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Let's Play a Game: A Game Theoretical Analysis of Conservative Voting in the 2016 Presidential Election in Utah

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Let's Play a Game: A Game Theoretical Analysis of Conservative Voting in the 2016 Presidential Election in Utah

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Introduction:

This study is intended to look at strategic voting behavior among conservatives in the state of Utah in the 2016 Presidential Election. This particular election is important and quite unique in that a third party, conservative candidate competed with the Republican candidate for victory in the state. With a viable third-party candidate to consider, conservative voters had a much more complex choice to make than they usually do in an election. We will model this choice and its outcomes to explain why the vote came out the way it did.

Research Question:

Did conservative Utah voters make a strategic choice in 2016, and can that choice be modeled using game theory?

Methods:

Vote choice among conservatives will be modeled using the following assumptions:

- Conservative voters choose only between Evan McMullin and Donald Trump
- Only Conservative voters choose between Evan McMullin and Donald Trump
- The conservative voter we model prefers Evan McMullin to Donald Trump, and Donald Trump to Hillary Clinton
- While our voter prefers Evan McMullin to Donald Trump, she only considers Donald Trump and Hillary Clinton to be serious contenders for the presidency. Thus, she prefers that Donald Trump win Utah in order to help him win the White House.
- While voters choose simultaneously who they will vote for, they have some expectation about what other voters will do. We will use projections from fivethirtyeight.com to serve as these expectations.

With these assumptions in mind, we can examine the information that will be available to our voters before they head to the polls. In this case, we use election forecast data for Utah from fivethirtyeight.com, a leading hub for polling and election projections, from November 7, 2016, the last day before the election – probably nearly the last information with which our voter makes her choice..

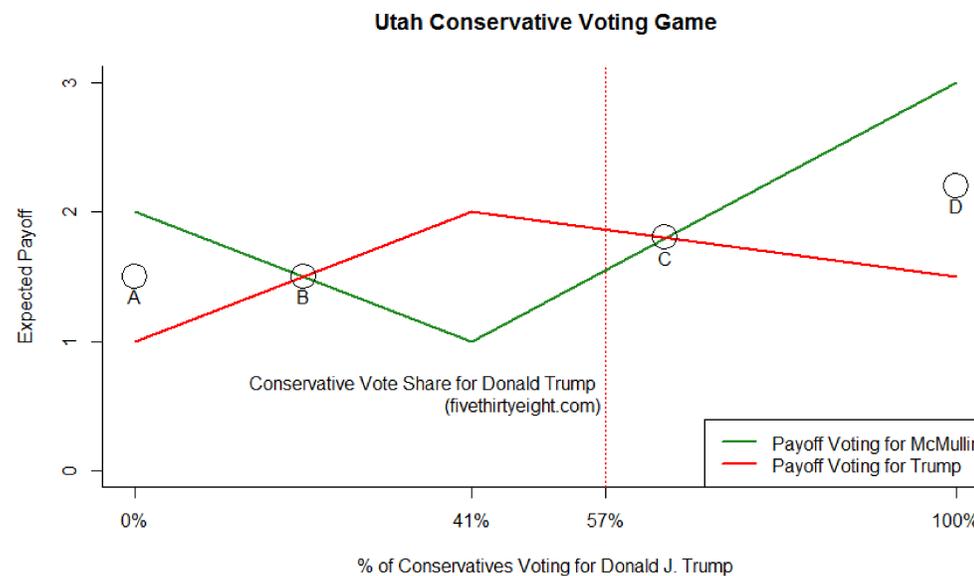
Fivethirtyeight.com Election Forecast November 7, 2016	
Donald Trump	37.5%
Evan McMullin	27.9%
Hillary Clinton	26.8%

From the election forecast table, we see that conservatives, who choose between McMullin and Trump, account for 65.4% of the total forecasted vote. Since 50% of 65.4 is greater than 26.8, our voter understands that no matter how the conservative vote is split, either Donald Trump or Evan McMullin will win Utah.

Considering the possible outcomes, we assign payoffs based on the voter's preferences:

Outcome	Payoff
McMullin Wins, voted McMullin	2, since she prefers Trump win
McMullin wins, voted Trump	1, since she voted in a non-preferred way and received a non-preferred election outcome
Trump wins, voted McMullin	3, since she votes in her preferred way and receives her preferred election outcome
Trump wins, voted Trump	1.5, since she received her preferred election outcome but voted in a non-preferred way

These Preferences and Payoffs are reflected in the following diagram:



Donald Trump needs at least 41% of conservative votes to defeat Hillary Clinton. He needs at least 50% of conservative votes to defeat Evan McMullin. The polls predict that he has 37.5 points out of the total 65.4 conservative points possible, which is a 57% conservative vote share – enough for him to win the state.

It is worth noting that in the Utah Conservative Voting Game, the highest payoff when voting for Donald Trump, our voter's non-preferred candidate, is at the 41% mark. This 41% of conservative vote share is the point at which Donald Trump wins the state of Utah. 41.5% of the 65.4% of total voters who are conservative is 26.8% of the total vote share in Utah, or the point at which a candidate has as many votes as Hillary Clinton. Our voter is much happier to be the person to tip the scale in favor of Trump than she is to vote for him under other circumstances.

Analysis:

Considering the game, we should now find its equilibria. Traditionally, on this type of game, we would look for equilibria in four places: A, B, C, and D.

At A and D, we can see that there is not an equilibrium. A player on either line would know exactly where she wanted to be (voting for Evan McMullin in both cases). At B, we can see that if we ever did end up at that point, there would be some indifference for a voter since the lines intersect, but if she got past that point, voters would want to go forward, so it is an unstable equilibrium. At C, though, voters are indifferent, and if pushed further down the red line, would retreat instead of going forward. This is a stable equilibrium. Point C is where we expect our vote share to fall.

Conclusion:

The model tells us that, although Donald Trump wins Utah if he gets 41% or more of the conservative vote, and polls already show him getting 57% of the conservative vote, he will continue to get more votes until he has accumulated 64.5% of conservative votes (point C). Evan McMullin will win the other 35.5% of conservative votes. Considering the popular vote in the state, the model predicts that they will win 42.18% and 23.22%, respectively.

The New York Times reported that Donald Trump won 45.1% and that Evan McMullin won 21.3% of the total vote in Utah.

Thus, with simple assumptions and a simple payoff scheme, we can represent the strategic behavior of Utah conservative voters in the 2016 Presidential Election.

References:

Projects.fivethirtyeight.com/2016-election-forecast/utah/
 Nytimes.com/elections/results/utah