

What Happened in the 2020 Election? An Interactive Exploration of the Outcomes

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Abstract

This paper searches for *prima facie* evidence of vote-count irregularities in the 2020 presidential election, by the simple device of looking for anomalous patterns in the vote counts at the county level.

We compare the 2020 presidential election outcomes *by county* in the five states that were considered decisive -- Arizona, Georgia, Michigan, Pennsylvania and Wisconsin -- with those in four large states that were not seriously contested: California, New Jersey, Ohio and Texas. Our purpose is to assess whether changes in outcomes in the five swing states at the county level were unusual, by comparison with events in states where manipulation of the results would have been pointless. The paper uses Tableau panels to allow readers to examine the county and state patterns in fine detail.

Geographic *polarization* of the vote, with Democratic gains being larger in counties that were already strongly Democratic, and similarly for the Republicans, was typical of the Midwest, of the Plains, Rocky Mountain states and of the Pacific Northwest. But the opposite pattern prevailed on the Eastern seaboard, in California and across the South, indicating substantial geographic *depolarization* of the electorate in many of those states.

We find that *both* candidates benefited in 2020 from a major improvement in ballot access and turnout. Biden's victory was due to a slight differential gain, along with the disappearance of the third parties which had drawn small but significant vote shares in 2016. Biden's *proportionate* gains in all nine states were larger in larger counties, but except in one state -- Georgia -- there is no evidence that they were greater in the swing states than in the non-swing states.

A figure called the "jelly-fish diagram" calls attention to the *change* in Democratic vote share in 2020 by county compared to the actual share in 2016. Three facts stand out. First, there was no difference between the performance of any county in 2020 in swing states as compared to non-swing states, except in two respects. The first is that a "tail" of small Texas counties, all along the border, showed remarkable *losses* in the Democratic vote share. The second is that in Georgia, a number of important counties showed exceptional Democratic gains, testimony to the effectiveness of political organization in that state.

We conclude that there are no visible traces of vote-count manipulation in this data. Expanding ballot access, the disappearance of fringe parties, and -- in the case of Georgia -- political organization were the decisive factors in the 2020 outcome. Those who now seek to reverse the Democratic gains of 2020 -- by reversing the democratic gains in turnout -- know what they are doing.

Introduction

The 2020 presidential election was marked by a more-than-usual degree of controversy, including the refusal of incumbent President Donald J. Trump to concede, the filing of more than 60 lawsuits challenging election results in state and federal courts, and a riot at the Capitol on January 6, 2021, when the results were finally certified.

This interactive essay explores the 2020 outcome from a straightforward retrospective standpoint: that of the actual reported election returns. It draws on an incontestable fact of life in U.S. politics which is that voters live, register and cast their ballots from within counties whose election boards and commissioners organize and conduct elections. Vote totals across counties necessarily add up to state totals that, in presidential contests, then determine the votes of the Electoral College. Thus any material irregularities—let alone fraudulent activity—must either be committed at the county level or allocated to the counties by some higher mechanism. Significant irregularities should show up in a county's vote totals, either in relation to other counties in the state or in relation to vote outcomes in that county in previous, similar elections.

For the 2020 election, a close parallel exists in its 2016 predecessor. The Republican candidate was the same in both elections, and the Democratic candidate in both cases was a non-incumbent, a former office holder from the previous administration and a representative of the centrist wing of the party. Moreover, the principal contested states in both 2016 and 2020 were the same: the historic “blue wall” of Pennsylvania, Michigan and Wisconsin and the transitioning states of Arizona and Georgia, both of which had demonstrated their contestability in the 2018 mid-term elections.

In this exercise, we compare the 2020 outcomes by county in these five states along two dimensions: first, with respect to their own outcomes in 2016 and, second, by contrasting them with outcomes in four different states where results were not seriously contested, California, Texas, Ohio and New Jersey. The purpose of the first comparison is to ascertain the patterns of change in voting over time; that of the second is to assess whether what happened in the five swing states was unusual in comparison with states where the election's outcome was a foregone conclusion. For counties that arouse curiosity, we then inspect the local election system with a view to ascertaining which party controlled the election machinery and whether allegations of irregularities appeared in the press at the time. Links throughout this essay to an online, interactive version of our analysis provide readers the chance to explore results first-hand.

Election irregularities in the United States

The historical record of U.S. elections is by no means pure. Vote suppression and ballot-box obstruction are an American way of life, particularly for African-American and Hispanic communities, but also for students and, in fact, for any community that threatens to change the hierarchy of American power by democratic means. In the past, poll taxes and literacy tests were important parts of the voter suppression mix. Today such suppression works primarily at the local level where it takes a multiplicity of forms from obstacles to voter registration, felony disenfranchisement, purges of the voting rolls, inadequate provision of voting facilities, and long and complicated ballots to holding elections on a work day and, indeed, any measure that discourages turnout or fosters long lines at the polls. Such practices are commonplace. No matter how much they may shock the conscience of observers from other democratic countries, American voters tolerate them on a regular and largely unchanging basis.

Nonetheless, even in the 21st century these practices have occasionally taken especially egregious

forms. The hanging chads of Palm Beach County in the close 2000 presidential election in Florida were a case in which the distinctive design of one county's ballot produced a diversion of several thousand votes to a third-party candidate, Patrick Buchanan, who had no noticeable base in the county and whose support abruptly disappeared at the Palm Beach County line (Wand et al. 2001). Whether the underlying cause was an error of faulty design or a deliberate attempt to confuse elderly voters, the episode illustrates both the county-specific nature of election irregularities in America and the detectability of such irregularities when they are significant by the simple device of inspecting vote totals after the fact.

Similarly, in Ohio in 2004, many murky events and allegations attended the outcome, most notably in Franklin County where one author of this report was an eyewitness to the three-hour voting lines in minority precincts and wrote about it at the time (Galbraith 2004). Later investigations pointed to a misallocation of voting machines favoring Republican suburbs; these effects were judged to be substantially larger than those in Palm Beach in 2000, though not large enough to have changed the outcome in Ohio and thus the final result of the election (Highton 2006). Notorious further examples occurred during primary elections in 2020 including in Milwaukee where only five voting sites in the entire city were opened on Super Tuesday and on the campus of Texas Southern University in Houston, where voters waited up to seven hours in line in the Democratic primary while half of the voting machines allocated to the uncontested Republican primary went unused (Dirr and Spicuzza 2020, Morris et al. 2020).

One of us at the time characterized these occurrences as forms of “structural fraud” in which past turnout in precincts is used to predict, and thereby to effectively ration, ballot access in each new election, thus automatically limiting the extent to which a change in voter sentiment or mobilization can affect the outcome (Galbraith 2020). A characteristic of this form of fraud is that it shows up in the statistical record as continuity of, rather than change from, past patterns, which is to say that it does not show up at all.

Allegations of irregularities in the 2020 general election necessarily take the form of active, rather than passive or structural, malfeasance. Since the election outcome was different from that of the 2016 election, the two possibilities are that the country—and therefore voters in particular states and counties—shifted away from President Trump *or* that interventions in these same states and counties made the difference. In the second case, such interventions should show up as statistical irregularities, differing in their appearance from one county to the next depending on who was in on the plot. That the entire election even at a state level—let alone the national level—could have been corrupted by some centrally-directed conspiracy seems to be ruled out by the structure of the U.S. elections regime. In any case, such an event was not alleged in even the most lurid of court filings.

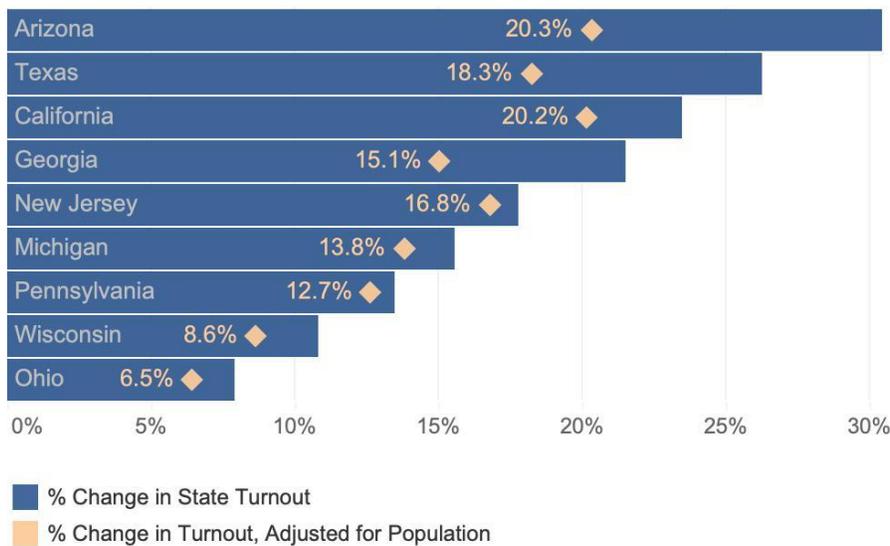
Evidence from the 2020 results

We present our data under the rubric of three basic questions. They relate to (1) changing voter turnout and population growth from 2016 to 2020; (2) the percentage change in the Democratic share of the vote from 2016 to 2020; and (3) the relative scale of these changes in contested and uncontested states, both in absolute terms and in relation to statewide margin of victory, which was of course known only after the fact. In addition, we scan the data for exceptional cases whose behavior merits further exploration, including examining the party control of election administration within counties. We take it as axiomatic, barring very specific contrary evidence, that there were no cases of Democratic election officials stealing votes for Trump nor of Republican officials similarly assisting Biden.

We present our data in a series of Tableau panels, integrated into this article by hyperlinks and embedded graphics. These permit the reader to isolate any county in any state to explore the data in our investigation. A pie chart permits easy identification of the larger counties in each state, and bar graphs and scatterplots permit easy visualization of outlying cases.

The first fact that jumps out from the data and from [the first Tableau panel](#) is that the scale of participation in this election was unusually high; in relation to the pool of eligible voters it was the highest since 1896 (Lindsay 2020). The growth of votes can be measured in raw terms and in relation to population growth; both measures show exceptional increases. Total votes grew by 20 million in four years, including by 10.4 million in the nine states we analyzed (Figure 1). A major factor was undoubtedly the relaxation of restrictions on vote-by-mail and extensive early voting days due to the pandemic; these greatly reduced, if not eliminated, election-day congestion at the polls. Of the 160 million votes cast nationally, 101 million were cast early or absentee (Lindsay 2020).

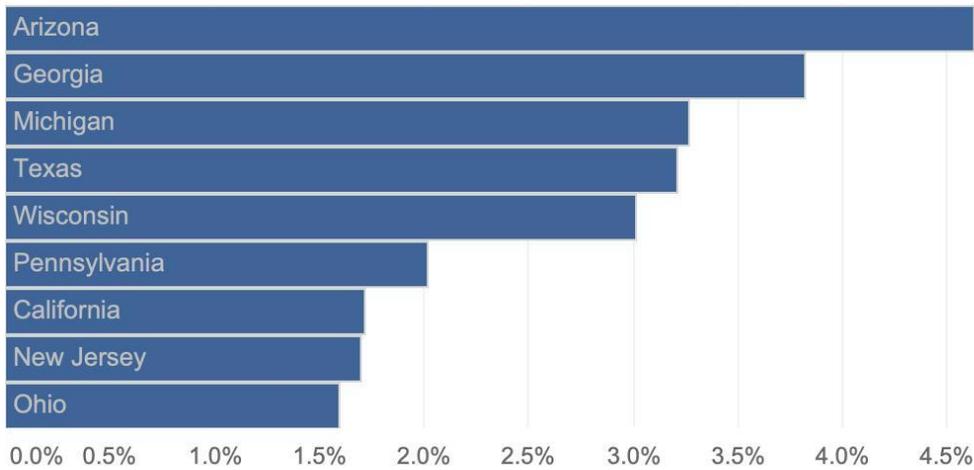
Figure 1: Percentage change in turnout, 2016-2020, total and adjusted for population growth



There is, however, no *exceptional* pattern of turnout growth in any swing state, except in Arizona. In the other four states in our analysis, the growth of turnout was well within the ranges seen in other states, including in both California and Texas which represented extremes of Democratic and Republican one-party control. In particular, turnout growth in “blue wall” states was entirely ordinary for this election; it was middle-of-the-road by comparative standards. Adjusted for population growth, Arizona’s turnout increase was in line with California’s.

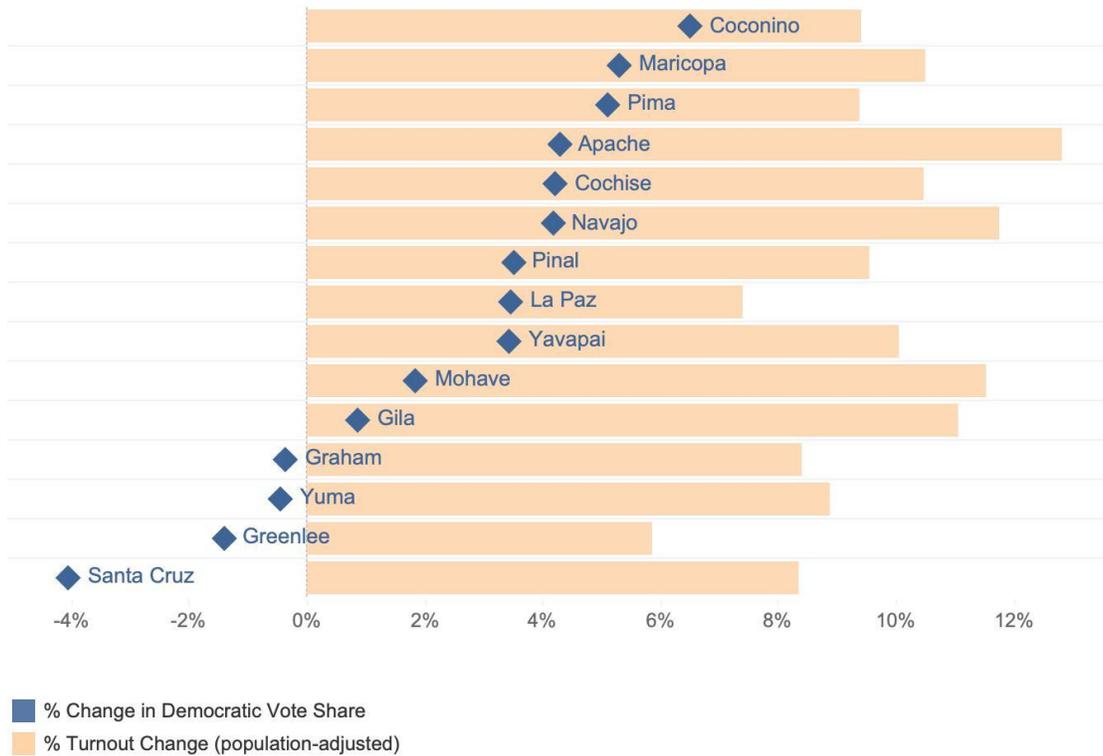
The [second Tableau panel](#) looks at the growth of the Democratic vote share from 2016 to 2020, summarized in Figure 2, a measure slightly complicated by the disappearance of the Green and Libertarian parties (as well as the independent candidacy of Evan McMullin) as significant factors but generally indicative of the shift toward Biden and away from Trump. By this metric, Arizona is the top case among the swing states, followed by Georgia and then Michigan. But none of the swing states ranks especially highly among all states in terms of the swing toward the Democrats from 2016 to 2020. Utah is first while Arizona is 20th in terms of the shift in Democratic voteshare; Georgia is 24th, Michigan 28th, Wisconsin 34th and Pennsylvania 40th.

Figure 2: Percentage change in Democratic voteshare, 2016-2020



Again, within each state there is a range (Figure 3), and in the close states it is quite typical for the shift in individual counties to have exceeded the final margin in the state as a whole. Maricopa County in Arizona is the extreme case. A rapidly growing county, Maricopa's shift toward the Democrats exceeded the final Biden margin of victory by a factor of more than thirty times. However, in percentage terms, the county's shift was not the highest in Arizona, and it was barely above that in Pima County, the state's second largest. It's worth noting that the *Republican* vote share in Maricopa County also increased by over 20 times the statewide margin. Moreover, lest one jump to conclusions, the election administration in Maricopa county was (and is) in Republican hands.

Figure 3: Arizona counties, percentage change in turnout (adjusted for voting age population) and in Democratic voteshare, 2016-2020, by county



A similar phenomenon of counties where shifts toward Biden between 2016 and 2020 were larger than the overall state margin in 2020 occurs in Georgia and Wisconsin, though not to the same degree, but not in Michigan or Pennsylvania where the overall margins were substantially larger. While one cannot, of course, rule out cases of ballot-box stuffing or its electronic equivalent solely on the basis of this sort of evidence, there is nothing anomalous in this statistical record to suggest such interference.

Statistical patterns do emerge in this data. As Table 1 demonstrates, Democratic gains in all seven states were proportionately larger in large counties than in small ones, and the relationship is highly significant in all cases except Arizona, which has unusually few counties and an unusual population distribution among them with a single county (Maricopa) accounting for more than half the population of the state. This is indicative both of the strength of the urban-rural divide in American politics and of the fact that this strength is not much different between swing and non-swing states; if swing states were systematically more strongly affected, that could indicate voter fraud on the part of large urban solidly-Democratic counties, but that does not seem to be the case, and the correlation appears to be driven more by regional factors and those unique to individual states than anything else. Moreover, in the northern swing states, there is a significant positive correlation between Democratic voteshare in 2016 and the Democratic gains in 2020.

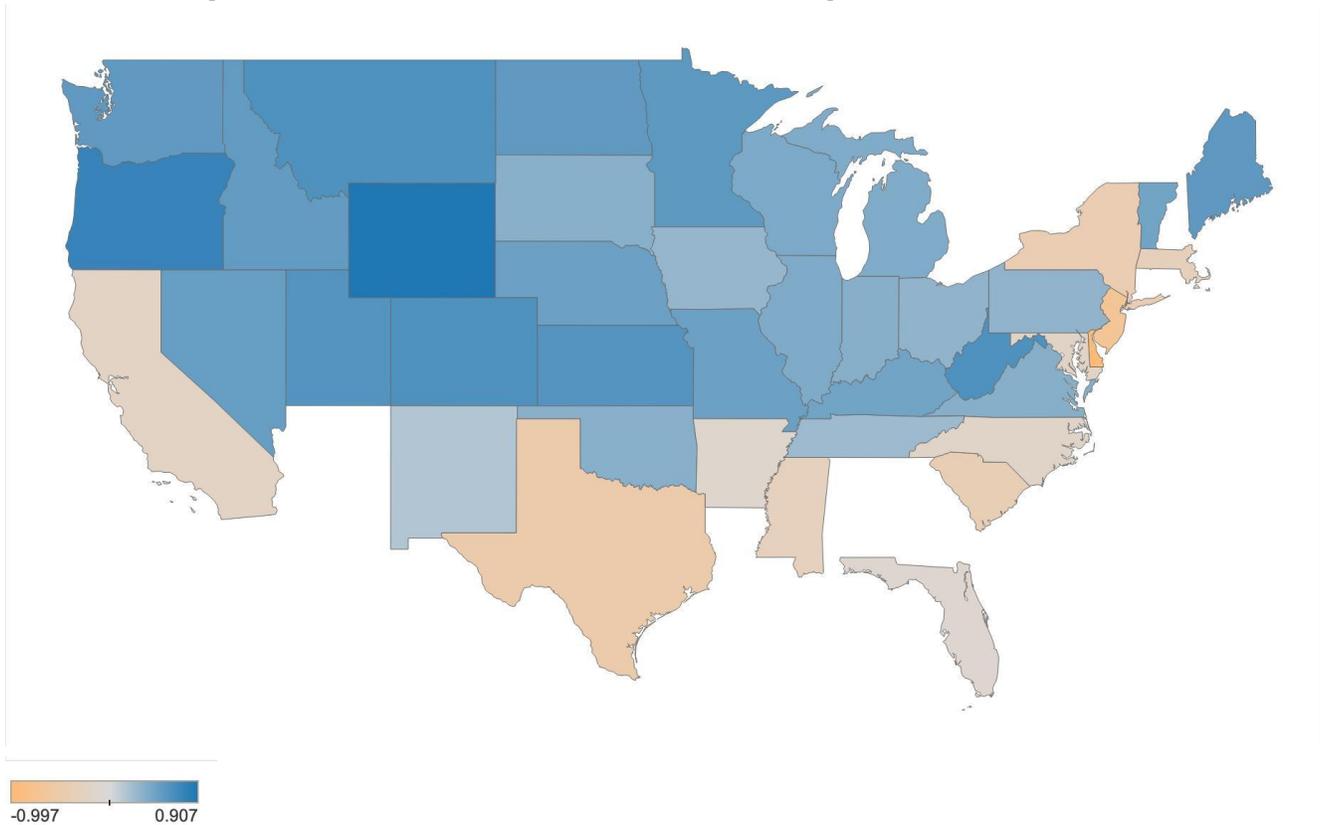
Table 1: Change in Democratic vote share in comparison to county size and previous election voteshare

	Correlation of Democratic vote share change and number of votes in county as proportion of votes in state	P-value of correlation	R ²	Correlation of 2016 Democratic vote share and Democratic vote share change, 2020 vs 2016.	P-value of correlation	R ²
Arizona	0.113	0.344	0.013	-0.036	0.550	0.001
California	0.361	0.001	0.131	-0.234	0.966	0.055
Georgia	0.333	0.000	0.111	0.012	0.440	0.000
Michigan	0.606	0.000	0.367	0.390	0.000	0.152
New Jersey	0.422	0.019	0.178	-0.737	1.000	0.543
Ohio	0.758	0.000	0.575	0.305	0.001	0.093
Pennsylvania	0.812	0.000	0.659	0.321	0.003	0.103
Texas	0.339	0.000	0.115	-0.503	1.000	0.253
Wisconsin	0.416	0.000	0.173	0.406	0.000	0.165
	Correlation of Republican voteshare change and number of votes in county as proportion of votes in state	P-value of correlation	R ²	Correlation of 2016 Republican voteshare and Republican voteshare change	P-value of correlation	R ²
Arizona	-0.411	0.951	0.169	-0.153	0.709	0.023
California	0.248	0.026	0.062	-0.227	0.961	0.052
Georgia	-0.446	1.000	0.199	0.112	0.078	0.013
Michigan	-0.288	0.997	0.083	0.410	0.000	0.168
New Jersey	0.215	0.169	0.046	-0.718	1.000	0.516
Ohio	-0.488	1.000	0.238	0.269	0.004	0.072
Pennsylvania	-0.223	0.969	0.050	0.307	0.004	0.094
Texas	-0.165	0.996	0.027	-0.559	1.000	0.313
Wisconsin	-0.303	0.997	0.092	0.370	0.000	0.137

These two correlations suggest that the 2020 election was marked—at least in the North—by increasing geographic polarization of the electorate. To assess this proposition, we ran the second correlation for all the states, and the results are presented as a map in Figure 4. The polarization hypothesis is abundantly supported throughout the West and North (except in New York), the Mid-Atlantic states and California, and it is roundly rejected in the South. The reason for the exception is the defection from the Democrats of significant numbers of Hispanic votes in Texas and elsewhere and likely of Jewish votes in downstate New York. Elsewhere in the South, a shift among formerly solid Republican suburbs toward the Democrats may be a factor in the trend toward geographical *depolarization* of the region, as might weaker numbers in the ‘Black Belt’ compared to whiter, more affluent counties.

Figure 4: Correlation between 2016 Democratic voteshare and change in Democratic voteshare from 2016-2020 by states.

States in which the p-value of this correlation > 0.05 are omitted from this map.



Unsurprisingly, a handful of outlier counties do appear on the charts. In Concho County, Texas, a surge in turnout *relative to population* was likely due to the closing of a prison in 2017 that reduced the non-voting population base in the county (Marks 2017). A similar phenomenon may have affected Stewart County, Georgia—home to one of the largest immigration detention facilities in the United States (Lopez 2020). The population dynamics in Liberty County, another Georgia outlier, are less clear but may have had something to do with the presence of the Army post at Fort Stewart. In Athens County, seat of the University of Ohio, we surmise that an absence of students due to the pandemic accounts for the steep drop in turnout from 2016 to 2020; a similar dynamic produces another outlier in Centre County, Pennsylvania, home of Pennsylvania State University. Michigan’s Gogebic County has unusual population dynamics as a consequence of deindustrialization and the end of the iron-mining industry; its population has steadily declined since the 1940 census, inflating its change in population-adjusted voter turnout. Wisconsin’s Menominee County and Texas’ Loving County are both small, inflating the effect of random or essentially random noise on their populations. (In other words, the chance of 25 residents of a county of 1,000 total residents leaving due to, perhaps, random chance or the downstream effects of a firm shutting down is greater than that of 25,000 residents of a county of a million people leaving for equivalent reasons.) Menominee County is also demographically distinct as it is geographically identical to the Menominee Indian Reservation.

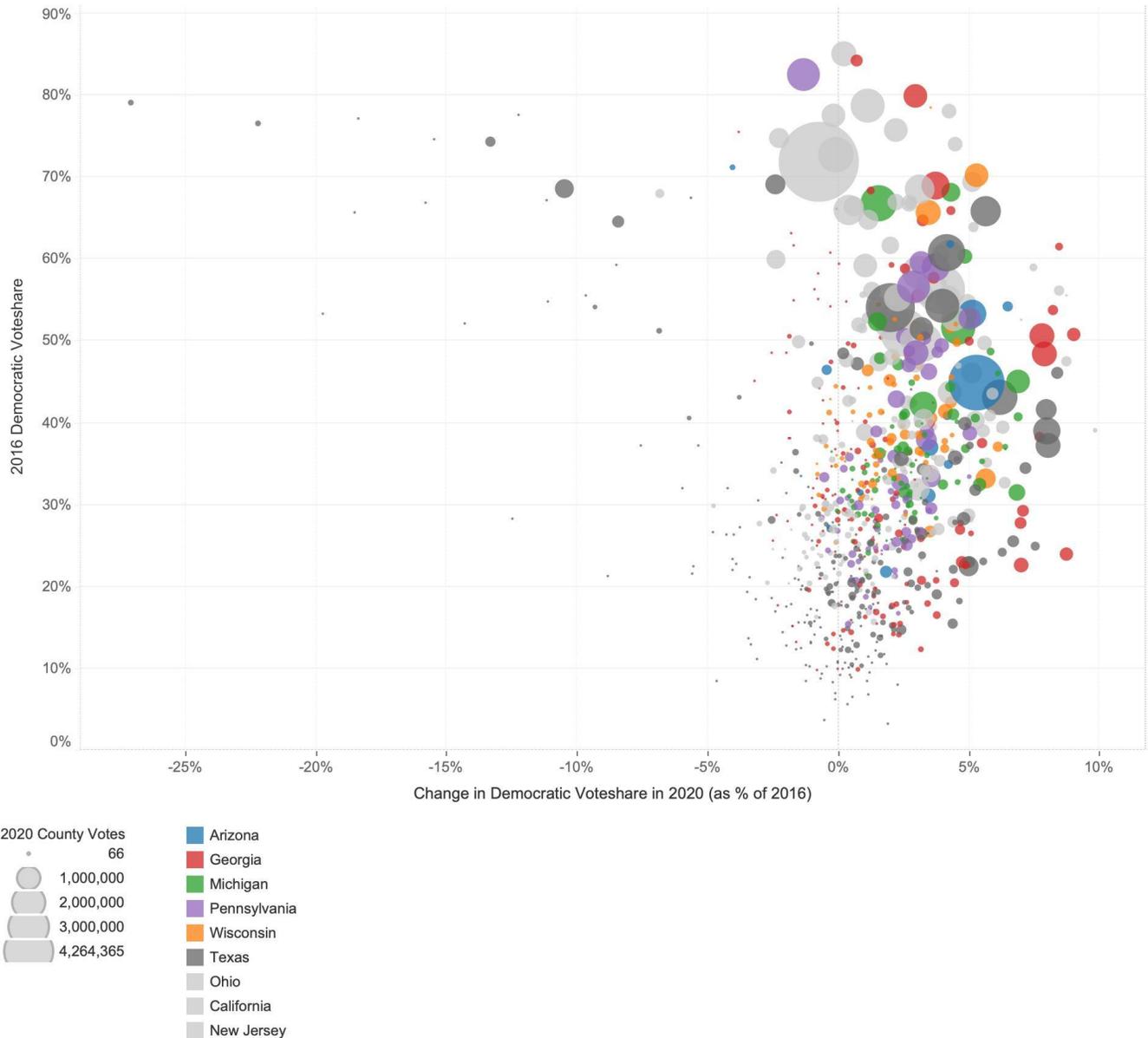
The Jelly-fish diagram

The [third Tableau panel](#) places all of the counties from the nine states in a single, comparative perspective, charting the 2016 Democratic voteshare against the proportionate shift in 2020, with colors

for the contested states and the others marked in gray as background. We call this the “jelly-fish diagram,” a simplified version of which is included here in Figure 5. (The full version with detailed county-level information can be explored in Tableau). The tentacles of the jelly-fish—the truly exceptional phenomena of this election—consist almost exclusively of Texas border counties, such as Webb, Starr, Maverick and Hidalgo, where the Democratic vote share *dropped* sharply.

In the center of the jelly-fish we find the large mass of counties from both contested and uncontested states. There is a very distinct tendency for the three Blue Wall states to group in the center of the blob. No exceptional cases from these states stand out at all.

Figure 5: County-level Democratic voteshare in 2016 and change in Democratic voteshare, 2016-2020



The remaining and remarkable feature of the graphic is the position of the counties of Georgia, which are located in the crown of the jelly-fish where its eyes would be (if jelly-fish had eyes). Georgia stands out for systematic, exceptional increases in the Democratic voteshare, especially in more populous

counties. However, this increase is *not* greater in counties that were previously Democratic than in those previously (and still) dominated by Republicans. A few Texas counties join those from Georgia in the crown suggesting where things may be headed in future elections.

A closer examination of the largest counties in Georgia reveals that the distribution of local control (as in, for example, election boards and commissioners) is more or less evenly split between Democrats and Republicans. In the case of DeKalb County, where allegations of maladministration of the 2020 election appeared in the local press, such claims were made by Democrats against Republican election officials (Estep 2020). Had these claims been valid or impacted the final result instead of solely affecting the speed of tabulation, then we would have expected to see a larger Democratic margin in Georgia.

Table 2: Partisan control of elections in selected Georgia counties

County	Board of Elections and Registration	County Board of Commissioners	Election oversight
Cobb	4 Republicans, 1 Democrat	2 Republicans, 3 Democrats	Republicans
DeKalb	2 Republicans, 2 Democrats and a neutral chairman*	7 Democrats	Both parties
Fulton	2 Republicans, 3 Democrats	3 Republicans, 4 Democrats	Democrats
Gwinnett	2 Republicans, 2 Democrats and 1 Independent	5 Democrats	Both parties

*The Democratic party in DeKalb County blamed the supposedly-neutral chairman for delays in 2020 (Estep 2020).

A [final Tableau panel](#) gives further detail for every county in each state that we examined, including its significance in relation to the outcome of the election in the state as a whole and, therefore, in the case of the swing states, to the outcome in the country.

The Post-election politics of voter access

Despite the absence of irregularities in the 2020 election, legislators almost every state have subsequently introduced legislation to restrict access to the ballot. As of March 24th, 47 states have seen 361 bills filed that would make voting harder by, for example, limiting early voting, changing requirements or eligibility to vote by mail, and introducing new restrictions on Election Day voting (“Voting” 2021). Some bills also seek to make voter registration more difficult while others increase the frequency of purges of voter rolls.

Georgia was among the first states to enact new voter restrictions after the 2020 election (Corasaniti 2021). Among the changes approved in March, the new statute creates stricter voter ID requirements, narrows eligibility for absentee voting and limits drop-off locations for mail-in ballots. Georgia’s new law also expands state legislators’ authority over county election boards while limiting the authority over elections of the Secretary of State.

In another of the states in our analysis, Arizona, legislators had filed 23 bills to restrict voting as of April 1 (“Voting” 2021). Proposed legislation includes measures to get rid of permanent early voting

lists, criminalize mailing absentee ballots to residents who are not already included on early voting lists, restrict who can aid voters by collecting and delivering mail ballots, increase requirements for mail-in ballots and even requiring that mail-in ballots be submitted in person instead of sent through the mail. Though measures expanding voter access have also been filed in many states, the backlash from Republican lawmakers in states where 2020 election results were highly contested yet not unusual reflects a continuation of the business-as-usual approach to restricting voting that threatens to shift power by democratic means which these authors noted in the introduction to this report.

Conclusion

We draw the following basic conclusions:

- The fundamental story of the 2020 election was vastly improved ballot access and increased voter participation. This increased votes for *both* major parties, who also benefited from a drop in third-party appeal. Vote-by-mail and early voting made a vast difference in assuring the right to vote all around.
- President Biden's victory was due to a very slight *differential* gain in his favor, which was actually smaller in the swing states we analyzed than in many others, though it was larger than in California, Texas or New Jersey where the outcome was never in doubt. The reasons for this change, which polls have attributed to a slight shift among white men toward Democrats offsetting a slight Republican shift in all other demographic categories (African-Americans, Hispanics, women), are beyond the scope of this analysis as is the disappearance of the various third parties and write-in votes (e.g. for Sanders in Vermont in 2016), though these undoubtedly played a role in the move toward Democrats last year (Frey 2020). Our analysis leads us to conclude that swing states show no pattern of having been exceptional in this regard.
- Arizona appears to have switched largely on the basis of demographic transition, though organizing surely played a role. In this respect, Arizona now joins Nevada and California (along with New Mexico, the only majority-minority state) in a Democratic bloc in the Southwest. Democratic gains in the region are attributable in part to the rapid rise in inequality in those states, a national phenomenon that favors the Democratic Party and that is working its way through Texas and other parts of the South (Galbraith and Choi 2020).
- Georgia is the exception among exceptions. It is the place where a statewide mobilization of previously non-participating or effectively-suppressed voters, aided by the massive growth of Atlanta and its suburbs, turned the tide. The credit due to an alumna of the LBJ School of Public Affairs, Stacey Abrams, is not misplaced.

Finally, as we have noted, in the aftermath of the election, Republican legislators in Arizona, Georgia, Wisconsin and Texas along with 43 other states have moved to reduce access to the polls in forthcoming elections. This suggests that these political professionals whose careers, livelihoods, power and wealth are on the line, share our analysis and conclusions.

Appendix: Notes on metrics used in this report

Data on results of the 2016 election are from the MIT Election Lab, while data on 2020 results come from Dave Leip's Atlas of U.S. Presidential Elections, current to February 20, 2021. County-level estimates of total population and population over the age of 18 come from the U.S. Census Bureau

(2019 Current Population Survey).

In this paper, “voteshare” refers to the *proportion* of each jurisdiction’s valid votes that were recorded for a candidate in comparison to all votes in the jurisdiction while *turnout* refers to the total number of valid votes cast in each jurisdiction.

In order to analyze change in turnout, it is important to disentangle changes in the population of potential voters from changes in the proportion of those voters who turn out to vote. While the Census Bureau publishes annual data on the number of citizens of voting-age in some counties, such data was not available for all counties more recently than 2018 until after this research was well underway, though it has since been released. Furthermore, while information on the voting-age population by county was available for 2016, it is not yet available for 2020. As such, to adjust for turnout, we used Census county-level estimates of population over 18 years old in 2015 (for 2016 calculations) and 2019 (for 2020 calculations) as a proxy for estimating the change in the number of eligible voters in elections 2016 and 2020. As mentioned, this creates unusual effects in counties with unusual population dynamics but allows for effective comparison of county-level voting trends by accounting for regional variances in growth rates, dynamics of outlier counties notwithstanding.

Another important metric in analyzing the election on a county-by-county basis is the size of the increase in the absolute vote for any one county relative to the statewide margin. This allows us to compare the importance of voting trend changes in any one county relative to the state’s final results, revealing the significance of large counties with major turnout and/or voting shifts in close states over smaller counties with less substantial shifts in less competitive states. However, while this metric is telling, it does not account for the fact that many counties saw substantial changes in votes total for *both* parties. In Texas, for example, the increase in Democratic votes was more than twice the statewide margin but was eclipsed by the increase in Republican turnout which, when added to the existing Republican head start, kept the state's 38 electoral votes firmly in Republican hands. Thus, the increase in the Democrats' *net margin* is another important metric.

Yet, while sufficient to analyse the counties' effects on statewide results, this metric does not tell the whole story. Changes in vote margins due to increased turnout in counties which already lean to one side or another can wipe out or inflate changes in vote margins as a result of one party improving its share of the vote. For example, Arizona's Mohave County, which had more than three Republican votes for every Democratic vote in both 2016 and 2020, recorded a decrease in net Democratic turnout larger than the statewide margin despite an increase in Democratic voteshare: even though the Democrats did better among new voters than the existing set, the Republicans still won a supermajority of new votes.. The turnout-adjusted change in net Democratic votes corrects for this by multiplying Democrats’ voteshare in 2016 by the total 2020 turnout in each county, cancelling out the ‘expected’ increase in the Democratic vote from holding steady in an expanding electorate, and comparing the result to the actual 2020 Democratic vote total in each county; it can also, equivalently, be analyzed as the change in Democratic voteshare between 2016 and 2020 multiplied by the 2020 total turnout in each county.

Correlation, as shown in Table 1, refers to the Pearson product-moment correlation coefficient. The correlations on the top left correspond to the correlation between the total number of votes in each county in 2020 as a proportion of the number of votes in the state that same year and the difference between the 2020 and 2016 Democratic shares of the vote in those counties, measuring polarization by county size; the correlations on the top right correspond to the correlation between the 2016 Democratic share of the vote in each county and the difference between the 2020 and 2016 Democratic shares of the vote in those counties, measuring polarization by pre-existing partisanship. The

correlations on the bottom correspond to the same metrics, but for the Republican rather than the Democratic party. All p-values are right-tailed in that table; however, in the national calculations, all p-values are two-tailed to account for the possibility of meaningful correlations in either direction. County equivalents (e.g. counties in all states that have them, as well as the parishes of Louisiana and the independent cities of Virginia) are used to calculate correlations in all states except Alaska, which tabulates election results by state house district; additionally, both Alaska and Maine tabulate votes received pursuant to the Uniformed and Overseas Citizens Absentee Voting Act separately.

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Tableau Dashboard (permalinks for reference, embedded into the paper, not for publication in this format): *Entire dashboard*

1. *The first panel shows turnout changes and the national context of analyzed states and all state margins of victory.*
2. *The second shows change in Democratic vote share and Republican vote share and contains the correlations map and county-level change in Democratic voteshare.*
3. *The third shows all counties in comparison of Democratic voteshare in 2016 and the proportionate shift in 2020.*
4. *The final and fourth panel provides detailed county-level information at the state level.*