meaning of this should be clear as I describe the rest of the variables. Respondents also were to describe the difficulty of their degree plan relative to the *average* Iowa State student (`difficulty_comparison`) and the amount of hours outside of class that they spend studying or on schoolwork (`hours_outside_class`). This covers the concept of time from schoolwork from the qualitative analysis of the first survey. Another concept I wished to measure based on the first survey was the amount of political communication between students was present (`political_comm`) and then how often political issues were discussed in class (`politics_lecture`). Additionally I block the model by the factor `stem_dummy`.

Discussion of Results:

If we look at *fig.2* and *fig.3*, we see that, off the bat, that the stem_dummy has such a high standard error and a non-significant p value which points to it not being whatsoever predictive of the voting status from the 2018 midterm or the intention to vote in the 2020 general election. In fact, seemingly, the class difficulty variable also lacks the significance or the precision of measurement. Even so, we know that stem majors are significantly more likely to report that they do not discuss politics among each other and they also deem themselves to, for the most part, have a harder degree path than the average student. This comparison question may even measure this phenomena more accurately. We see high significance, high effect of coefficient, and relatively low standard error values especially in back

predicting whether the respondent voted in 2018. I anticipate that there is a lot of social desirability bias present in the intention for voting in 2020 dependent variable as it is very easy to say that you will vote at some point in the future. Additionally, voting in a non-presidential election year is much more of an indicator of civic engagement comparatively (Campbell & Mann 2016). It seems as though that, though it is not significant at an alpha of 0.05, the lack of talk about political talk in lecture is also a significant factor.

Where to go next:

I think that the survey methodology could be greatly improved with more resources. A randomized stratified, rather than a blanket send out, would have improved the results. Additionally, having more different indirect ways of asking questions about these concepts is something that I think the surveys could be improved upon.

Replication Materials:

https://github.com/zmj99/stem-analysis

fig. 1

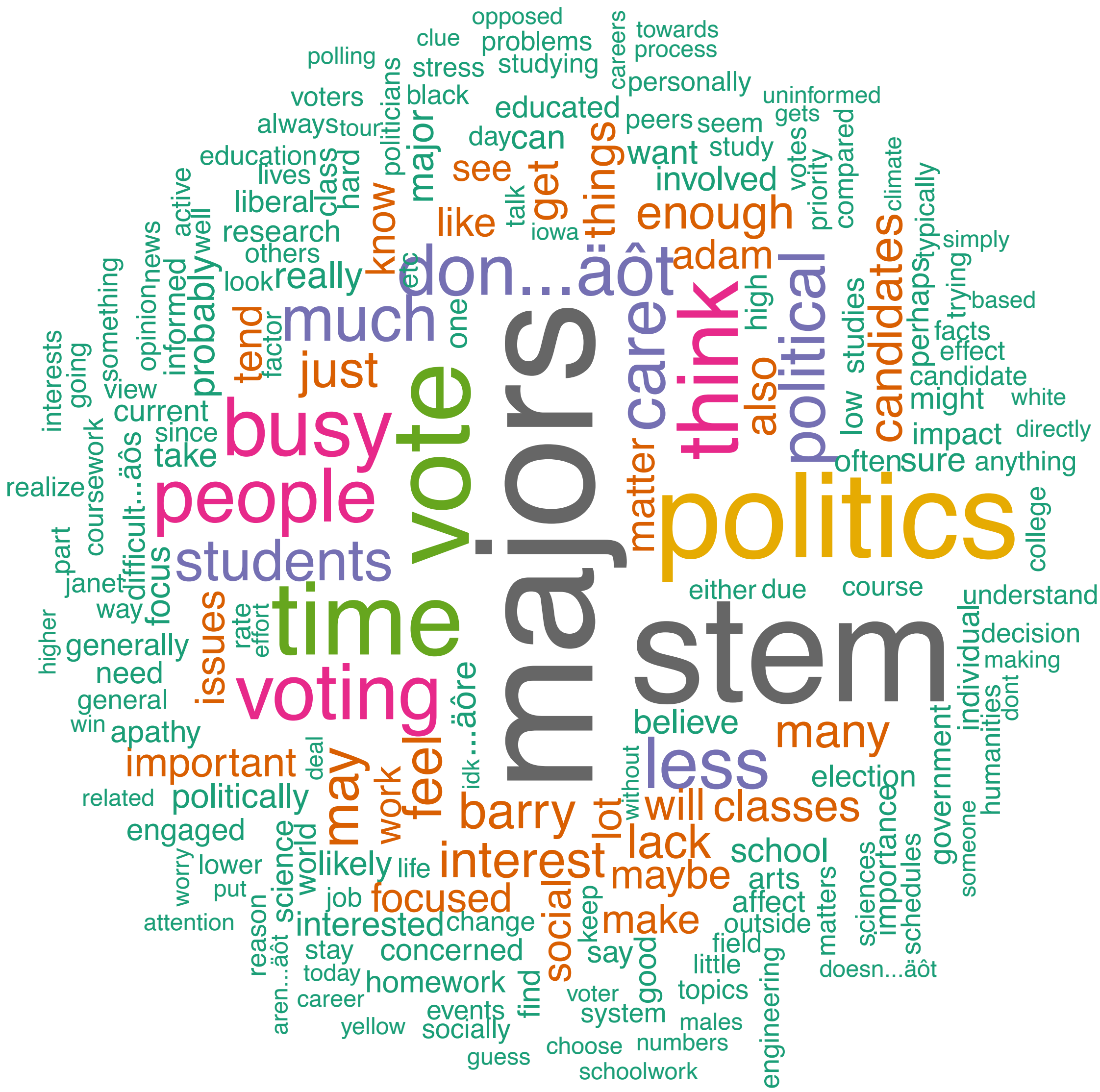

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fig. 2

2020 Vote Intention

	Dependent variable:		
	Whether the Respondent Anticipates They eill be Voting in the 2020 General		
	(1)	(2)	(3)
class_difficulty	0.017		-0.014
	(0.158)		(0.146)
difficulty_comparison	-0.090	-0.105	
	(0.192)	(0.165)	
politics_lecture	-0.049		-0.325
	(0.271)		(0.243)
hours_outside_class	-0.039		-0.034
	(0.133)		(0.127)
political_comm	-0.567**	-0.579***	
	(0.223)	(0.207)	
stem_dummy	0.400	0.380	0.167
	(0.461)	(0.445)	(0.426)
Constant	4.465***	4.408***	3.816***
	(1.141)	(0.911)	(1.081)
Observations	583	583	583
Log Likelihood	-127.625	-127.683	-131.267
Akaike Inf. Crit.	269.251	263.366	272.534
Note:			*p<0.1; **p<0.05; ***p<0.01

fig. 3

2018 Vote Status

	Dependent variable:		
	Vote Status in 2018		
	(1)	(2)	(3)
class_difficulty	-0.013		-0.052
	(0.080)		(0.074)
difficulty_comparison	-0.135	-0.161**	
	(0.095)	(0.082)	
politics_lecture	0.084		-0.100
	(0.124)		(0.111)
hours_outside_class	-0.049		-0.058
	(0.067)		(0.064)
political_comm	-0.344***	-0.310***	
	(0.104)	(0.094)	
stem_dummy	0.212	0.243	-0.020
	(0.239)	(0.228)	(0.218)
Constant	1.962***	1.952***	1.604***
	(0.523)	(0.414)	(0.506)
Observations	583	583	583
Log Likelihood	-364.741	-365.306	-371.323
Akaike Inf. Crit.	743.481	738.613	752.646
Note:	*p<0.1; **p<0.05; ***p<0.01		

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