STRATEGIC VOTING: TO SWITCH OR NOT TO SWITCH

Analyzing how perceived vote strengths, state swing affects behavior in North Carolina and Missouri

INTRODUCTION

Many young adults find themselves in a new state when they go off to college. This presents a whole host of opportunities and challenges, from being able to explore a new environment to being—potentially—far away from home. Every four years, though, college students are presented with a unique opportunity. As many attend four-year institutions, they are guaranteed to experience a presidential election. However, they are confronted with an interesting dilemma: now that they have a new address in possibly a new state, do they change their registration? One element of strategic voting is rooted in the idea that assuming people want to make their vote count as much as possible, they will make choices that allow for that to happen.

Thus, when students move to a new state they have the ability to change where their vote is counted. If they perceive that their vote will count more in their home state, they may choose not to change their registration. However, if they believe that their vote will count more in the state they attend college, they might choose to change their registration. Theoretically, if they practice strategic voting, they may have a greater impact in presidential elections. But, do students take advantage of this opportunity, and why?

RESEARCH QUESTION: What motivates college students to change their registration?

H₀₁: The margin of expected victory in the presidential election for a state will not affect registration choice.

H_{A1}: Students are more likely to register in a state with a small margin of expected victory in the presidential election.

 H_{02} : The perception of a state as swing or solid will not affect registration choice. H_{02} : Students are more likely to register in a swing state.

To approach this question, we looked at two different states in two different elections: North Carolina in 2008 and Missouri in 2016.

METHODS

To collect data from Washington University students in St. Louis, Mo. we created a nine-question survey, which asked students questions about what their home state is, where they voted, why they voted in the state that they did, how interested in politics they are, and whether they believed voting in the state that they did would have more influence. We also included some demographic questions including gender, race/ethnicity, and the year they began their undergraduate studies. We incentivized students to take the survey with a chance to win a \$50 Visa gift card.

To obtain data from North Carolina, we used our professor, Jacob Montgomery's, data he collected after the 2008 election at Duke University. We kept the questions we asked consistent in language with the questions he asked in his survey.

In each election, for each state, we created a variable called "state_margin" in which we found the difference between the predicted outcome of each state from the polls and the actual vote percentage count.

We then defined a "swing state" as any state that has a margin of 5 points, thus—if students are voting strategically—they would consider the states they could vote in and choose the one with a smaller margin.

By this definition, North Carolina was a swing state in both elections. Missouri, however, was a swing state in 2008 and not so in 2016. We chose to look at the question of margin from a data-driven perspective of what is and isn't actually a swing state. However, students aren't necessarily attuned to the sheer numbers, but more their perception of what is generally a swing or solid state. Thus, they might choose to switch even though the state wasn't considered a swing that year—i.e. like in Missouri's case.

In working with our data in R, we ran a series of regression and chi square tests on our data as we:

- created new variables which paired each home state with the margin of the vote that year (duke/wustl \$state_margin) and subtracted the margin of the state of interest to created (duke/wustl \$mar.diff)
- created new variables which coded state of interest (Missouri or North Carolina) as a 1 and all else with a 0 (duke/wustl\$switch)subset data into swing and solid states and tested each set (Solid08/16;Swing08/16)
- created objects which link the percent of respondents who switched for each state and the margin difference for each state
- plotted these object to show for each state what percentage of respondents switched their registration.

RESULTS & ANALYSIS

GRAPHS FIGURE 1: DUKE FIGURE 2: WASH. U. FIGURE 3 (CHI SQUARED TEST DUKE): We can reject the null hypothesis H₀₂ (p-value 4.766E-16) FIGURE 3 (CHI SQUARED TEST MASH, U.)

FIGURE 2: WASH. U.

Registration in Solid vs. Swing states

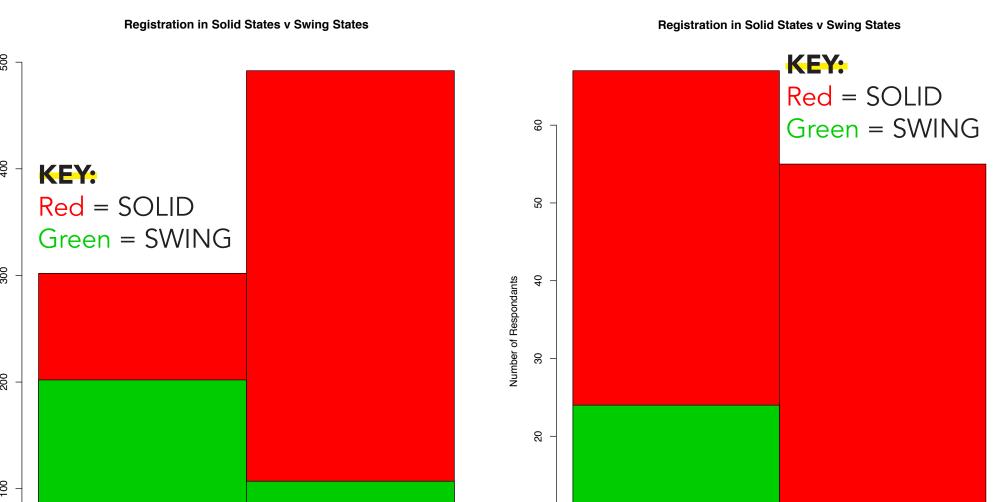
Registration in Solid vs. Swing states

Registration in Solid States v Swing States

FIGURE 2 (CHI-SQUARED TEST WASH. U.):

We can reject the null hypothesis H₀₂ (p-value .009059)

FIGURE 3 (DUKE REGRESSION): Switching or not versus difference in margins



y=0.144x+0.3938 **FIGURE 4 (WASH. U. REGRESSION):** Switching or not versus difference in margins
This graph displays where students voted with the larger the state abbreviation,
the more students who voted in that state. This graph shows that if the margin for

a state was greater more people would register in North Carolina.

will change their registration increases by .0144.

that someone will change their registration is: 0.3938.

a state was greater more people would register in Missouri. This model predicts that for every one point increase in difference in winning margins between home state and Missouri, the probability that someone will change their registration increases by .012. This result is statistically significant.

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the more students who voted in that state. This graph shows that if the margin for

This model predicts that for every one point increase in difference in winning

margins between home state and North Carolina, the probability that someone

This model also predicts that when there is no difference in margins, the probability

This model predicts that when there is no difference in margins, the probability that someone will change their registration is 0.356.

y=0.012x+0.356

FIGURE 5 (DUKE REGRESSION TABLE):

- We can reject the null hypothesis H₀.
- This test controls for the amount of political campaigns respondents watched/ interest, how close they viewed the presidential race, how much the respondents cared about the election, party affiliation/strength, gender, race, years at Duke.
- This indicates that with every unit increase in margin difference, there is a .014127 increase in the chance that the individual will switch their registration to NC.

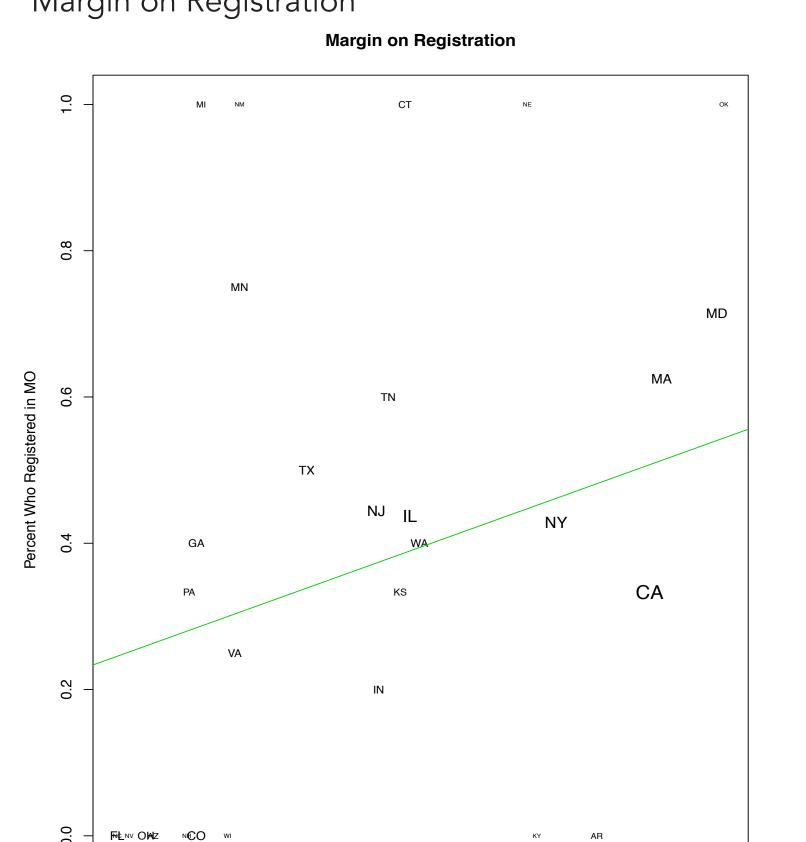
FIGURE 6 (WASH. U. REGRESSION TABLE):

- We can reject the null hypothesis H₀₁
- This test controls for political interest, gender, year WUSTL, race, and reason for registration in chosen state (open ended).

FIGURE 4: WASH. U.Margin on Registration

FIGURE 3: DUKE

Margin on Registration



Difference In Margin (from MO)

FIGURE 5: DUKE

Switching registrat	ion or not for NC		_
	Dependent variable	e:	•
_	Switching Registrati	on	_
Difference in margin	0.014***		
	(0.002)		
Campaign Interest	0.018		
	(0.029)		
Gender: male	-0.007		
	(0.031)		
ears as undergraduate	-0.008		
	(0.013)		
Race: Black	-0.012		
	(0.076)		
	-0.016 (0.093)		
Anna Markina dal			
Race: Multiracial	-0.182***		
N N	(0.067)		
Race: Native American	-0.668 (0.487)		
Race: Other	0.035		
cace: Otner	(0.139)		
Race: White	-0.130***		
tace. White	(0.039)		
trength of party affiliation	0.010		
acingai or party annuaron	(0.022)		
arty: Independent	-0.013		
	(0.063)		
arty: Republican	-0.094***		
-	(0.035)		
erception of race closeness	0.011		
	(0.032)		
nvestment in election	-0.030		ervations
	(0.045)	R ²	-
Campaign programs on TV	0.003		isted R ²
	(0.019)		dual Std. Error
Constant	0.502***	F Sta	atistic
	(0.086)	Note	

Difference in margin vs. switching registration

	Dependent variable:	
	Switching Registration	
Difference in margin	0.014***	
	(0.002)	
Constant	0.394***	
	(0.025)	
Observations	1,103	
R^2	0.048	
Adjusted R ²	0.047	
Residual Std. Error	0.486 (df = 1101)	
F Statistic	55.531*** (df = 1; 1101)	
Note:	*p<0.1; **p<0.05; ***p<0.0	

FIGURE 6: WASH. U.

	Dependent variable:	
-	Switching Registration	
Difference in margin	0.018***	
	(0.005)	
Political interest	0.080	
	(0.081)	
Gender: other	0.210	
	(0.257)	
Gender: woman	-0.043	
	(0.076)	
Years as an undergrad	0.051*	
	(0.029)	
Race: Black	0.169	
	(0.258)	
Race: Multiracial	-0.224	
	(0.152)	
Race: Other	-0.280	
	(0.211)	
Race: White	-0.143	
	(0.093)	
Reason: Defer to home state	-0.162	
	(0.135)	
Reason: Local	-0.292**	
	(0.133)	
Reason: Swing	0.275**	
	(0.126)	
Constant	0.125	
	(0.262)	
Observations	151	
R^2	0.334	
Adjusted R ²	0.276	
Residual Std. Error	0.418 (df = 138)	
F Statistic	5.772*** (df = 12; 138	
Note:	*p<0.1; **p<0.05; ***p<0	

Difference in margin vs. switching registration or not for MO

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	Dependent variable:	
	Switching Registration	
Difference in margin	0.012**	
	(0.005)	
Constant	0.356***	
	(0.043)	
Observations	151	
\mathbb{R}^2	0.035	
Adjusted R ²	0.029	
Residual Std. Error	0.484 (df = 149)	
F Statistic	5.435^{**} (df = 1; 149)	
Note:	*p<0.1; **p<0.05; ***p<0.01	

CONCLUSIONS & LIMITATIONS

With regards to our research design, we considered the following limitations:

- **SAMPLING METHODOLOGY:** while both samples from which we gathered our data were large enough to meet the assumptions of the tests we ran, both datasets were collected via a survey to which all voluntary responses came from one school within a state. Since our data was not gathered through simple random sampling, there was likely sampling bias both due to untrue responses and non-proportional representation of certain groups within the population of students who attend college out of state. Our survey was posted on Facebook class pages for only three days, so respondents were Facebook members who are active on social media and regularly check their Wash. U. class page. This subset of Wash. U. students are more active on social media than the average WashU student, which could be a confounding factor that influences strategic voting behavior.
- **DIFFERENCES IN SURVEY CONSTRUCTION:** the survey that Professor Montgomery administered at Duke University was far more elaborate than the one that was taken by Washington University students. Thus, more potentially confounding variables could be controlled within the Duke dataset.
- ARBITRARY DEFINITIONS: our expected margin of victory that we used to categorize states into "swing" and "solid" categories was chosen arbitrarily. Not only was it an arbitrary choice to consider the cutoff for expected margin of victory to be five percentage points, but it also was arbitrary to use FiveThirtyEight's polling data, which may have had its own inaccuracies, in determining what we would use as each state's expected margin of victory. Our arbitrary choice for margin of victory cutoff could also be problematic if organizations, like those that sponsor registration drives, consider states not in that margin as "swing."
- **SURVEY METHODOLOGY:** certain potentially confounding variables at least somewhat eluded both our survey and Professor Montgomery's. Among these underlying factors may have been down-ballot elections of interest, difference between states in terms of ease of registration and actually voting, and how much money outside organizations, such as the presidential campaigns, spend to encourage switching registration.
- ANALYSIS DOES NOT EXACTLY FOLLOW THE LAYOUT OF THE ELECTORAL COLLEGE: Each congressional district in Maine and Nebraska awards one electoral vote to the candidate who wins the district's popular vote, with each state then giving two additional electoral votes to the winner of the statewide popular vote. All other states award all of their electoral votes to the winner of the statewide popular vote. We used the expected statewide margin of victory for all states, including Maine and Nebraska, in our analysis, and thus did not account for the difference in expected margins of victory between those two states' congressional districts

CONCLUSION FOR H.:

As a result of our tests, we can determine that for both Duke and Wash. U. we can reject the null hypothesis as our results are statistically significant. Thus, we can claim that margin does influence where students choose to vote.

CONCLUSION FOR H₂:

As a result of our tests, we can determine that for both Duke and Wash. U. we can reject the null hypothesis as our results are statistically significant. Thus, we can claim that perception of being a swing or solid state does influence where students choose to vote.

When out-of-state college students choose between registering in their home state or the state in which they attend college, our results conclude that we should expect students to vote in the state that maintains the smaller margin. Furthermore, whether or not a state is within a margin, a student's perception of whether a state is a solid or swing state can affect where they vote. Thus, we would expect them to vote in the state that they perceive more as a swing. This behavior falls under the umbrella term of "strategic voting," or what an individual can do to increase the strength or impact of his or her vote.

Looking at Missouri and North Carolina was also particularly interesting as, using our definition of a margin, both were swing states in 2008. However, Missouri was not a swing state in 2016, with a margin of over 10 points, and yet our second series of tests account for that idea that Missouri may still be considered a swing state—especially to students coming from solid states like California or New York—even if not so from sheer definition.

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