Electoral Fairness and Borda Partitioning in American Politics

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Restatement of the Problem

Currently, the President of the United States is elected into office by an electoral college, indirectly from the popular vote. In the electoral college each state receives a number of votes that is equal to that state's number of congressmen (two senators plus a number of representatives is based on the state's population). The number of representatives is apportioned based on the current census data, and, in the case of the 1992 presidential election, the most current data was from 1990 census.

In each state, a popular vote is taken. Whichever candidate wins the plurality, or gets the most votes, wins that state and receives all of the state's electoral votes[1]. The candidate with the most electoral votes wins the election. The task at hand is to devise a new system of dividing up a state's electoral votes and to account for various scenarios, including one in which a candidate might lose the plurality by a minuscule margin in several states such as California, which have a great number of electoral votes (54), and then, by a large margin, carry many small states. It is possible for that candidate to have won a majority of the popular votes and still lose the presidential election, as in 1876 Hayes-Tilden (Blum). This forces candidates to campaign in a manner that targets key states (states with a large number of electoral votes), while other states are more neglected by candidates.

Assumptions and Justifications

- For an ideal model, amendments to the Constitution would be unnecessary because of the lengthy process involved.
- We will use the a modified Borda Count Method with weighting by states to decide electoral votes. The Borda Count uses the available information about all the votes, not just the votes for the winner. Also the Borda Count is the most effective manner in dealing with candidates who start late and/or quit early (Scientific American).
- The preference schedule is the ranking from 1 to *n* of *n* candidates of how many popular votes they amassed.
- Candidates earn electoral votes based on their placement in a preference schedule. A multiplier is assigned according to their placement in popular vote. The multiplier is less than 1 in all cases unless he is the only significant candidate in the state, in that case s/he gets all votes.
- Any candidate who accrues less than 5% of the popular vote in a state is considered insignificant in that state and is not considered in the preference schedule.
- No rounding was made in any of the Borda assignments.
- Just as under the current system, the new President is the person with a majority of electoral votes.
- A majority is over 50% of electoral votes.
- No electoral model can be entirely fair. This is shown by Kenneth Arrow's Impossibility Theorem (Saari).

Model Design

To start with, we decided it was necessary to use a system that accounts for close second finishers. This modified Borda count uses the preference schedule to partition votes.

Our next goal was to eliminate the problems of someone focusing on a few states to capture electoral votes and force them to spread their campaigning around to capture second place in the event of a three major candidate elections. The Borda Count method assigns a multiplier to candidates, with the highest multiplier going to the most popular candidate. The model for the multiplier is outlined in the flowchart figure 1.

The votes for each candidate (V_c) were then calculated using this multiplier and the number of electoral votes per voting district (E_s) using :

The algorithm then decides whether the candidate

$$V_c = \sum_{s=1}^{51} \left(E_s n \Big/ \sum_{i=0}^{n-1} (n-i) \right)$$

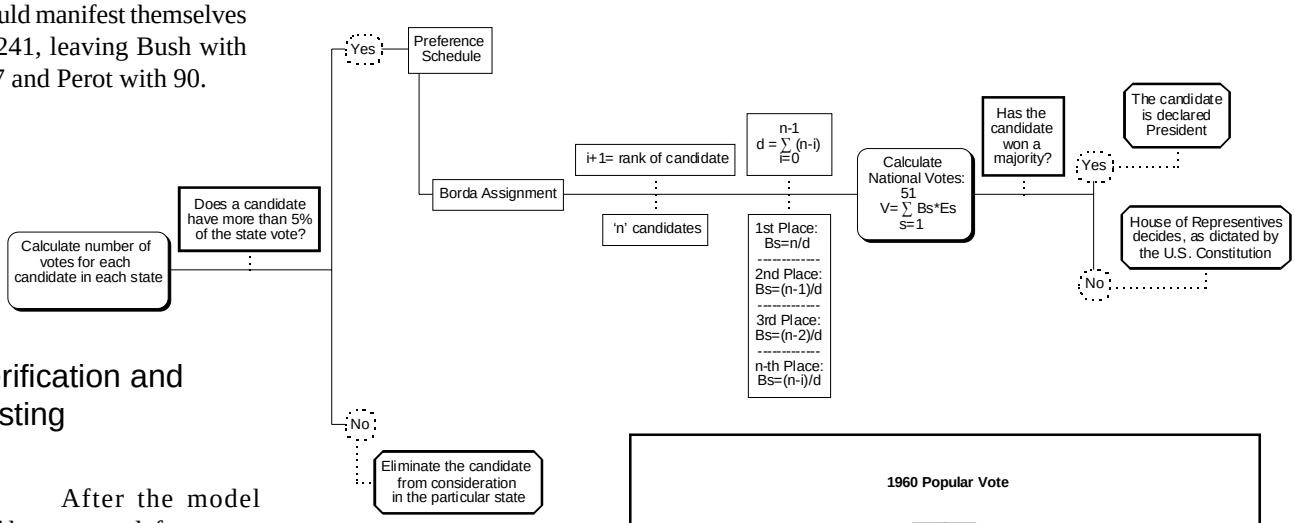
[1] This is true with the exception of Maine and Nebraska, which split their votes by voting districts.

has won a majority of the calculated electoral votes (to comply with the Constitution). If the candidate has won a majority, then s/he is declared the President. Otherwise, the burden is placed on the House of Representatives, which then makes the final decision.

When the algorithm is carried out, the V_c could be a rational number. In actuality, electoral votes are integers, so our model would call for rounding the calculated electoral votes to the nearest whole number at the final tabulation. Using the standard rounding procedures; that is, round down for 0, 1, 2 , 3, 4 and round up for 5, 6, 7, 8, 9. Therefore in 1992, the 240.7 calculated electoral votes for Clinton would manifest themselves as 241, leaving Bush with 207 and Perot with 90.

Nixon and Kennedy

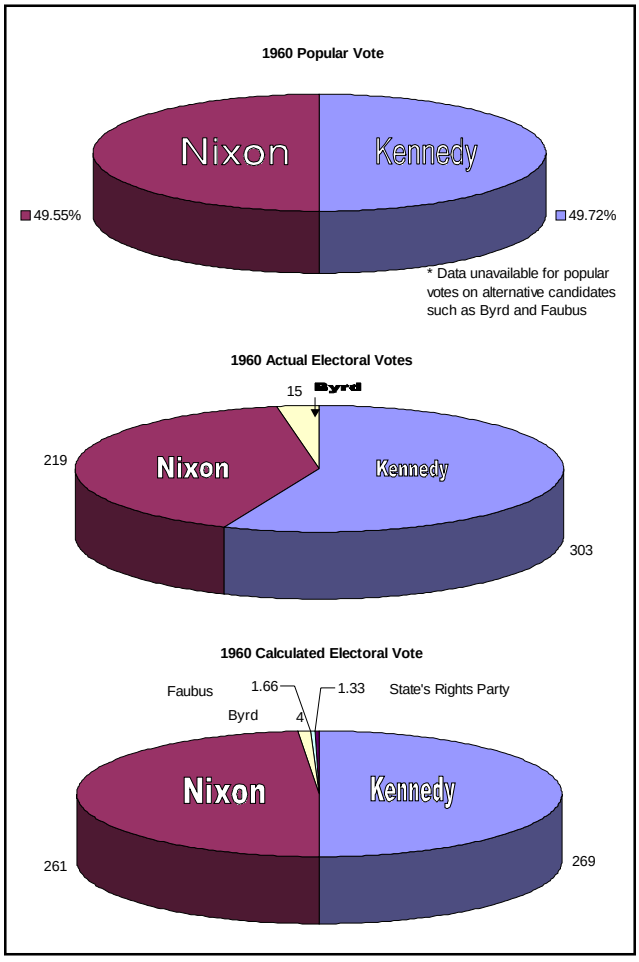
Figure 1: Vote Assignment Algorithm



Verification and Testing

After the model had been created, four types of elections were tested, including an election in which a third party candidate was significant (more than 5% of the popular votes per state) (1968), an election with only two significant candidates who earned a nearly identical number of popular votes with minor 3rd party regional candidates (1960), and a two candidate election in which the result was a landslide (1984), in addition to the 1992 data provided using information from the *U.S. Election Atlas*.

The algorithm was run these four real life scenarios to verify historical validity:



1960

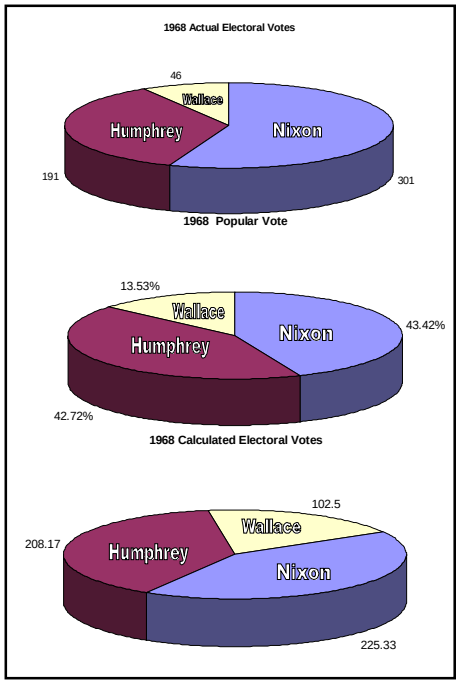
This election was significant because two major party contenders squared off in an extremely close race while being challenged by local third party candidates in Louisiana, Arkansas, and Mississippi.

While Kennedy did not achieve a popular majority, he did receive an electoral majority and an extremely narrow electoral majority in our system. This confirms historical results and supports Kennedy's narrow popular victory. Moreover, had the election gone to the House (it didn't in our tabulation), the 1960 Democratic majority in the house would have probably resulted in a Kennedy victory ("Political Divisions").

1968

This election was chosen because Wallace presented a significant third party threat to major party candidates in the Deep South. This is the only election that might be impacted by the introduction of a new system.

Because a majority was not achieved, Nixon's electoral and popular plurality might have been challenged by the Democrats' control of the House of Representatives - a possible overturning of the national election ("Political Divisions"). Realistically, however, the same division between Wallace and Humphrey would have divided the Democratic 1968 bloc and sustained Nixon's win.



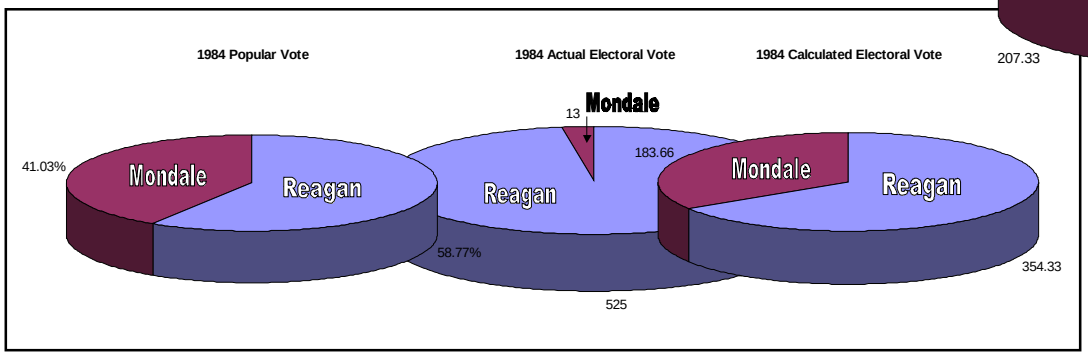
Humphrey and Nixon

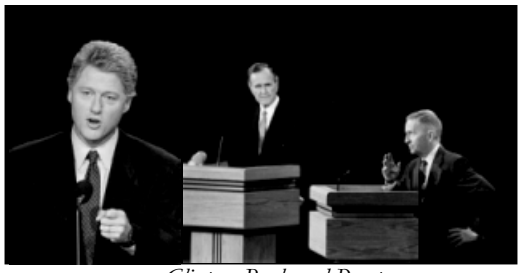
1984

This election was chosen to ensure that a clear electoral and popular victory by a candidate would not be overturned by the introduction of the new system.

Although Reagan's electoral victory was diluted significantly, Reagan's victory was still sizeable.

Regan and Mondale

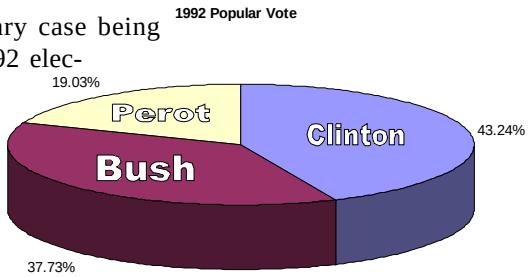




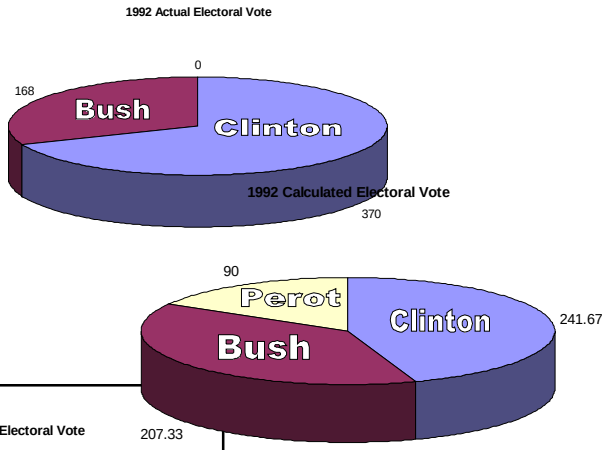
Clinton, Bush and Perot

1992

The primary case being considered, the 1992 election is unique among U.S. presidential elections with strong 3rd party contenders because Perot drew support from both sides of the aisle. In the algorithm being introduced, the election would go to the House where each state would receive one vote. Because of the Democrats' control of the house, the election would have probably gone toward Clinton.



Because Perot operated outside the party system and was only a newcomer to the political scene, he would have been unlikely to garner a significant number of votes from the House.



Verification and Testing Overall Results

Each of the trials presented an outcome that was consistent with both the traditional electoral and popular votes. The most significant departure, however, was the introduction of the House of Representatives into the process in the 1968 and 1992 elections. While this has been a rarity in recent years, the historical precedent for the process is strong. Moreover, the introduction of this deciding factor has contributed to the development of two strong major parties, a source of strength for the political climate of America (Abramson).

Discussion

Our algorithm (see Appendix A) is superior to the current system because it will become important to win states as a whole, but the model will dilute the power of large states such as California and New York to determine the next president. This is important because based on the results of Nixon's 1968 election, Richard Scammon showed it was possible to win the presidency while only carrying the Northeast states and California, known as the Quadcali strategy (Scammon 70). Since there was a majority of electoral votes in these few states, Nixon could have completely neglected the needs of all of the other states. Under our algorithm, any candidate who takes the Quadcali strategy would lose valuable second place votes in the other states, which will turn the tide in an election.

Our model maintains the current electoral college system at a national level. It does not change the way electoral votes are apportioned among states, total number of electors, or the number of electors required to win nationally, merely the way a state divides the electoral votes that it has at its disposal. Therefore, constitutional changes at a national level would not be required. The plan could be adopted gradually, on a state by state basis.

A winner-take-all electoral system tends to turn national popular vote pluralities into electoral college majorities. A candidate with a plurality of 40% of the popular vote will almost always win at least the 270 electoral votes required to win a presidential election. Our system more accurately represents a candidate's popular vote showing. A candidate with a 40% plurality probably will get less than 50% of the electoral votes. Yet this new system maintains precedent in that it is still important to win individual states rather than a purely popular vote system, which would be render the role of states insignificant. Under our system more elections with one or more significant third party candidates or very close two major candidate races would be decided by the House of Representatives, as defined by the Constitution.

However, the model does have some problems and drawbacks. For instance, it seems likely that a large portion of the elections will be sent to the House of Representatives to be decided there. Although this political precedent has produced and maintained a strong two party system, frequent use of this method could cause political instability. The results of the election would then depend on the political makeup of the House. If we had more time, additional experimentation would be done to determine the ideal modifications to the Borda multiplier assignments, and to verify the fairness of our modified Borda assignment.

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Source code and data available upon request, <jbg@caltech.edu>.