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What's both massive and slender, and thin but convincing?

The victory of Joe Biden over Donald Trump in the 2020 US Presidential Election has been described as a 'convincing win'¹ involving a 'massive margin'², or just plain 'comfortable' in terms of the popular vote³. Similar adjectives have been widely applied in all media, and the victory proved to be even more definitive in relation to the Electoral College votes³ (see box); all this putting to one side Trump's claims about electoral fraud⁴. So being of a curious nature I checked out the actual numbers and percentages, and found that whilst any Presidential Election is effectively a straight battle between the candidates from the Democratic and Republican parties there were others standing. Out of the 158,212,080 votes cast in the 2020 election 2,704,851 (1.7%) went to these other candidates, with the main two being the Libertarian Party's Jo Jorgensen (1.2%) and the Green Party's Howie Hawkins (0.3%)⁵. The voter turnout was 67%⁶. Idly I wondered what would have been the percentage split of Biden's and Trump's votes if it **was** a two-horse race, i.e. all votes for other candidates were excluded? The outcome? Biden won by 52% to 48%.

Do these figures sound familiar? Of course they do, at least to people who live in the UK who have been interminably reminded of the result of the 2016 UK European Union membership referendum (Brexit Referendum), which had a turnout of 72%⁷. However, the result of 52% to 48% in favour of leaving the European Union has had descriptions such as 'narrow'^{8,9,10}, 'slim'¹¹, 'slender'¹², 'a very thin margin'¹³ and 'wafer thin'¹⁴. Therefore it is interesting to note that although the two sets of results are the same percentage-wise (rounded to whole numbers) the media, politicians and commentators have applied very different descriptions of this 4% majority; arguably applying opposing adjectives. Of course, Biden's majority over Trump was over 7 million and the Vote Leave majority was 1.3 million – but it has to be remembered that the USA electorate is over five times the size of that in the UK.

What to make of this? It is important to keep in mind that elections place individuals and political parties in power for a limited period (generally four or five years) whilst referenda can be 'generation-defining' events with long-term/ permanent consequences. Nevertheless, the above use of adjectives suggests that (Shock! Horror!) the media, politicians and commentators present their interpretations of statistics in ways that suit their own agenda, whatever that may be. Accordingly it is little surprise that the 52-48 majority in the US Senate which confirmed President Trump's nomination Amy Coney Barrett for a lifetime appointment to the Supreme Court was described as 'narrow'^{15,16} and 'slim'¹⁷, given the American mainstream media's antipathy towards Trump¹⁸. It was argued that the process was rushed because Trump was trailing Biden in the polls nationally and in key swing states, making the possibility of Democrats flipping the Senate becoming ever-more real¹⁵, which would have undoubtedly led to an appointment of a judge more sympathetic to the Democrats.

Of course, the nature of politics is such that individuals can refer to a 52-48 split in contradictory ways as it perhaps suits them. Whilst Nigel Farage celebrated the victory for the Leave campaign with the Brexit Referendum result, in 2016 he said (in anticipation of a narrow defeat): *'In a 52-48 referendum this would be unfinished business by a long way.'* He was reminded of his stance on the Brexit Referendum result by his opponents when Ursula von der Leyen was elected as the new EU Commission president in 2019, and he said that she had *'scraped in by 9 votes. Power but no legitimacy.'* They highlighted the irony of his

statement by comparing the 51.9% voting for Leave with the 51.3% of all MEPs who voted for Von der Leyen's appointment¹⁹.

Yet, as the old saying goes *'It's the same the whole world over'*. 2021 saw the surprise election of conservative businessman Guillermo Lasso as President of Ecuador when he took 52% of the vote in the electoral runoff with Andres Arauz^{20,21}. Back in 2017 Lasso was in another run-off for the presidency but lost to his left-wing opponent Lenin Moreno, on a 51.2% to 48.8% split of the votes²². However, on this occasion he filed a complaint and demanded a recount of all votes, alleging that fraud had taken place, and claiming that if Moreno took power he would be the head an illegitimate government²³.

The 2020 Ghana presidential election saw Nana Akufo-Addo win his second four-year term with 52% of the vote, defeating his long-time rival former President John Mahama. The presidential candidacy rivals had signed a peace pact to respect the verdict that came out of the polls; with the police recording many incidents of election-related violence. This was despite Ghana having had seven peaceful transitions of power since the return of democracy almost 30 years previously, largely because post-electoral grievances had been pursued through the courts. However, the opposition rejected the election results claiming that Akufo-Addo's government had harnessed the military in a bid to sway the outcome, a claim which was denied^{24,25}.

Results of 52%-48% in referenda with binary options and two-horse race elections, such as presidential elections, should not come as a total surprise if there is a genuine split of opinion in the electorate. And it should be noted that electorates are becoming increasingly polarised in many large democracies and across the world^{26,27}. Statistically such a result is quite likely in such circumstances, and this is arguably reinforced by strong arguments and debates if both sides believe that they have a chance of winning. Whilst individual voters may not be sensitive to the probability of their votes being decisive in a close ballot, some studies have found that related higher turnout for such elections probably reflects the increased mobilisation of political organisations to get their supporters to polling stations²⁸, knowing that *'every vote counts'*. After all, how many voters and political organisations are likely to put in extra effort if the outcome is genuinely a foregone conclusion? Therefore such close electoral results are likely to become more frequent, and the related hyperbole describing them will probably only increase; with the terms used reflecting commentators' views of the results.

As a professional statistician I am forced to smile and feign amusement whenever someone says *"There are lies, damn lies and statistics"*, as though I have never heard it before. There are debates about the statement's origin (it wasn't necessarily Mark Twain who said it)²⁹; but maybe, when it comes to psephology this phrase should be replaced with *"There are lies, damn lies and polemics"*?

1103 words (excluding Box on US Electoral College)

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Box on US Electoral College

The President of the USA is not chosen directly by the voters, but by what is known as the Electoral College. Therefore it is possible that the candidate with the most votes from the public won't be the winner. When Americans go to the polls in presidential elections they are actually voting for a group of officials who make up the Electoral College; the word '*college*' here simply referring to a group of people with a shared task. The number of electors from each state is roughly in line with the size of its population. Each state gets as many electors as it has lawmakers in the US Congress (representatives in the House and senators); California has the most electors (55), whilst sparsely populated states like Wyoming, Alaska and North Dakota (and Washington DC) have the minimum of three. There are 538 electors in total and each elector represents one electoral vote. Generally, states award all their Electoral College votes to whoever won the poll of ordinary voters in the state. A candidate needs to gain a majority of the votes (270 or more) to win the presidency.

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