

“The electors shall meet in their respective states”: Bias and the US Presidential Electoral College, 1960–2012[☆]



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A B S T R A C T

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American Presidential elections are indirect, reflecting popular support for the candidates through the institution of the Electoral College to choose the President. In common with other plurality-based electoral systems, the College tends to exaggerate the apparent mandate received by the winner of the popular vote but, on occasion, can deliver victory to the second-placed candidate. Despite a sizeable literature on its operation and vagaries, however, relatively little attention has been paid to the question of systematic bias in the College: does one party receive a consistent advantage over the other from the College's operation? The paper examines the evidence for such a bias in each Presidential election since 1960. Although biases have occurred and in some cases were substantial, neither major party is a consistent beneficiary; the prime source of bias is to be found in the relative effectiveness of parties' own vote-winning strategies.

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An assumed property of most electoral systems is that they consistently deliver the ‘right’ result, such that the most popular party will win the most seats in the elected chamber. In plurality systems, this extends to the formation of governments: a plurality in the popular vote is supposed to translate into a majority of representatives. However, this is not inevitable: the candidate or party most popular in terms of vote share can lose out to a less popular one. These events, though generally rare, raise troubling questions about the legitimacy of the electoral process. They also highlight a central concern of electoral geography, the way in which the geography of party support and the rules of the electoral system interact to affect the outcome of elections (Gudgin & Taylor, 1979). Johnston (2005) pointed out nearly a decade ago that the issue of biased election results addressed in Gudgin and Taylor's classic work, where one party has an advantage over its opponent because of the geographies underpinning the operation of electoral systems such as the American, had received little attention among American electoral geographers – unlike the comparable situation in the United Kingdom (Johnston, Pattie, Dorling, & Rossiter, 2001; Johnston, Pattie, & Rossiter, 2013). This paper remedies that omission by applying a standard methodology for identifying the extent

and reasons for such bias to the results of the last fourteen US Presidential elections, with particular reference to the 2012 contest.

The Electoral College used to elect US Presidents throws up validity problems on occasion, most recently in the 2000 election (Edwards, 2011). In the nationwide popular vote, Al Gore, the Democrat candidate, gained 540,000 more votes than his Republican rival, George W Bush (their national vote shares were 48.4 and 47.9% respectively). But the outcome came down to the result in Florida, where a wafer-thin Bush win (by just 537 – contested – votes) delivered all 29 of that state's Electoral College votes into the Republican camp, taking him over the 270 College votes required for victory (Erikson, 2001; Hill & McKee, 2005; Shelley, 2002; Warf, 2006; Webster, 2002).

It is worrying enough that electoral systems occasionally deliver the ‘wrong’ winner. But if this is random in its effects, with candidates of all main parties equally likely to benefit or suffer from – albeit rare – perverse outcomes across a sequence of elections, proponents of a given system might feel justified in continuing to support it despite the risk of occasional aberrant outcomes. But what if the electoral system is not even-handed over time in how fairly – or unfairly – it treats parties? Of particular concern are situations where the ‘wrong’ result occurs because of a systematic bias, making it easier for one party to win power than for another of similar popularity. In this paper, we ask whether such a systematic bias exists in US Presidential elections and, if so, which party is favoured?

[☆] Constitution of the United States, Twelfth Amendment.

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Geography and election outcomes

Perhaps the dominant theme within electoral geography is the explication of how context affects voter decisions. Why, for instance, do Democrat candidates tend to perform well in urban communities especially in the north-eastern and west coast states of the USA, while Republicans are more successful in more rural and heartland areas (for reviews see Johnston & Pattie, 2006; Leib & Quinton, 2011)? To some degree, the answer can be traced to the social and economic make-up of different communities (e.g. Warf, 2011). But it also reflects variations in factors such as party campaign strategies (Johnston, 1987; Pattie, Johnston, & Fieldhouse, 1995) and the contingent social construction of place (Agnew, 1987, 1996).

However, by focussing largely on what influences voters' decisions, research in this vein misses the key step in most elections: the translation of votes into elected office. This involves the interaction between the geography of the vote and the rules of the electoral system (Johnston & Pattie, 2006, chap. 8; Johnston, Pattie, Dorling et al., 2001). Understanding this interaction helps reveal the extent to which a given electoral system produces in-built and sometimes unacknowledged or even unknown biases. Most electoral systems mask these biases (whether deliberately or not) under a rhetorical commitment to giving the voters the direct opportunity to pass judgement on their politicians. In a few systems (that for the election of American Presidents being a case in point), the gap between the rhetoric of popular control and the reality of elected power is somewhat greater. Not only do Presidential candidates have to woo American voters, but they (and crucially) have to do so while ensuring they win in the Electoral College, the body constitutionally charged with choosing the President. In this paper, we discuss how geography helps create partisan biases in the operation of America's Electoral College. We begin that process by reviewing how the College operates.

How to elect a President: the Electoral College

Presidential elections in the USA are unusual among major democracies, in that American Presidents are chosen not by direct popular ballot, but indirectly by the Electoral College (Edwards, 2011; Warf, 2009). Each state in the Union is allocated a number of electors in the College, equal to the state's Congressional representation. Every state has two members of the US Senate. Each state's representation in the House of Representatives, meanwhile, is roughly proportional to its share of the national population – given that each is guaranteed one seat – and Congressional districts are redistributed following each decennial census to reflect this. At the 2012 Presidential election, House delegations varied from just one Representative from Wyoming (the smallest state) to 53 from California (the most populous). Hence Wyoming was entitled then to 3 Electoral College votes, while California had 55.¹ While the size of the College can vary over time as the size of Congress varies, it has since 1964 comprised 538 electors.

Technically, the popular vote is a means of choosing each state's College delegates, who then select the President and Vice-President. That said, those elected to the College are 'pledged' to support particular candidates and in all states the partisan composition of the College delegates is based on the result of the state-wide popular vote. All but two states operate a winner-take-all system for deciding the partisan composition of their Electoral College delegations, all of whom vote for the winner of the state-wide popular vote. In 2012, for instance, Barack Obama beat Mitt Romney by a margin of almost 84 percentage points in Washington DC, and took all 3 Electoral College votes from that competition. He also won all 29 College votes in Florida, even though his margin of

victory there was much narrower (just under 1 percentage point: this was the most closely contested state in the election). Two states, Maine and Nebraska, use a different system (since 1972 in Maine and 1992 in Nebraska). In both, two Electoral College places go to the winner of the state-wide popular vote, while the popular winner in each Congressional District (2 in Maine and 3 in Nebraska in 2012) within the state gets that district's College vote. This allows at least the potential for the Maine and Nebraska Electoral College delegations to be split between the leading candidates. In practice, however, since adopting this system, both states' Electoral College votes have almost always gone to the same candidate. The only exception occurred in Nebraska in 2008, when one College vote went to Barack Obama, while four went to his rival John McCain. Once the popular vote is in, therefore, it becomes clear how the state's Electoral College votes will fall.²

To win an election, a candidate has to obtain a majority in the Electoral College. In 2012, with 538 College votes at stake, this meant obtaining a minimum of 270 votes, a margin which Barack Obama comfortably exceeded (gaining 332 votes).

The correlation between popular and college votes, 1960–2012

How well does the Electoral College perform as an expression of the popular will? An obvious starting point is the relationship between the popular and the College vote for Presidential candidates. Here, we examine all 14 Presidential elections between 1960 and 2012 inclusive (1960 being the first election in which all States currently in the Union had achieved full statehood).

A popular vote majority is not necessary to win in the College. Indeed, in several recent Presidential contests, the eventual winner obtained less than half the national vote (Kennedy in 1960, with 49.7%; Nixon in 1968, with 43.4%; Clinton in 1992 and 1996, with 43.0% and 49.2%; and Bush in 2000, with 47.9%). In some of these contests, a strong third party challenger made it harder for either the Democrat or the Republican candidate to gain over 50% (George Wallace took 13.5% in 1968, John Anderson gained 6.6% in 1980, Ross Perot took 18.9% in 1992 and 8.4% in 1996; and Ralph Nader won 2.7% in 2000). This is not uncommon in plurality systems (in the UK, for instance, no party has ever won over 50% of the vote in a General Election since World War 2, though most elections have resulted in one party obtaining a clear majority of MPs).

In most Presidential election years the plurality winner of the popular vote has also been the majority winner in the Electoral College. But, as in other plurality systems, this is not guaranteed. The popular vote winner has lost in the College three times since 1828 (in 1876, 1888 and 2000: Edwards, 2011, 62).

And as in other plurality systems, the Electoral College routinely produces a "winner's bonus" (Riggs, Hobbs, & Riggs, 2009). For instance, President Obama won 51% of the popular vote in 2012 but almost 62% of the College votes. On average over the period from 1960 to 2012, the winner's share of the Electoral College was 20.7 percentage points higher than his share of the popular vote. But this winner's margin was not consistent in size from election to election (Fig. 1). In some contests (e.g. 2000 and 2004) the winning candidate's share of College votes came close to his share of the popular vote. In other elections, however, the gap was much wider (as in 1964, 1972, 1980 and 1984). The most dramatic disparity between popular and College support occurred in the 1980 contest, when Ronald Reagan's 50.7% share of the popular vote delivered an overwhelming 90.9% of the College (489 votes out of 538). (This was not the most dramatic Electoral College landslide, however: the 1972 and 1984 contests resulted in bigger sweeps of the College for the winner, Nixon gaining all but 17 College votes in 1972, and Reagan gaining an even more striking 525 – just 13 short of a clean sweep – in 1984.) One way of looking at these patterns is to express

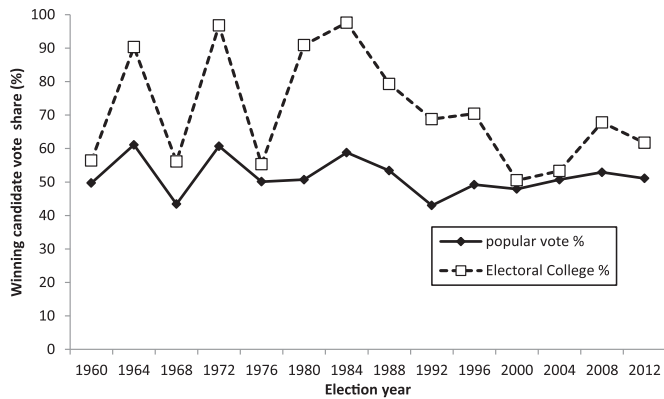


Fig. 1. Popular and Electoral College vote shares for the winning Presidential candidate, 1960–2012.

the winning candidate's percentage share of the Electoral College as a ratio of his percentage share of the popular vote (Fig. 2). A ratio of 1.0 indicates exact proportionality between popular and College support. But none of the Presidential contests since 1960 have achieved this, only the 1960, 1976, 2000 and 2004 contests coming close. On average, the winner's percentage share of the College was 1.4 times larger than his share of the popular vote.

Over the period studied here, however, the College produced similarly-sized winners' bonuses for candidates of both major parties (Table 1). On average successful Republican Presidential candidates apparently gained a small advantage in the College relative to successful Democrat candidates: the average gap between EC and popular vote shares was 7 percentage points higher for the former than the latter, and the average EC/popular vote ratio for Republican winners was 1.4 compared to 1.3 for Democrat winners. But these apparent partisan differences fall well short of statistical significance.

Measuring bias in the Electoral College

The winner's bonus demonstrates disproportionality in Presidential election results. But it cannot tell us whether they are biased. To see why, consider the 2012 election. In the actual contest, Obama obtained 51% of the popular vote and 332 College votes, while 47% of the popular vote and 206 College votes went to Romney. Had the candidates' popular vote shares been reversed, giving Romney 51% of the popular vote and Obama 47%, an unbiased Electoral College should have resulted in 332 College votes for

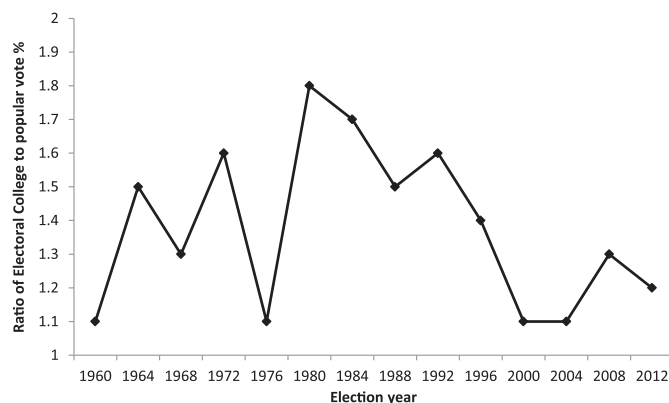


Fig. 2. Ratio of Electoral College to popular vote shares for the winning Presidential candidate, 1960–2012.

Table 1
Candidate partisanship and the winner's bias, 1960–2012.

	Democrat winner		Republican winner		<i>t</i>	<i>p</i>
	Mean	SE	Mean	SE		
Percentage point difference between college and popular vote shares	17.3	3.8	24.1	7.0	−0.842	0.416
Ratio of college % to popular %	1.4	0.1	1.3	0.1	−0.992	0.341

Romney and 206 for Obama. In this situation, the 2012 winner's bonus would have been the same no matter who had won the election. Disproportionality of outcome is not a problem *per se* in plurality electoral systems like the College (indeed, it is an intended consequence of their operation). As long as the winner's bonus would be the same whichever party won the popular vote, the system is being even-handed between parties (and hence is not biased).

A different means is therefore required to measure bias. One strategy, building on Banzhaf's (1968) seminal paper, focuses on relative voter power, measuring how much influence voters in different groups have on the election outcome. Banzhaf showed that (contrary to the received wisdom) votes cast in large states were more 'powerful' in Presidential elections – often by large amounts – than were those cast in small states. Though his method has been criticised (Grofman, 1981; Margolis, 1983), it forms the basis for many subsequent analyses. For instance, Longley and Dana (1984, 1992) extend it to look at variations in relative power between different social and demographic groups (demonstrating, for instance, that urban voters, voters in the Eastern and Western states, and Hispanic, Jewish and foreign-born voters generally had more voting power in the College than did voters in rural areas, the South, the Midwest and the Mountain states, or than white or black voters). In a further extension, Warf (2009) shows that voters in closely contested states have more power in the College than do voters in states where the result is not in question (though he also shows that in most election years there are relatively few systematic variations in voter power between Democrat and Republican voters).

However, work based on Banzhaf's method measures how much influence particular groups of voters have over the outcome of Presidential elections, not electoral bias in the sense we examine it here. Our focus is on candidates and parties, not voters: we are interested in the extent to which the Electoral College gives one candidate or party a systematic advantage or head start over the other, irrespective of the actual outcome of the election, or of who casts the pivotal vote.

Critically, we require a method which differentiates between the exaggerative effects of plurality elections (the winner's bonus discussed above) and bias. A number of different approaches to this have been essayed in the literature (e.g. Garand & Parent, 1991; Grofman, Brunell, & Campagna, 1997; Grofman, 1983, demonstrates that most, including the method used here, are mathematically equivalent). Here, we employ Brookes' (1959, 1960) method for analysis of electoral bias in two-party plurality electoral systems, which Grofman (1983, 321) praises for its 'high methodological sophistication'. Originally applied to New Zealand, it has also been used in the United Kingdom (see e.g. Johnston, Pattie, Dorling et al., 2001). Brookes' method is also well-suited to analysis of the Electoral College, which (like the UK and – prior to 1996 – New Zealand) is a two-party plurality system (indeed, Presidential elections are generally much more two-party in nature than are UK elections: Johnston, Pattie, & Rossiter, 2001; Johnston, Rossiter, & Pattie, 2005, 2006).

At the core of the method is a simple idea: if an electoral system is unbiased between two candidates or parties, they should obtain the same results (whether in terms of constituencies won or Electoral College votes secured) if they receive the same popular vote. The greater the deviation from this, the greater the bias in the system. As previously noted, although the 1960 and 2000 Presidential elections did not see complete popular vote ties between the leading candidates, they came very close (a gap of 0.2 percentage points in 1960 and 0.5 percentage points in 2000). Hence if the system was unbiased between the two lead candidates in those election years we would expect them to obtain virtually the same numbers of votes in the College. But in 1960, Kennedy gained 84 more College votes than Nixon, while in 2000 Bush's lead over Gore was only 5 College votes. The winner's College lead over his rival when the two were virtually tied on the popular vote gives an easily-interpretable measure of bias. In 1960, the Presidential electoral system was substantially biased in the Democrats' favour, whereas in 2000 there was a much narrower pro-Republican bias.

In practice, tied national popular votes are rare. Some means is therefore required to estimate what the results of these elections would have been had the popular votes been tied. Brookes' method achieves this by assuming a nationally-uniform movement of popular support from one candidate to the other in order to achieve a pre-set alternative national result. In the remainder of the paper, we simulate the outcome of each election had the two lead candidates tied in the popular vote, having won the same combined share as in the actual contest. To do this, we divide each state into pseudo-constituencies, one for each of the state's Electoral College votes. Reflecting the winner-takes-all nature of the College system within states, the election result in each pseudo-constituency mirrors the state-wide result: the voting-age population, number of registered voters and votes cast for each candidate in each pseudo-constituency are the total state-wide numbers divided by the state's College allocation. To illustrate this, consider Alabama. In 2012, the state had 9 votes in the Electoral College. That year, 2,074,338 Alabamans voted in the Presidential election, 1,255,925 voting Republican and 795,696 voting Democrat (the remainder voting for minor candidates). The state was therefore 'awarded' 9 pseudo-constituencies, and in each one, 230,482 (2,077,338/9) individuals voted, 139,547 (1,255,925/9) for Romney and 88,411 (795,696/9) for Obama.

The national swing required for the lead candidates to tie in the popular vote is then applied to every pseudo-constituency to produce an estimate of the College result at equal vote shares. Assuming a nationally-uniform swing clearly departs from what occurs in real elections, when the swing between parties or candidates varies from place to place, often substantially (Curtice & Steed, 1982; Johnston, Pattie, & Allsopp, 1988). However, uniform swing is commonly applied as a simplifying assumption when projecting election results from, for instance, national opinion polls (Butler, 1951, 1963): the method does have the distinct advantage of providing a simple and easily replicable (and often in the aggregate reasonably accurate) benchmark against which to work. Regional or local swings are much less predictable, and much larger and less easily rationalised assumptions are required in order to specify geographically-variant swings which would also result in a national vote tie. Hence our preference here for the uniform swing assumption, which Brookes' method shares with other well-established methods for estimating bias (see, for instance, Garand & Parent, 1991, 1019). The resulting difference between the number of College votes for the Democrat and the Republican candidate gives an estimate of the net bias. In the following, positive values indicate bias in favour of the Democrat candidate, while negative estimates show pro-Republican bias. A bias estimate of 0 would indicate an election in which there was no net bias in favour of either party.

An analysis at the 2012 election illustrates the approach. Moving from the actual Obama: Romney national vote share of 51.1%:47.2% to the tied scenario of 49.2% each (the mid-point between the two candidates' actual vote shares) requires a national swing from Obama to Romney of 1.9 percentage points. To achieve this, we reduce Obama's percentage vote share and increase Romney's by this amount in each state. In many states, a shift of this size would not enough change the overall result. In California, for instance, the actual popular vote was 60.2% for Obama and 37.1% for Romney. A 1.9 percentage point swing from Obama to Romney would give Obama 58.3% in California to 39.0% for Romney: Obama would still sweep all 55 of California's College votes. But other states are more tightly contested. Florida, a true swing state in 2012, produced a popular vote of 50.0% for Obama and 49.1% for Romney and the state's 29 College votes entered Obama's column. But applying the same swing would have changed the state winner: Romney's vote share in Florida would have gone up to 51.0%, while Obama's would have dropped to 48.1%, and the Romney camp would have been 29 College votes better off. Applying the same swing across all states (and assuming that nothing else changed in the process), we estimate that had Obama and Romney been neck-and-neck in the national popular vote, Obama would have gained 285 votes in the College to 253 for Romney, a winning margin of 32 College votes, considerably narrower than his actual margin of 126 College votes, but still more than enough to return him to the White House. Obama won in 2012 largely because he was the more popular of the two candidates, therefore. But he was helped on his way by the operation of the electoral system that year, which in effect gave him a 32-College vote head start on his rival.

Decomposing the bias

How was this achieved? Brookes' method not only estimates the net bias, but also uncovers its sources (see Johnston, Pattie, Dorling et al., 2001, 229ff. for the algebra). Four factors can have a potential effect: the average size of electoral districts; differential turnout; the varying impact of third party candidacies; and how efficiently each candidate's vote is distributed between states (in addition, interactions between these factors can also affect the net bias). Each is considered in more detail below.

One potential source of bias can be discounted, however: deliberate partisan gerrymandering (Brunell, 2008; Cox & Katz, 2002; Monmonier, 2001). By and large, this is not a factor in the Presidential contest, as states are the key electoral districts, and their boundaries do not change over time. (In theory, there is scope for partisan gerrymandering of College votes in Maine and Nebraska, as some College votes there are decided by the winner of each Congressional district. As these districts are redrawn after each decennial Census, there is a recurrent opportunity to design them for partisan advantage: in both states, the final say over the new Congressional boundaries rests with the state legislature, though in Maine the initial proposals are made by an independent commission. But only 5 out of all 538 College votes were at risk of such manipulation.)

Average district size

That said, Congressional redistricting does influence the Electoral College. Congressional districts are allocated between states roughly in line with their shares of the national population in the decennial Census. The allocation is not strictly proportional, however. The House of Representatives is limited to 435 members: each state must be allocated an integer number of House seats, and must be allocated at least one Representative. As a result, the average population of Congressional districts can vary substantially from

state to state: after the reapportionment following the 2010 Census, for instance, it varied from a minimum of 547,623 in Rhode Island to a maximum of 994,416 in Montana. The two states had broadly similar populations (1,055,247 in Rhode Island to Montana's 994,416), but the difference was just enough to allocate two Congressional districts to the former but only one to the latter. As the number of College votes allocated to each state depends in part on the number of Congressional districts the state has, these disparities begin to introduce deviations from strict proportionality into each state's influence on the Presidential contest.

In addition, the allocation of two further College votes to each state to match its Senate representation gives a boost to small states' College contingents relative to large states. Putting these two factors together produces some substantial inter-state variations in the population per Electoral College vote. At the 2012 election, populous states such as Florida, New York and California had many more residents per College vote than did small states such as Wyoming, Vermont and North Dakota (Fig. 3). In effect, this gives an advantage to candidates whose support is concentrated more in small (and for the most part more rural) states than in larger (and often relatively more urbanised) ones. This may seem perverse,

given the much more substantial rewards in College votes which come from taking a large state such as California rather than a small state like Wyoming and it points in the opposite direction to Banzhaf's (1968) demonstration that residents of large states have more voter power than their counterparts in smaller states. But the issue here is not who is most likely to be the pivotal voter (Banzhaf's concern), but how efficiently each candidate's vote is spread geographically. In this regard, the advantage to candidates comes from the number of popular votes required to win each College vote: candidates whose support is based in small states which are over-represented in the College relative to their population size will tend to need fewer popular votes to win each College vote than rivals whose support is focussed on larger states, and hence they will obtain a better return of College votes for their popular support.

Turnout

A second source of bias in the electoral system comes from variations in turnout between states (here and throughout the rest of the paper, turnout is estimated on the basis of the votes cast and

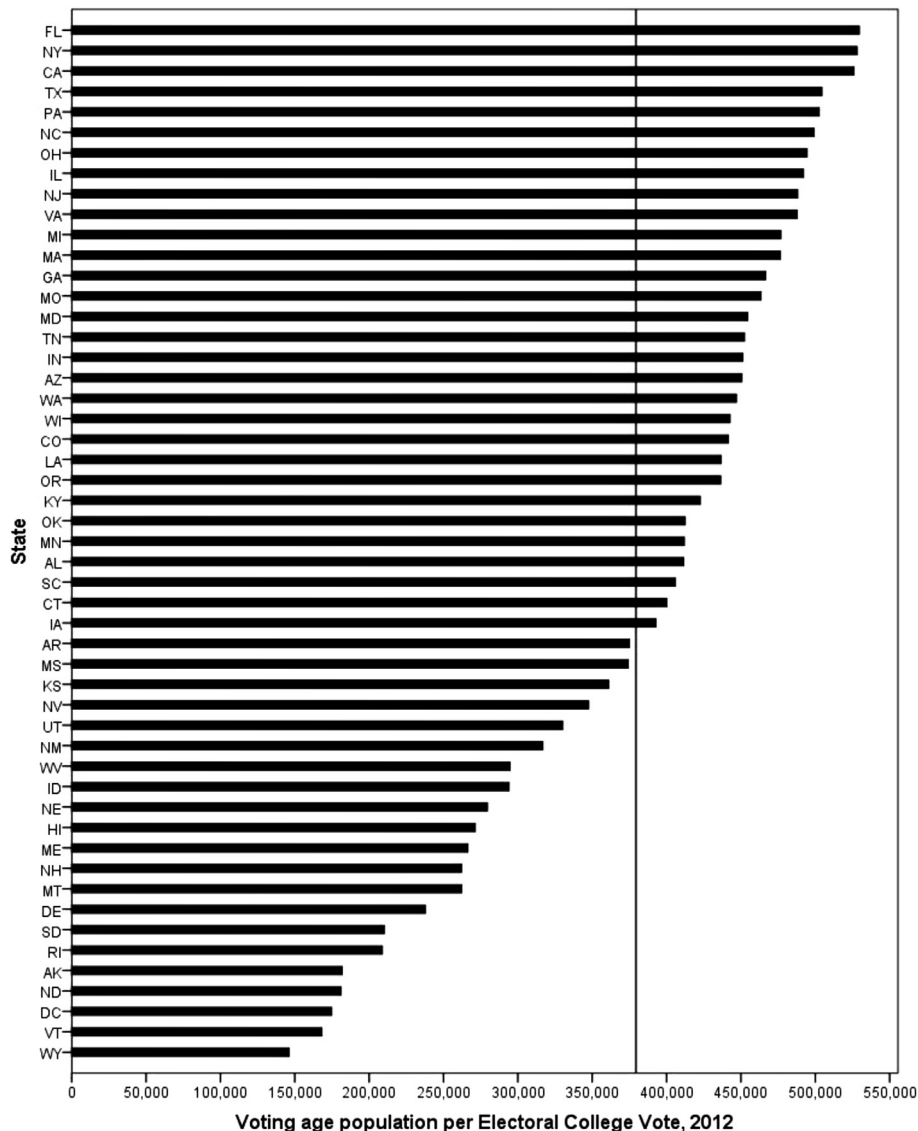


Fig. 3. Average voting-age population per Electoral College vote by state, 2012.

the voting-age population).³ Even in Presidential elections, turnout can vary substantially across the country; in 2012, it varied from 40% of the voting-age population (VAP) in Hawaii to 71.3% in Minnesota.

Counter-intuitive though it may seem, low turnout in a state is an advantage to the leading candidate there, as it reduces the number of votes needed to obtain each Electoral College vote. So candidates whose vote is relatively concentrated in states where turnout is lower will, other things being equal, tend to be advantaged compared to candidates whose support is relatively concentrated in states with higher turnouts. Note, however, that this should not be conflated with the widely discussed partisan differential in turnout, which suggests that Republicans are more likely to vote than are Democrats (e.g. [Osborn, McClurg, & Knoll, 2010](#)). We are concerned not with whether individuals who do vote are more likely to support one party rather than another: our interest here is simply in the overall effect of turnout on the threshold of votes required to win – and the fewer who vote, the lower this threshold becomes.

To see why low turnout can help the leading candidate in a state, consider two states of roughly equal size. In 2012, Hawaii and Maine both had voting-age populations (VAPs) of just over 1 million (1.08 million in the former; 1.06 in the latter). And both had 4 votes in the Electoral College. If we assume that every voting-age adult both was registered and voted in the 2012 election, and that only two candidates were on the Presidential ballot, then the winning candidate would require a minimum vote of $(VAP/2) + 1$ in order to win the state and – ignoring for the time being Maine's unusual system for the distribution of its College votes – $((VAP/2) + 1)/4$ per College vote. This yields a minimum threshold of 133,213 popular votes for each College vote in Maine, and 135,680 in Hawaii. But whereas 2012 turnout was just 40% in Hawaii, it was 67% in Maine. The effective minimum threshold to win a two horse race in Hawaii was therefore 54,338 popular votes per College vote: in Maine, however, it was 89,148, over 50% higher.

Third party candidacies

While Presidential contests are heavily dominated by the Republicans and Democrats, they do not enjoy a total duopoly. Though a range of other candidates also usually stand, most attract very little support. But in some elections (1968, 1980, 1992, 1996 and 2000 stand out), third party candidates received a relatively large popular vote. On occasion, they picked up Electoral College votes too (as did the Byrd/Thurmond ticket in 1960 and Wallace/LeMay in 1968).⁴ These third party candidacies also contribute to electoral bias.

They do so in two different ways, depending on whether a minor candidate does well enough to win a plurality of the popular vote in a state. Where no third party candidate emerges as a plurality winner, then the larger the share of the state vote going to minor candidates, the more this helps the actual plurality winner, other things being equal. As with turnout and number of voters per Electoral College vote, this is because better third party performances reduce the effective number of votes a major party candidate needs for victory. Hence if one major party candidate tends to beat the other more often in states where there is a relatively strong third party vote, a bias will develop in favour of the former.

But when a third party candidate does emerge as the plurality winner in a state, this disadvantages the major party candidate who would otherwise have expected to win there, as he is then deprived of that state's College votes. In modern times, third party candidates who did well enough to win College votes all represented 'dissident' groups of Southern Democrats and took states the Democrats might otherwise have expected to win. Hence this bias has in practice worked against the Democrats.

Efficient geographies of support

A final source of bias comes from how efficiently candidates' votes are spatially spread. In a winner-take-all system, it is inefficient to amass popular vote super-majorities where one can expect to win no matter what. Similarly, it is not effective to be a respectable loser in places where one has little realistic chance of winning. In the former, once the winning candidate has one more vote than his or her nearest rival, all available College votes are theirs, and every extra vote is surplus to requirements, as it makes no further contribution to the candidate's haul. In the latter, all votes are in an important sense wasted, as none contribute to a win for the candidate. Better, at least from the point of view of getting the most efficient return to one's support, to have relatively narrow majorities where one wins, but to lose relatively badly where one does not.

Presidential elections, of course, are not equally competitive in all parts of the USA. Some states are not seriously in play: one or other of the leading parties has a virtual lock on the popular vote there and hence on the state's Electoral College representation. Massachusetts, for instance, was won by the Democrat candidate in 12 of the 14 Presidential elections from 1960 to 2012 (the exceptions were Reagan's 1980 and 1984 wins), and generally by a large margin (the average Democrat lead over the Republicans through this period was 20.5 percentage points). The chances, in 2012, of the state voting against President Obama were very small.

Other states are much more finely poised. Presidential elections are won or lost on which candidate can amass most College votes from these battlegrounds ([Warf, 2009](#), discusses the relative voter power of electors in competitive as opposed to uncompetitive states). Hence the importance, in recent contests, of states like Florida, where the result is often decided by the narrowest of margins, and where the potential haul of College seats is considerable. In 2012, much attention – from both the media and the campaigns – was focussed on a small handful of toss-up states, particularly Florida, Ohio, Virginia and Wisconsin, which together delivered a potentially decisive 70 Electoral College seats, but also including states where the College gains were smaller but the race was still tight, such as Colorado (9 College votes), Iowa (6) and New Hampshire (4).

The Presidential campaign teams know this well and organise their ground wars accordingly. Little effort is expended campaigning in the 'safe' states. But very substantial campaign resources are poured into the battleground states. The aim is to achieve as efficient a vote spread as possible, concentrating on amassing support in the swing states. The more effectively candidates can do this, the more they stand to benefit from the efficiency bias.

An example: Brookes' electoral bias in the 2012 Presidential election

Applied to the 2012 election, Brookes' method estimates that, at equal popular vote shares (and assuming that turnout and third party candidates' votes were unchanged from the actual contest), Obama would have had a 32-vote advantage over Romney in the College. Although that pro-Democrat bias was influenced by all of the above factors, not all of them worked in Obama's favour ([Table 2](#)).

The Romney campaign benefitted from a slightly greater success rate in relatively small states (like Idaho, Wyoming and the Dakotas) compared to Obama's. At equal vote shares, the average size of the voting-age population per Electoral College vote in states which would have been won by the Republicans was 437,394. This compares with a slightly larger average VAP per College vote of

Table 2

Decomposing the bias in the Electoral College at the 2012 Presidential election (positive numbers indicate a pro-Democrat and negative numbers a pro-Republican bias in the Electoral College).

Source of bias	Bias
District size	–12
Turnout	–10
3rd Party votes	1
3rd Party wins	0
Efficiency	52
Interactions	0
Total net bias	32

457,075 in the states which would have fallen to the Democrats. That said, some small states (like Vermont) were Obama wins, and some large ones (e.g. Texas) were Romney gains. But in general, states where President Obama won were skewed towards those with quite high VAPs per College vote, while Governor Romney's not only had a smaller average overall, but were more evenly spread (Fig. 4). Overall, this gave Romney an advantage over his rival of 12 College votes.

The Romney campaign also benefitted from relatively low turnouts in the states it would have won at equal vote shares. On average, each of Romney's Electoral College votes at equal shares was won with a turnout (as a percentage of VAP) of 52.7%, compared to an equivalent of 55.0% for the Obama campaign. The margins are relatively small, but overall this was enough to give the Republicans an advantage worth an additional 10 College votes.

Third party effects were extremely muted in 2012. Though there were numerous minor candidates, none gained more than a small handful of votes or came near to winning in any state. The Obama campaign received a very small advantage from third party candidacies, worth just one extra vote in the College.

The above biases, all of which reflect, in different ways, factors influencing the number of popular votes required to win each Electoral College vote, generally worked to the Republicans' advantage in 2012. But the Obama camp had a trump card: the pro-Democrat efficiency bias of 52 College votes substantially outweighed the combined pro-Republican effects of voting-age population and turnout.

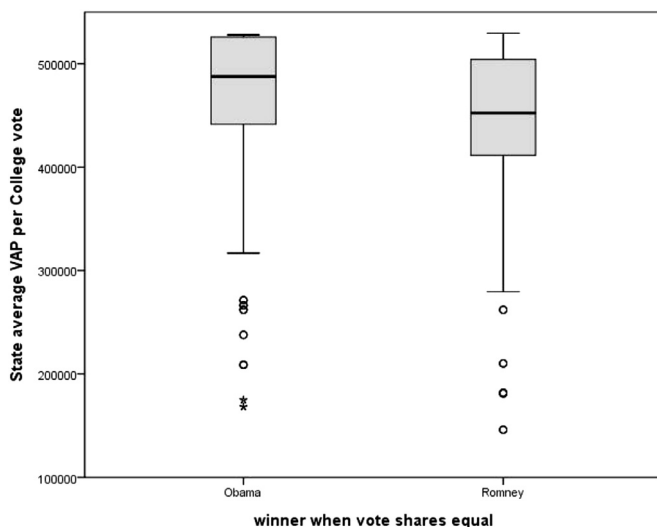


Fig. 4. Average voting-age populations per Electoral College vote in seats won by Obama and Romney at equal vote shares, 2012.

One way to think about this is to distinguish between *effective*, *surplus* and *wasted* votes (Johnston, Pattie, Dorling et al., 2001, 13). To win a state in a winner-take-all competition, a candidate needs just one vote more than the second-placed candidate: this gives the number of effective votes for the winning candidate. Surplus votes, meanwhile, are those the winning candidate in a state obtains over and above his effective votes: these are surplus as they do not result in any more gains – the winning candidate has already scooped all the College votes available in the state and can win no more there, no matter how large the popular vote majority. Finally, in states where a candidate loses all his popular votes are wasted, as none will produce any College votes. Table 3 shows the number of effective and surplus popular votes per Electoral College vote won, and the number wasted per College vote lost for both Obama and Romney in 2012. The Obama campaign had a clear advantage, with fewer wasted or surplus votes, and more effective ones, per College vote at equal national vote shares. Quite simply, the Democrats got a greater return for each vote cast for them in 2012 than did the Republicans.

In large part, this was a consequence of the Obama campaign's formidable and highly effective grass roots organisation. The campaign established a dense network of local field offices in battleground states, directing get-out-the-vote and campaign activities in key areas. It was much more active in this regard than the Republican campaign. A sense of the Obama camp's strategy can be gained from analyses of his first Presidential campaign, in 2008. Analyses of county-level voting trends then reveal larger shifts of support to the Democrats in counties where a field office was in operation than elsewhere, both boosting overall support for Obama and in three key states making the difference between defeat and victory (Masket, 2009). Furthermore, where within swing states the campaigns focussed also reveals the relative strategic acumen of the Obama camp. For instance, research by Chen and Reeves (2011) on which swing state counties were visited by the candidates shows very different approaches adopted by the rival camps. While the McCain/Palin campaign concentrated on mobilising its base of existing supporters by focussing candidate visits to swing states on counties in which the Republicans had previously done well, the Obama/Biden campaign did not, focussing instead on counties with large and rapidly growing populations (and hence where there would be a large number of new voters to win over): while the Republican campaign was conservative, sticking to existing supporters, the Democrats sought to extend their support into new groups – and to an important extent succeeded in doing so. His campaign's ground game probably did not seal Obama's 2008 victory. But it almost certainly positively affected the margin of that victory, both in the popular vote and in the College. The same held in 2012.

Electoral bias since 1960

This section applies Brookes' method to each Presidential election since 1960. Since then, neither of the two major parties has been the recipient of a consistent net bias in the Electoral College (Fig. 5). Rather, net bias has sometimes favoured the Democrats, sometimes the Republicans, and sometimes neither. Overall, the average net bias for the period gave a vanishingly small 0.7 College

Table 3

Effective, surplus and wasted votes at equal popular vote shares, 2012.

	Obama/Biden	Romney/Ryan
Effective votes per college vote won	106,625	95,771
Surplus votes per college vote won	30,869	34,774
Wasted votes per college vote lost	95,771	106,625

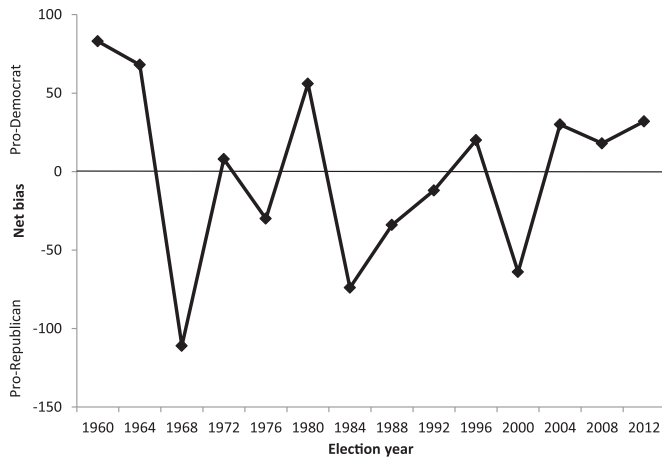


Fig. 5. Net bias in Electoral College votes at equal popular vote shares, 1960–2012.

vote advantage to the Republicans. Nor have there been particularly consistent patterns over time. Rather, the advantage has swung back and forth between the parties, neither enjoying a net bias for more than an election or two prior to 2004. In the subsequent three Presidential elections, the system worked steadily in the Democrats' favour, to the tune of around 27 College votes.

That said, some of the biases are substantial. The largest net biases occur relatively early in the period, in 1960 (a pro-Democrat bias of 83 College votes) and 1968 (an 111-vote bias towards the Republicans, the largest net bias in the series). The net bias has exceeded 50 College votes only once since 1988, perhaps not too surprisingly in the controversial and closely-fought 2000 contest, when the pro-Republican bias was worth 64 extra College votes. But five of the seven contests between 1960 and 1984 produced net biases greater than 50 College votes.

Net bias reveals a different side of modern Presidential elections to that shown by the disproportionality of the conversion of popular into College votes in the actual election results (compare Figs. 2 and 5). Overall, there is a (weak) association between disproportionality and bias. Of the 14 elections over the period, 7 were won by Democrat candidates and 7 by Republicans. And when a party won, such disproportionality as was present worked in its favour. In 5 of the Democrats' 7 wins (1960, 1964, 1996, 2008 and 2012), and in 4 of the Republicans' (1968, 1984, 1988 and 2000), they also enjoyed an electoral bias advantage. Even so, the link between the two was not always strong. For instance, the 1960 contest was one of the least disproportional elections of modern times, but also very biased, the Democrats taking the advantage from both. Similarly, Nixon's 1968 victory was assisted by a very substantial pro-Republican bias in the College, but the result was not especially disproportional. Elections with large biases did not necessarily produce highly disproportional results.

And in some contests, electoral bias was actually working against the eventual victor. This was the case in 2 of the Democrats' 7 wins (1976 and 1992) and 3 of the Republicans' (1972, 1980 and 2004). In some of these contests, the bias against which the eventual winner had to push was only small; the 1972 result was relatively disproportional in its outcome (President Nixon sweeping almost 97% of the College votes on the basis of a 61% share of the popular vote, a College:popular vote ratio of 1.59) but it was not especially biased and then narrowly in favour of the Democrat McGovern ticket, not the Republicans. In other cases, the bias the eventual winner had to overcome was rather larger. In 1980, Ronald Reagan faced a substantial systemic disadvantage (a pro-Democrat bias worth 56 College votes) but achieved the most disproportional

result since 1960, taking 91% of the College on the back of a bare 51% popular vote majority (a ratio of 1.79). The very substantial Republican Electoral College successes in both years therefore came despite the biases in the voting system, not because of them. Weak Democrat candidates squandered a valuable advantage in both competitions. Electoral bias may give one campaign a head start over its rival, therefore. But it is not a guarantee of success.

We turn next to how the various sources of bias in Presidential elections have changed over the last half century. In general, district size and turnout have tended to favour Republican candidates, though neither has been a major contributor to net bias recently (Fig. 6). Only in 1980 were the Democrats advantaged (to the tune of 13 extra College votes) by relative success in states with fewer voters per Electoral College vote. In all other contests, the Republicans gained the advantage from this: the overall average advantage for the whole period delivered by variations between states in electors per College vote was a 13.6 College vote margin for the Republicans. This varied somewhat: the smallest pro-Republican bias from this source was a 3-College vote margin in 2008, and the highest was the 37-vote margin delivered in 1972.

The effects of turnout, meanwhile, were greater and more variable in the 1960s and 1970s than thereafter. On three occasions before 1980, the Democrats gained the net advantage from turnout, in 1960, 1968 (only narrowly) and quite substantially in 1976 (when it was worth an extra 27 College votes for them). But from 1980 onwards, this source of bias has worked in the Republicans' favour, albeit only to the tune of around 6.6 College votes on average.⁵

Third party effects, too, have generally been muted (Fig. 7). Third party votes have made a difference of only a small handful of College votes either way, and if anything have in recent years worked in the Democrats' favour. Even in 2000, when Ralph Nader may have cost Al Gore the Presidency by giving an alternative home for otherwise Democrat voters in a close election, the overall effect of third party support actually narrowly helped the Democrats, by lowering the number of votes required for victory in states the party would win on a tied popular vote. But overall, third party candidates have tended to draw the same average support from states won by Democrats as from those won by Republicans. To take one example, in his 1992 campaign, Ross Perot (the most successful third party candidate of the last half century in popular vote totals, though he won no College delegates) averaged 18.9% of the vote in states won by Bill Clinton, and 20.6% in states won by George Bush Sr.: the difference was not statistically significant ($t = -0.982$, $p = 0.331$). In 2000, the Nader campaign did slightly better, on

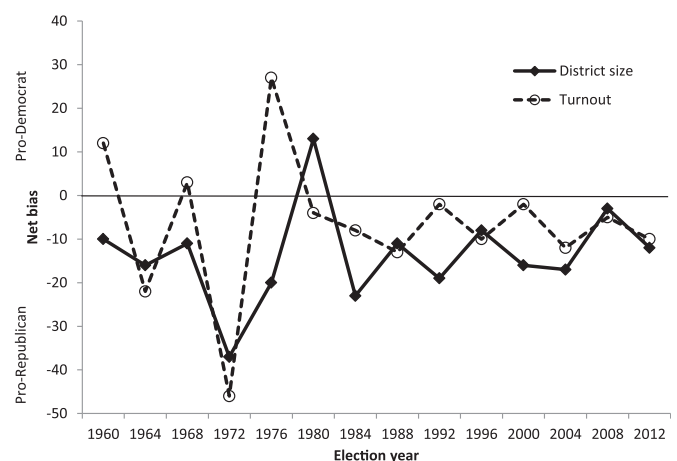


Fig. 6. District size and turnout biases in Electoral College votes at equal popular vote shares, 1960–2012.

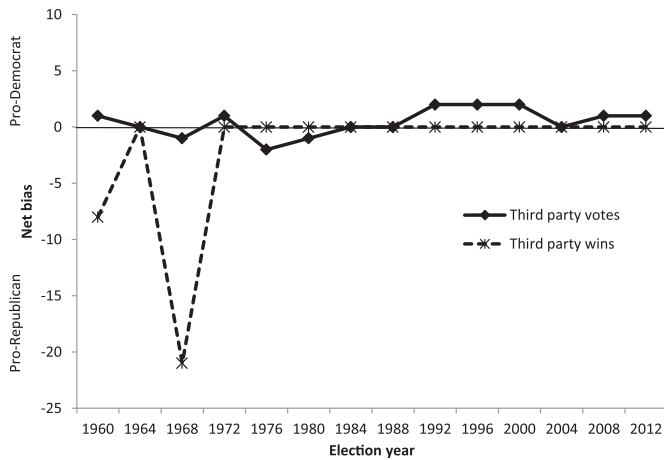


Fig. 7. Third party biases in Electoral College votes at equal popular vote shares, 1960–2012.

average, in states which Al Gore won than in those taken by George Bush Jr., but the substantive difference, although statistically significant, was small (the respective averages were 4.1% and 2.4%; $t = 3.084$, $p = 0.003$).

Third party wins in a state's College delegation, while rarer, can have a relatively large impact on bias when they do occur. Over the period studied here, both elections when third party College wins occurred were in the 1960s. And on both occasions, the resulting advantage was gained by the Republicans, helping the GOP by 8 College votes in 1960 and 21 in 1968. The reason for the pro-Republican bias from 3rd party College wins in both years is easy to see; the successful third party candidates were renegade Democrats (running in part on anti-civil rights platforms) in southern states which the party would otherwise have expected to win.

But by far the largest (in most election years, 1988 and 1992 excepted) and the most variable contributor to net bias has been vote efficiency (Fig. 8). Efficiency biases were generally substantial in the 1960s and early 1970s (worth an average of 91 College votes to the beneficiary – the Democrats in 1960, 1964 and 1972, and the Republicans in 1968). In 1976, 1980 and 1984, the efficiency bias was worth an average of 42 College votes – helping the Democrats in 1980, and the Republicans in the other two elections. And after the low point of the 1988 and 1992 contests, it was worth an

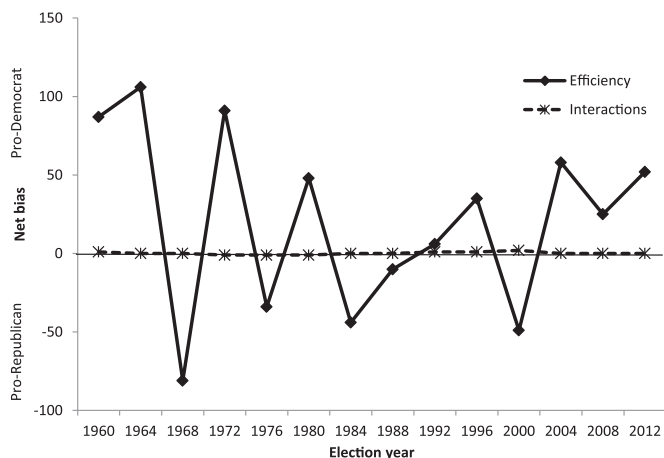


Fig. 8. Efficiency bias in Electoral College votes and interactions at equal popular vote shares, 1960–2012.

average of roughly 42 College votes for the beneficiary (the Democrats in all years apart from 2000, when it was worth 49 College votes for Bush).

That efficiency dominates electoral bias in Presidential contests suggests that much has to do with the relative geographical effectiveness of the campaigns. That the advantage the efficiency bias bestows seems to see-saw between the Democrats and the Republicans over most of the period suggests that no one camp has enjoyed a sustained ground war advantage: tactics which are relatively effective for one party at one campaign seem to be quickly countered by its rival at the next. But the facts that the three most recent elections have all produced decently-sized pro-Democrat efficiency biases and that this is the only three-election run since 1960 in which the same party has consistently 'won' the efficiency battle suggest there may be something more deeply amiss in current Republican Presidential campaigning – perhaps a consequence of the 'get-out-the-base' strategy seen in the McCain-Palin campaign of 2008 (Chen & Reeves, 2011).

Finally, some interaction is also possible between the sources of bias, but the net interaction effect has been very small, averaging only one or two College votes either way over the period (Fig. 8).

How does bias in Presidential elections compare?

How big a problem does electoral bias present in US Presidential elections? In one sense, so long as the plurality vote winner also wins in the College, the system can be said to deliver a result that most are likely to see as legitimate. There are concerns over the College's tendency to exaggerate the winner's apparent mandate (Edwards, 2011). But it is only in rare cases like 2000, when the 'wrong' winner emerged from the College, that concerns become mainstream. Another way of assessing how large a problem bias presents, however, is to compare trends in Presidential elections with those in another plurality electoral system. Here, we look at electoral bias in Great Britain, another country where Brookes' method has been applied to most post-war elections.⁶

One point of comparison is the extent to which bias consistently favours a particular party. Since 1950, Britain has experienced two prolonged periods in which one of the two main parties, Labour or Conservative, has enjoyed a systematic advantage over the other, separated by an interlude in which the net bias was small (Johnston, Pattie, Dorling et al., 2001; Johnston & Pattie, 2011: the third party in British politics, currently the Liberal Democrats, has been consistently and substantially disadvantaged by the electoral system over the entire period). Between 1950 and 1964, the UK electoral system consistently favoured the Conservatives over Labour. Between the mid-1960s and the late-1980s, net bias was small and relatively even-handed between the two parties. And then, from 1992 onwards, it consistently and strongly favoured Labour over the Conservatives. But as discussed above, no such fixed pattern of relative advantage has marred the working of Presidential elections over a similar period. The Presidential system emerges quite well from this comparison.

Ignoring the partisan direction, is bias a bigger issue in the USA or the UK? To answer this, we calculated the net bias (ignoring its partisan direction) at each election as a percentage of all College votes in the US and all Parliamentary constituencies in the UK, for every election from 1959 to 2012. The distributions look remarkably similar (Fig. 9). Net bias as a percentage of the Electoral College ranged from a minimum of 1.49% (in 1972) to a maximum of 20.6% (in 1968). In Britain, the equivalents were 0.32% (1970) and 22.0% (2001). There is some suggestion that relatively high net biases occurred a little more often in Presidential than in British Parliamentary elections: the median net bias percentage was 6.1% in the US and 4.0% in Britain, and the British distribution is relatively more

focussed on lower values. But there is no real statistically discernible difference in mean relative bias levels between the two electoral systems ($t = 0.892$; $p = 0.380$). In relative terms, the size of the electoral bias 'problem' in recent US Presidential elections is not so far out of line with the equivalent problem in another major plurality electoral system.

Conclusions

Most American Presidents win a greater share of the seats in the Electoral College than they do of the popular votes cast, reflecting the winner's bias normal in such electoral systems. But, as extensive studies in the UK, Australia, New Zealand and elsewhere have shown, such disproportionality is not the only characteristic of election results there. Bias is also common – with a particular share of the votes cast one party performs better than the other would in the same situation: as with the disproportionality, this feature is a consequence of the geographical structuring of the electoral systems, support for the parties, and the spatial structuring of candidates' campaigns.

Applying a widely-recognised methodology for analysing such bias and its sources in two-party systems, this paper has explored the extent and nature of bias at the last 14 US Presidential elections. For the most recent contest in 2012, it showed that Barack Obama had a 32-College seat advantage over Mitt Romney: if the geography of their support had been unchanged in relative terms, but each had obtained 49.2 per cent of the popular vote, Obama would have enjoyed a comfortable victory – though less than was the case with George W. Bush's win over Al Gore in 2000, when the two candidates were virtually level in the popular vote. Obama's advantage was not because all of the bias components favoured him, however: variations in both district size and turnout favoured Romney. It was the efficiency of the distribution of Obama's votes across the states that delivered him the advantage – undoubtedly a reflection of the spatial sophistication and intensity of his campaign.

Although Obama benefited from bias in both of his election victories (as also did the losing Democratic contender – John Kerry – at the preceding contest) this was not a characteristic of all Democratic candidates' campaigns over the last five decades. The only long-term advantages have been in the Republican candidates' favour: they benefited (though rarely very substantially) from variations in district size at every election except 1980, and at all but three of the 14 post-1960 elections from variations in turnout.

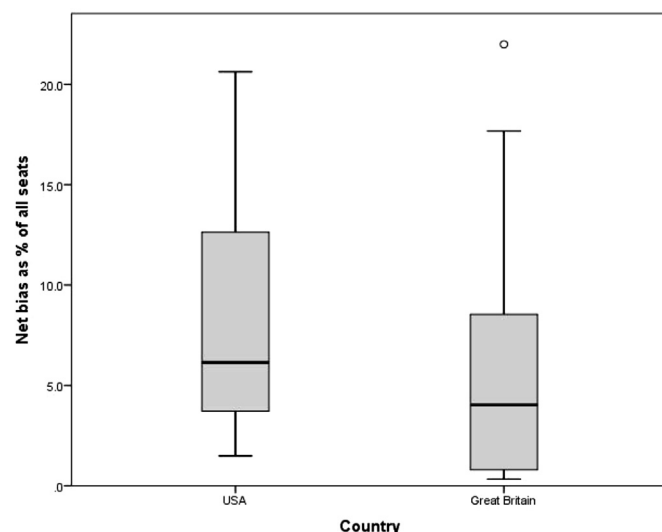


Fig. 9. Comparing electoral bias in US Presidential and British Parliamentary elections.

For the Democrats to benefit from the spatially-varying components of the electoral system's operations, they have had to ensure a more efficient distribution of their popular support – which occurred very substantially in 1960 and 1964 (both of which elections they won) and then again in 1972. Whichever party had the advantage from then on, the benefit has been generally smaller.

The efficiency component favoured the Democrats at the last three elections. It is tempting, but undoubtedly premature, to see this as a continuing feature, but it can be linked to other recent changes in the country's electoral geography. Much has been written over the last decade regarding the growing spatial polarisation of the American electorate, with a clear division identified between the so-called 'red' and 'blue' states (Republican and Democrat strongholds respectively: Bishop, 2008; Gelman, 2008).⁷ Many states are 'uncompetitive' – one of the parties has very little chance of victory there. Those in that category that are 'red' tend to be the ones with relatively small ratios of voters to Electoral College seats and relatively low turnouts – aspects of that emerging geography that favour the Republicans. For overall victory, therefore, the Democrats have had to focus not so much on their 'blue' heartlands, where success is virtually guaranteed, but rather on the swing states, where success by relatively small margins means few surplus votes. This was what the Obama campaigns achieved. Future Republican candidates could do the same with successful focused campaigns. Increasingly, therefore, in a spatially polarised country much will depend on those campaigns, on the parties' abilities to mobilise support in those parts of the country (which may just be particular sections of key states – as in Ohio in 2008 and 2012) where a relatively small number of additional votes matter and can deliver success.

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Endnotes

¹ Washington DC is an anomaly. Prior to 1964, the capital's residents could not vote in Presidential elections. But since then (thanks to the 23rd Amendment to the US Constitution adopted in 1961), they have been. Washington DC has no Congressional representation, but its quota of College electors is set at the minimum possible for a state, three under current rules.

² Occasionally, College electors cast their vote for a candidate other than the one indicated by the popular vote result (see Ross & Josephson, 1996 for a discussion of the legal issues involved). These so-called 'faithless electors' have been relatively rare in modern times, however. There were only seven between 1960 and 2012 (one each in 1960, 1968, 1972, 1976, 1988, 2000 and 2004), just 0.09% of all the Electoral College votes cast over that time.

³ We use VAP rather than the voting eligible population (i.e. the population who could potentially vote) because of substantial variations between states in the success of voter registration methods, the number of foreign nationals resident within the state, and so on, all of which mean the relationship between VAP and the enrolled electorate is not uniform or straightforward (McDonald & Popkin, 2001). VAP is not only a commonly used baseline in the literature (see e.g. Norris, 2002, 40ff.), but relevant data are also easier to come by than good estimates of the VEP. Focussing on VAP allows us to sidestep the (sometimes arbitrary) vagaries of the registration process and put all states on an equal footing. Furthermore, the allocation of Congressional districts to states (and hence their relative importance in the Electoral College) is based not on registered or eligible electorates, but on their total populations. VAP takes us closer to the root of College representation, therefore, than does VEP.

⁴ Byrd and Thurmond's 15 Electoral College votes came from unpledged electors – 6 in Alabama, 8 in Mississippi and 1 in Oklahoma. The Alabama and Mississippi

unpledged electors were elected via the Democrat slate, while in Oklahoma the unpledged elector was on the Republican slate. In the following analyses, we treat them as representing 14 College pseudo-constituencies which would otherwise have gone to Kennedy, and 1 which would otherwise have gone to Nixon.

⁵ This partly reflects the shifting electoral landscape from the late 1960s on, as the Democrats lost their long-term grip on low-turnout Southern states, which increasingly turned to the Republicans in Presidential elections (Archer & Taylor, 1981).

⁶ We exclude Northern Ireland as the party system there is quite distinct to that in the rest of the UK.

⁷ As Gelman (2008) shows, the major cleavages in American elections relate to factors such as individual wealth: in all states (including 'red states'), poorer Americans are more likely to vote Democrat and less likely to support the Republicans than are their richer compatriots. While politics at the state scale is increasingly polarised, there is relatively little sign of deep polarisation among individual voters (Fiorina & Abrams, 2008; Levendusky & Pope, 2011).

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