Democrats or Republicans: Who has a more difficult time voting?
Datasci 203: Lab 1

Annie Friar, Kushal Gourikrishna

Contents

1 Importance and Context

The 2020 presidential election was a highly contested and highly anticipated election. Per a national survey conducted by the Pew Research Center, a record 83% of voters answered that the 2020 presidential election "really matters".[1] On the other hand, 2020 was also right in the midst of the COVID-19 pandemic and voters were concerned about how difficult it would be to vote in the 2020 election. According to the same Pew Research Center survey, about half of registered voters expected to have some difficulties voting. When looking at the breakdown between political parties, 60% of registered Democrats answered that they expected to have difficulties voting while only 35% of Republicans answered the same thing. While COVID-19 is a huge challenge, easier methods of voting also gained a lot more traction such as vote-by-mail and same-day voting. Access and ease of voting is an important factor for both political parties and campaigns. In order to improve or leverage the current situation, understanding how difficult it is for voters to vote is crucial.

This analysis specifically looks at voting difficulty through a partisan lens. As mentioned in the previous paragraph, about half of overall registered voters reported that they expected to experience difficulty voting but there was a stark difference in percentage between the two major parties. Now that the 2020 election has passed, this analysis aims to look at that partisan divide regarding voting difficulty. Specifically, the goal of this analysis is to address the following research question:

> *Did Democratic voters or Republican voters experience more difficulty voting in the 2020 election?*

Gathering insights into the partisan divide in voting difficulty (if it exists) can assist both parties in better understanding their voter base and championing efforts to improve ease of voting.

2 Data and Methodology

This analysis relies on data from the American National Election Studies (ANES), specifically from the ANES 2020 Time Series study. The study is a two-wave panel design that involves pre-election and post-election interviews. Over 8,000 individuals were interviewed in some capacity. The sampling frame for the fresh sample was the list of residential addresses where the United States Postal Service delivers mail. ANES researchers report that "most of the population of interest for the study was 'covered.'"[2] However, the sample is not perfectly nationally representative.

To operationalize the question of how difficulty in the voting process was experienced by the two major parties, first we needed to distinguish party membership for survey respondents. One option we considered was simply relying on a voter's self-identification. However, as discussed by John Richard Petrocik, most independents in national surveys are actually "leaners", and treating them as independents underestimates party-level effects.[3] Therefore, we relied on both party identification as well as the question, "Do you think of yourself as closer to the Republican Party or to the Democratic Party?" Using this methodology resulted in an additional 1,446 partisans being classified as either a Democrat or a Republican. We remove respondents who are true Independents as well as individuals who had no post-election interview or refused to answer questions about party leanings, leaving 5,827 partisans for whom difficulty voting could be compared.

Difficulties can arise in many different phases of the voting process, and vary state to state. In fact, there is a rich policy debate on both sides surrounding voting rights, with state legislators enacting policies that either make voting more restrictive or reduce the cost of voting.[4] In many states, voters are required to register in advance of the election, and difficulties often arise during this process. Once registered, voters may experience challenges in the voting process itself, sometimes so much so that they are deterred from voting altogether.

Some studies have managed to quantify such challenges objectively, for example in exploring how the

---

[1] Pew Research Center. Election 2020: Voters Are Highly Engaged, but Nearly Half Expect To Have Difficulties Voting" (2020)

[2] American National Election Studies. 2021. ANES 2020 Time Series Study Full Release [dataset and documentation]. February 10, 2022 version. www.electionstudies.org.

[3] Petrocik, J. R. (2009). Measuring party support: Leaners are not independents. Electoral Studies.

[4] Schraufnagel, S., Pomante, M., and Li, Q. (2022). Cost of Voting in the American States: 2022. Election Law Journal: Rules, Politics, and Policy, 21(3).

consolidation of polling places depresses voter turnout using a natural experiment.[5] However, voters' personal experience of these difficulties is also relevant. Recent research has found that experiencing long waits at the polls decreases turnout for future elections.[6] Since voting is a personal decision, voters' personal experience of the voting process can impact their current and future decisions to vote. Therefore, in this analysis, we decided to focus on voters' self-reported experiences of challenges voting.

The ANES study allows respondents to share difficulties that arise for them during the election cycle. Respondents can share difficulties that prevented them from registering to vote, difficulties experienced while voting, and, in some cases, difficulties that deterred them from casting their vote, as shown in Table 1.

Table 1: Difficulty Voting Breakdown

Party_Classification	Any	Registering	Voting	Deterred_Voting
Democrat	646	31	484	155
Republican	575	33	386	184

In this analysis, we chose to focus specifically on difficulties reported by voters who managed to cast their vote in the 2020 election. Certainly, this does not represent a comprehensive picture of all difficulties experienced during the voting process. However, this does provide a report of the challenges experienced by voters in the act of voting in this most recent election. As mentioned above, voters who experience difficulties may be at risk of becoming non-voters in the next election, which makes them of particular interest to both parties.

We do find that a sizable portion of voters from the two parties report experiencing difficulties in the voting process, as shown in the leftmost chart from Figure 1. The breakdown of the categories of difficulties that voters reported experiencing is shown in the rightmost chart in Figure 1. There is an observable difference between the percentage of voters experiencing difficulties for each party. However, to know if this difference is significant, we must turn to a statistical test.
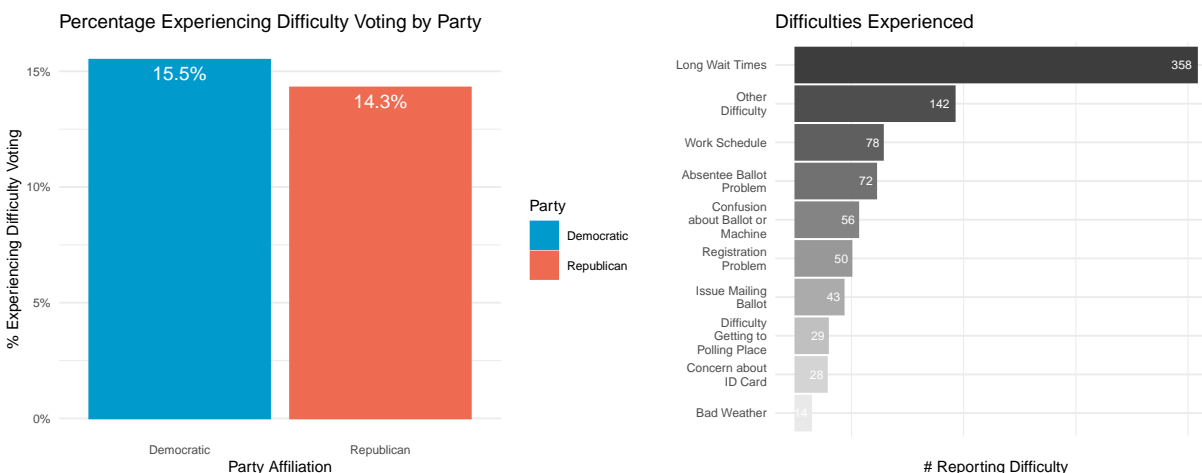

Figure 1: Voting Difficulties Experienced by Party & Types of Difficulties Experienced.

Because we are comparing two groups (Democrats and Republicans) and our outcome variable is binary (a voter experienced difficulty or not) we can run a two-sample t-test.

The null hypothesis of our t-test can be phrased as follows:

[5]McNulty, J. E., Dowling, C. M., and Ariotti, M. H. (2009). Driving Saints to Sin: How Increasing the Difficulty of Voting Dissuades Even the Most Motivated Voters. Political Analysis, 17(4), 435–455.

[6]Pettigrew, S. (2021). The downstream consequences of long waits: How lines at the precinct depress future turnout. Electoral Studies. http://www.stephenpettigrew.com/articles/pettigrew-2021-es.pdf

Null Hypothesis: *The probability that a Democrat experiences difficulty voting is equal to the probability that a Republican experiences difficulty voting*

For a t-test to be valid, there are three assumptions that must be true.

The first assumption states that the data must be generated by an I.I.D. process. The 2020 ANES data were drawn from a "fresh cross sectional sample." This consisted of a randomized sample from a USPS database that had a set of residential addresses from all 50 states and Washington DC. All of these voters had an equal chance of being selected. Then these chosen voters were randomly assigned to a type of survey (web-only, mixed web, mixed video). With this double randomized sampling method it can be assumed that these samples are sufficiently independent and identically distributed, therefore satisfying the I.I.D. assumption.

The second assumption states that the data must be measured on a metric scale. In our case, we measured whether a voter had difficulty with a simple binary variable (1 if yes, 0 if no). Hence, the binary variable satisfies the metric scale assumption.

The third assumption states that the distribution of the data must be sufficiently normal, which is often satisfied by the Central Limit Theorem. In our case, the sample size is large enough (~5800 observations) to assume that it will eventually converge to a normal distribution as per the Central Limit Theorem.

3   Results

```
test <- anes %>%
  filter(party %in% c('D', 'R'))%>%
  filter(had_difficulty_numeric == 1 | had_difficulty_numeric ==0) %$%
  t.test(had_difficulty_numeric == 1 ~ party)
```

Based on the results of our t-test, we fail to reject the null hypothesis that we stated earlier in this report (t=1.25, p=0.21). Essentially, based on the data we had and the statistical test we performed, we cannot conclude that there is any significant difference between the probability that a Democrat experiences difficulty voting as compared to the probability that a Republican experiences difficulty voting.

It should be noted that this test is not comprehensive and there are multiple limitations to keep in mind. The ANES sample is not representative of the U.S. population as a whole. Those people who are able and willing to respond to a survey may also face fewer difficulties voting. Looking only at difficulties faced by those who were successful in voting is a significant limitation. It is certainly possible that voters from one party or the other are more likely to experience difficulties that prevent them from voting; that question is beyond the scope of this study. Finally, the survey response data represent subjective evaluations of difficulty, and different people may have different thresholds for acknowledging these difficulties experienced during their interview.

4   Discussion

Based on the results of this statistical test, we cannot conclude that there is any significant difference in voting difficulty between Democrats and Republicans, though further research is warranted. Practically, this result aligns with the "eye test" of the raw ANES data. With a sample of almost 6,000 voters, there was only a small difference between Democrats who reported difficulty in voting and Republicans who reported the same. Statistically, this small difference came out to be not enough to reject our null hypothesis.

As mentioned in the opening section of this report, Democrats and Republicans clearly have a large difference in perception of how difficult it is to vote. Yet after the election actually took place, there doesn't seem to be a marked difference in voting difficulty between parties among those who voted successfully. It would be worth digging into the different types of difficulty that voters faced. This study focused on the overall difficulties voters faced but a focus on specific areas such as vote-by-mail or polling lines may show different results. Broadly, this study is an initial step to understand how voters from the two major parties experience the voting process. There is much more specific work that can still be done to garner more insights.