Physical Location Factors in Voter Engagement and Participation: Wake County, North Carolina

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May 10, 2020

1. Introduction

Background

Voting is one of the most common collective human activities performed across the world. In one form or another, with varying levels of accuracy and oversight, it is performed in most politically, economically, and culturally stable countries (and many unstable countries) on a routine basis. Many people, especially in the United States, lament the electoral process, whether it be for the less than stellar voter turnout rate often experienced, the ever-increasing hyper-partisan nature of elections, or the disbelief that voting will in the end make a difference to the way in which government runs at the federal, state, or local levels. The ancient Greek statesman, orator, and general Pericles is often cited as having stated, “Just because you do not take an interest in politics doesn't mean politics won't take an interest in you.” (1) It is true that level of indifference one may have toward politics makes absolutely no difference in whether one is affected by the results of politics. Elections are held, officials take office, and the business of government runs, for better or worse. That being stated, the political and electoral process is important to everyone.

There has been a great deal of research on voting, sentiment, political ideal formation, and other concepts associated with the electoral process. One area that has been researched, although possibly not to the extent that it could be researched, is that of physical location factors in determining voting various types of voting behaviors. (2) For example, it was found that shortening the distance of polling locations increased voter turnout, regardless of the level of confusion that change may have caused. (3) Others debate whether the choice of venue, whether it be a private religious institution (such as a church) or a public secular institution (such as a public school) is enough to subtly sway the choices of those casting a ballot. (4) Understanding these concepts are considerations when choosing the placement of a polling place for a particular precinct. This also is a consideration for those who advocate for greater degrees of emphasis being placed on other methods of voting, such as voting by mail or even Internet-based voting systems.

Research Problem

There are many measurable voting behaviors that could be tied to real-world location components. Some of the more unique situations include such things as turnout, under-voting (a ballot where the choices completed are less than the number allowed, whether it be for top-of-ticket races, lower ballot races, non-partisan positions, specific races), or split-ticket voting (where two or more top-level races are decided for candidates of a different party).

Similarly, real-world situations that are measurable and may be associated with particular voting behaviors include the type of venue serving as a particular polling place for a precinct, the prevalence of certain types of venues of a similar nature to the precinct polling place, or the presence of particular types of commercial venues. This project seeks to examine these geo-location factors that may be related to, or exhibited in conjunction with, certain types of voting results or behaviors. This project will utilize real-world election results from elections in and existing location data powered by the Foursquare API from Wake County, North Carolina – home of Raleigh, the capital of North Carolina.

Intended Audience

As mentioned previously, everyone has a stake in the performance of government, whether or not there is an explicit desire to be actively participate or participate at a higher level in the process. While there is general applicability of this project, some groups may be more interested in the insights gained from this type of research than others. For example, activists desiring a higher level of engagement among communities they serve or represent may want to utilize the community building and neighborhood commercial aspects of this understanding to channel funding and resources back to the community to create a community that leads to a greater degree of success among its members. Those of charge of elections may wish to increase the level of turnout and achieve their goals of making the best utilization of resources in terms of budgets and locations. Political candidates and campaigns may wish to utilize this knowledge to determine areas where a possible base may be located as well as to better be able to reach those potential voters with whom they are not yet in contact. And finally, the average citizen and taxpayer may realize better representation and less dissatisfaction with elected officials by becoming more knowledge about candidate choices and the conscious or unconscious process behind those decisions.

2. Data

Description of the data

Data sources

Data to be used in this research is roughly divided into three different categories: location data, demographic/party identification data, and election results data.

Location data was obtained through the Wake County website, the Wake County Board of Elections website, the North Carolina State Board of Elections website, and obtained from Foursquare via the Foursquare API. Data was obtained on the four main types of voting: in-person precinct voting, one-stop early voting, absentee/by mail voting, and provisional voting (which may either be in-person voting or not). Additional information was obtained through Foursquare via the Foursquare API that included local venues in each precinct area of a varied nature, but specifically focusing on public services and venues matching the commonly used precinct polling locations (e.g. schools, churches, community centers, etc).

Demographic data was obtained primarily from the North Carolina State Board of elections. Data that is available in bulk includes only two categories: party affiliation, racial/ethnic, and gender/sex data. North Carolina has historically allowed for party registration as Democratic, Republican, and Unaffiliated. Libertarian party registration has also been allowed for most election cycles, depending on the Libertarian Party's ballot status at that particular time. In recent elections, Constitution and Green registration options have been available, although the total number of registrations fro Libertarian, Constitution, and Green registrations are typically far less than those of Democratic, Republican, and Unaffiliated registrations. Racial/ethnic data is self-identified when the individual voter registers and is not required, so this data may be of a more limited use due to the high proportion of other/not recorded data in this category. Self-reported racial/ethnic identity options available include American Indian, Black, Hispanic, White, or Other. Gender/sex data is recorded as either Male or Female. Typical demographic data that is collected by various boards of elections that is not readily available in bulk or aggregate from free and publicly available sources includes date of birth (or age) as pursuant to North Carolina General Statute 132, § 163-82.10. (5) This type of information will be considered out of scope for this project, other than to consider precincts, voting patterns, or clusters over time.

Precinct level results for most races in Wake County are available for general and primary elections from the Wake County Board of Elections website until the general election of November 1992. However, as twenty-eight years represents a sizable possibility for change in the precinct polling locations and in the general surrounding locations, the scope of this project will be the last couple of general elections. Data associated with early and absentee voting were obtained from the Wake County Board of Elections and North Carolina State Board of Elections websites and corroborated with individual voter data files obtained from the Wake County Board of Elections website.

Full details on the data referenced and locations from where this data was obtained may be obtained in **Section 7. References** at the end of this document.

Data Cleaning

Location data obtained in Excel, KML, and Shape format files and parsed in order to provide CSV files for easier analysis. Data obtained via the Foursquare API was added to CSV files for retention and later analysis.

Demographic data was obtained scraped from PDF format files and via CSV files (where available).

Election results data was obtained and referenced for county-wide (not those specific to any municipality within the country for elections from 2012 to 2018. Main analysis was provided for the general elections of 2012 and 2016, particularly in terms of voter turnout, under-voting, split-ticket voting, and non-partisan voting analysis. Mid-term election data was used for 2014 and 2018 in terms of voter turnout, non-partisan voting, and judicial voting as it reflected a change from being a non-partisan race to a partisan race in 2017. (6) As this data is publicly available and required to be provided in full by North Carolina General Statute 132, this data set is assumed to be accurate and complete with no null data fields. (7) This data was obtained in Excel spreadsheet/CSV format files by election year.

Data was combined into single spreadsheets per year and indexed by precinct number. Coding of race results was done to simplify the reporting and analyses in precincts having different races for a particular elected office (e.g. all precincts had a congressional race, but the congressional races for different precincts involved different candidates).

How data will be used to examine the problem

Statistics such as voter turnout and vote totals were provided by the state and county boards of elections. Statistics associated with under-voting, split-ticket, non-partisan, and judicial voting were calculated based on provided vote totals.

Location data obtained from boards of election and the Foursquare API included type of venue used for voting, precinct polling latitude and longitude, nearby venues, and nearly venues of a type similar to the precinct polling locations.

In addition to descriptive statistics, machine learning techniques will be used to provide further analysis. These will include regression and cluster analysis of precincts demographics and vote results as well as venue information obtained from the Foursquare API. Further information on the techniques used have been included in the **Section 3. Methodology**.

3. Methodology

4. Results

5. Discussion

6. Conclusion

Recommendations

Further research

7. References

Citations

1. Pericles on politics
https://www.brainyquote.com/quotes/pericles_387116

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https://en.wikipedia.org/wiki/Polling_place

3. How Polling Places Can Affect Your Vote
https://psmag.com/news/how-polling-places-can-affect-your-vote-20318

4. The Polling Place Priming (PPP) Effect: Is Voting in Churches (or Anywhere Else) Unconstitutional?
http://www.bu.edu/law/journals-archive/bulr/documents/blumenthalandturnipseed.pdf

The Impact of Polling Places on Voting *(need permission to cite or reference)*
https://cpb-us-w2.wpmucdn.com/web.sas.upenn.edu/dist/7/538/files/2019/07/Mann-and-Stein-Polling-Place-Effect.pdf

5. WakeGOV – Data & Reports – Why Voter Registration Data is Available Here
http://www.wakegov.com/elections/data/Pages/default.aspx

6. Ballotpedia – Judicial Selection in North Carolina – Selection Process
https://ballotpedia.org/Judicial_selection_in_North_Carolina

7. WakeGOV – Data & Reports – Why Voter Registration Data is Available Here
http://www.wakegov.com/elections/data/Pages/default.aspx

Data sources

North Carolina State Board of Elections FTP Site:
https://dl.ncsbe.gov/index.html

Wake County Voting Results (by Precinct)
http://www.wakegov.com/elections/data/Pages/registrationstatistics.aspx

Wake County Voting Results (Historical)
http://www.wakegov.com/elections/data/Pages/pastelectionresults.aspx

Wake County Voting Results (Early Voting)
http://www.wakegov.com/elections/data/Pages/default.aspx

Early Voting Site Codes
http://www.wakegov.com/elections/data/Pages/pastelectionresults.aspx

Wake County Precincts
https://data.wakegov.com/datasets/precincts/data

Wake County Zip Codes
https://data.wakegov.com/datasets/zip-codes/data

Polling Places
https://data.wakegov.com/datasets/polling-places/data

Voter Registration Search
https://vt.ncsbe.gov/RegStat/
http://www.wakegov.com/elections/data/Pages/registrationstatistics.aspx