Letter: Drought affected 1976 presidential election results in South Dakota

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Abstract

In the staunchly Republican state of South Dakota, a severe drought in the election year of 1976 led to anomalously strong rural voter support for Democratic presidential nominee Jimmy Carter. As growing attention is given by researchers to the effects of disaster response and climate policy on elections, this case is a natural experiment providing evidence that exceptional weather conditions can lead to exceptional election results.

Introduction

South Dakota is a staunchly Republican state. Since 1900, only two Democratic presidential candidates have won the majority of the popular vote in South Dakota: Franklin D. Roosevelt, in 1932 and 1936 in the worst years of the Great Depression (FDR would lose the South Dakota popular vote in the 1940 and 1944 elections); and, Lyndon B. Johnson, who in the election following the 1963 assassination of President John F. Kennedy thrashed Republican Barry Goldwater by receiving a record 61% of the national popular vote. Current President Joe Biden received only 35.6% of the popular vote in South Dakota (Federal Election Commission 2021), and his Democratic presidential predecessors Barack Obama and Bill Clinton similarly failed to win the state. Since LBJ, only one Democratic candidate has ever come close to breaking Republican dominance in South Dakota: James (Jimmy) Carter, who in 1976 received 49% of all votes cast in the state.

The summer of 1976 was the driest in South Dakota since the 1950s and caused crop losses on scales not seen since the infamous Dust Bowl years of the 1930s (Matthai 1979), when a majority of South Dakotans voted for FDR. Spring-planted grain, corn and fodder crops failed across much of the state and a half-million head of cattle were culled for lack of pasture or feed, generating over US$700 million in economic losses in the state’s agricultural sector (Diersen et al 2002, McLeman et al 2022). The 1976 drought was spatially concentrated in South Dakota, and did not extend to neighboring states beyond a small number of adjacent counties (Figure 1) (Thompson 1976). By late June, the federal government had declared much of eastern South Dakota a drought disaster area and was providing low-interest loans and other financial assistance to affected farmers and rural businesses. In the November 1976 election, the percentage of votes for the Democratic candidate was higher than the 1972 election in all but six of sixty-seven counties (Inter-university Consortium for Political and Social Research 2013). These six exceptions included Minnehaha County, home to the state’s biggest urban centre, Sioux Falls, and where 15% of all votes were cast, as well as Brookings and Clay counties, where the state’s two largest universities are key employers. Strong Republican support in these populous counties, where voters’ livelihoods were less directly affected by the drought, allowed incumbent President Gerald Ford to pip Carter and claim the state’s electoral college votes.

This raises the question of whether Carter’s anomalously strong showing in rural South Dakota was attributable in whole or in part to the socio-economic impacts of the drought, or if it was coincidental or attributable to other, exogenous factors. The question of whether extreme weather events such as
droughts can affect electoral outcomes is an increasingly topical subject where research to date has shown mixed results. Some studies published in recent years have found that incumbent governments may have an advantage following a disaster (Blankenship et al 2020, Masiero & Santarossa 2021) and that voter participation rates often fall after a disaster (e.g. post-Hurricane Katrina local elections in New Orleans (Sinclair et al 2011)), which typically gives an advantage to established candidates. However, other studies have found no such effects, an example being post-flood municipal voting in Calgary, Canada (Bodet et al 2016). A key factor appears to be attribution – that is, whether voters associate the socio-economic impacts of a disaster with inadequate preparation and/or weak post-disaster response on the part of the incumbent government (Arceneaux & Stein 2006). This attribution effect has been observed in the context of weather-related property damage in both gubernatorial and presidential election results in the US (Gasper and Reeves 2011).

The 1976 South Dakota case provides a unique natural experiment for exploring such questions. It is rare for a drought event of such severity to be confined almost entirely to the political boundaries of a single state, meaning that voters in other states would have had little experience of its socio-economic impacts. Even within the South Dakota, the severity of drought conditions varied across counties, allowing for a comparative analysis of voter behaviour at relatively small spatial scales. The timing is also unique in that the drought occurred immediately before the election, meaning that its socio-economic impacts were fresh in voters’ minds when they went to the ballot box. Finally, the election presented voters with the choice of an incumbent president, whose administration had had an opportunity to provide assistance to people in drought-affected areas, with a challenger who had never previously run for the presidency and was comparatively unknown to voters.

Methods

Our starting assumption was that, with one notable exception described below, the potential influence on voters of non-climatic events such as political party platforms, lingering effects of the Watergate scandal, macro-economic performance, energy prices, and so forth, would be experienced equally across South Dakota in 1976 – and would not differ significantly with neighboring states – but that the influence of the drought on voters’ decisions would vary within the state according to the severity of drought’s impacts at local levels. In other words, our hypothesis was that counties where the drought was most severe would be statistically more likely to vote for Carter than Ford, with a null hypothesis that no significant relationship would be observable between the severity of drought conditions and the number of votes for a particular party at county levels.

County-level election results data for 1972 and 1976 were obtained from the Inter-university Consortium for Political and Social Research (2013). Although we focused only on voter support for the Republican and Democratic candidates, it should be noted that the 1976 election also featured several independent candidates, the most notable one being Senator Eugene McCarthy from the neighbouring state of Minnesota, a former Democrat who had unsuccessfully sought that party’s nomination for President in 1972. McCarthy won less than 1% of the popular vote in 1976, but his participation in the election means
that votes lost by the Republican candidate were not automatically gained by the Democratic candidate (or vice versa). The overall number of votes cast across South Dakota was 2.2% lower in 1976 than in 1972, so it may also be possible that voters who were dissatisfied with the party they had voted for in 1972 chose not to vote at all in 1976. For these reasons, we did not focus on the absolute numbers of votes, but the percentage of total votes cast in each county for Carter and Ford.

We then used ordinary least square regression models to compare the percentage of votes for each candidate in each county with the precipitation anomaly for each county; that is, the extent to which a county’s precipitation deviated from expected norms in the summer of 1976. County-level data for drought severity were obtained from the National Centers for Environmental Information historical weather database (https://www.ncei.noaa.gov/). Based on a timeline for the 1976 drought generated by McLeman et al (2022), we selected as our independent variable the precipitation anomaly for January to July 1976 for each county, measured in inches. This measure provides a rough estimate of soil moisture availability and hence relative severity of agricultural drought conditions at the county level that particular summer. A small number of counties experienced a positive anomaly (up to 6.63 inches of precipitation above average), but most counties experienced a precipitation deficit as compared with the historical average.

In assessing 1976 voting results for eastern South Dakota, we controlled for a potentially confounding factor specific to that part of the state: the Oahe project, an elaborate proposal by the federal Bureau of Reclamation to channel water from a reservoir on the Missouri River to irrigate 750,000 acres of land in northeastern South Dakota. The Oahe project proposal was politically contentious in the mid-1970s, and was ultimately terminated in 1982 without being completed (Carrels 1999). We isolated the counties directly affected by the Oahe project and compared their voting patterns with other eastern South Dakota counties using a one-way ANOVA test to determine if there were any identifiable voting differences that might be attributable to the project.

Findings

Across the state as a whole, we found that for every inch that precipitation fell below expected norms in the period January-July 1976, the number of votes per county for the Democratic candidate was 1.02% higher and votes for the Republican candidate 0.91% lower (significant at p=0.0001). However, this relationship did not express itself in linear fashion. Instead, we observed a threshold effect, in that voting outcomes were disproportionately affected in counties where the shortfall in expected precipitation was roughly four inches (10cm) or more (Figures 2 and 3).

The combination of fewer total votes and higher Democratic support in drought-affected counties had the overall effect of creating much larger and wider spread support for the Democratic candidate in 1976 as compared with 1972. As can be seen in Figure 4, ten counties where the majority of voters in 1972 supported the Republican candidate, Richard M. Nixon, flipped in 1976, with the majority of votes going to Carter. Nine of these intersect with the area shown in Figure 1 where drought conditions were most severe. The tenth – Gregory County, the southernmost county touching the west bank of the Missouri
River – had a precipitation deficit of -5.67 inches, placing it outside the highest ranking counties in terms of severity, but nonetheless experiencing significant drought conditions. The eastern part of South Dakota that was hit so severely by the drought differs socially and economically from the ranching-dominated western part of the state. The east is more populous, and the most common rural land use at that time consisted of family-operated farms producing a mix of unirrigated field crops, pasture and livestock – a farming system that was inherently more drought sensitive than ranching (McLeman et al 2022). It is also, as shown in the 1972 results in Figure 4, an area where support for Democratic candidates was historically stronger than elsewhere.

The counties directly affected by the Oahe project are identified with cross-hatching in Figure 4. In these counties, the relationship between precipitation anomalies and county-level vote distributions were consistent with the state-wide pattern (95% confidence, R-squared values range from 0.2 to 0.25). ANOVA tests showed no statistically significant difference between the means of county-level voting percentages in Oahe counties as compared with other South Dakota counties. In other words, the drought influenced 1976 presidential voting patterns in South Dakota but the Oahe project did not. Detailed county-by-county voting results and precipitation anomalies are provided in the Supplementary Materials.

**Discussion And Conclusions**

Our analysis shows there was a clear, statistically significant, positive association between the local severity of drought conditions in the summer of 1976 and higher voter support in South Dakota for Jimmy Carter in the November 1976 election. Despite these gains, Carter lost (barely) the state’s electoral college votes to Gerald Ford. Republican support remained relatively solid in western South Dakota counties less affected by the drought, and the Republican candidate actually gained votes in and around Sioux Falls and the two counties home to large universities, where livelihoods are less directly tied to agriculture. The strong support for the Democratic candidate in drought-affected rural counties suggests that those voters may have attributed the severe socio-economic impacts of the drought to the federal government, consistent with the ‘attribution affect’ noted earlier. Articles published in local newspapers in eastern South Dakota in the summer of 1976 make frequent reference to public meetings where local farmers expressed dissatisfaction with the speed and adequacy of drought relief provided by the federal Department of Agriculture (McLeman et al 2022). Our study cannot prove that this dissatisfaction extended to President Ford himself, but election results suggest this was the case.

Why are these findings notable today? The Intergovernmental Panel on Climate Change (2021) has warned that anthropogenic climate change will exacerbate the frequency and/or severity of extreme weather events in many regions, including large areas of the United States. One recent study conducted in Europe found that temperature and precipitation anomalies in recent years have been associated with growing voter support for Green parties in some countries (Hoffmann et al 2022). It may therefore only be a matter of time before similar effects emerge elsewhere. A takeaway message to today’s politicians from rural South Dakotans from 1976 is that exceptional weather conditions can lead to election outcomes that would be unimaginable in ordinary political calculus.
Declarations

Ethics approval and consent to participate: not applicable, no human subjects participated in this study.

Consent for publication: All authors consent to the submission and potential publication of this manuscript.

Competing Interests: The authors declare no conflicts of interest.

Author contributions: McLeman conceived of the project, led the writing of this manuscript, identified the critical precipitation thresholds, and conducted background research; Heath conducted the statistical analyses of climate and voting data and generated the maps; Vollan identified critical historical information about the South Dakota politics and voting critical to the case study and contributed to the writing of the manuscript; Robertson contributed to data analysis and writing of manuscript.

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Availability of data and materials: Data used in this study are included in spreadsheet format as Supplementary Materials.

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References


Figures
Figure 1

Severely drought-affected areas in June 1976 as detected from LANDSAT imagery (from Thompson 1976). Dotted lines indicate climate monitoring zones of the time.

Figure 2

Percentage of county-level votes cast for the Democratic candidate vs county-level precipitation anomaly, 1976.

Figure 3

Percentage of county-level vote for Republican candidate vs county-level precipitation anomaly, 1976.
Figure 4

County-level presidential voting results in 1972 (upper map) and 1976 (lower map), with percentage of votes received by winning candidate shown by color shading. Cross-hatched areas are counties directly affected by the Oahe irrigation project.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.
• ClimaticChangesupplementaryinfodataset.xlsx