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Résumé de l'article

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Methods - An analysis of data from the 2010, 2012, 2014, and 2016 Public Libraries Survey and election results from the 2010, 2012, 2014, and 2016 Presidential and House of Representatives elections (by state) is performed with the assistance of Tableau, a data visualization program. Scatter plots provide a visual representation of the data, while correlation coefficients indicate the strength of relationship between voting and library visits per capita.

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Conclusions - The political leaning of a state appears to have no correlation with the frequency of library usage among that state’s population.

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Research Article

Election Voting and Public Library Use in the United States

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Abstract

Objective - This study examines whether a correlation exists between state-wide voting in federal elections and state average per capita visits to public libraries in the U.S. In so doing, it provides insight into the extent to which library patronage is affiliated with political leaning.

Methods - An analysis of data from the 2010, 2012, 2014, and 2016 Public Libraries Survey and

election results from the 2010, 2012, 2014, and 2016 Presidential and House of Representatives elections (by state) is performed with the assistance of Tableau, a data visualization program. Scatter plots provide a visual representation of the data, while correlation coefficients indicate the strength of relationship between voting and library visits per capita.

Results - The findings reveal no significant relationship between public library use and the vote share of a political party in elections among a state's population.

Conclusions - The political leaning of a state appears to have no correlation with the frequency of library usage among that state's population.

Introduction

In recent decades, several studies have examined the demographics of library patrons and which associated factors help to predict library use and non-use. Ethnicity, age, and educational attainment, for instance, all appear to have a modest effect on the extent to which individuals utilize their public library (Sin, 2012; Sin & Kim, 2008). These findings are compelling for library administrators, who may use them to inform outreach and services, as well as to argue for increased spending allocations. One central demographic attribute among many modern Americans is their political identity. Political leaning has not yet been well-examined in relation to public library usage. However, as with factors such as ethnicity and age, it is important to know whether political leaning impacts library usage, so that libraries may better conduct outreach and advocate for their role within their communities.

This study addresses the gap in literature relating to political leaning and library usage by performing an analysis of data from the 2010, 2012, 2014, and 2016 elections for the House of Representatives, and the 2012 and 2016 Presidential elections in the U.S., in relation to public library usage statistics from the 2010, 2012, 2014, and 2016 Institute of Museum and Library Services' (IMLS) Public Library Survey. Correlation analyses of state-wide election results and median per-capita library visits are performed. The findings of these analyses may give public library employees, administrators, and researchers a point of advocacy in terms of the political diversity of library patrons.

Literature Review

Studies involving the relationship between library usage and various population demographics individuals have existed for well over a century. Some of the earliest library-related research studies worked to develop a profile of the "typical" library patron and the community in which the library served (Wheeler, 1924; Gaskill, Dunbar, & Brown, 1934). Over time, these descriptive studies of library patrons have become an increasingly perfected art. Researchers like Sin (2012) and Sin and Kim (2008 have recently used advanced statistical techniques like logistical regression to analyze the relationships between a variety of demographic variables and library use and non-use.

Several recent studies examined the concept of "motivation" to use libraries (Aabo & Strand, 2004; Lee, 2007) or deflated motivation or interest that contributes to library non-use (McNicol, 2004; Nackerud, Fransen, Peterson, & Mastel, 2013). Often, the strongest motivating factors are found to be related to outcomes rather than demographic background, for example the motivation to address an information need. For the purposes of funding libraries, these findings are informative, as they show that libraries serve the information needs

of diverse populations, not significantly skewed to one group of individuals. In the perspective of politicians, this likely makes funding libraries a less partisan issue.

A popular source of secondary data for studies of library usage is the IMLS' Public Library Survey (PLS) data (https://www.imls.gov/research-evaluation/data-collection/public-libraries-survey). Huang and Tahamtan (2018) identified a variety of factors that predict library usage by the service population, such as the total expenditures of the library. Joo and Cahill (2019) also used the PLS to analyze the relationship between library expenditures and usage by children and young adults. Additionally, Burke (2018) used this data source to identify connections between service availability and usage of public libraries. Kim and Yu (2011) even suggested using the PLS data to develop an alternative model of public library management. This data can be used in conjunction with other data sets, such as state-wide voting statistics, to create new insights about library services and use.

Starting in 2008, the Online Computer Library Center (OCLC) in conjunction with the American Library Association published a report entitled "From Awareness to Funding: A Study of Library Support in America." This report examines a variety of factors related to library funding and support (De Rosa & Johnson, 2008). Major sections of this report are dedicated to the demographics of who supports public libraries and why. While politically liberal individuals have been shown in these reports to be the group most likely to support public libraries even if they do not personally use them, all political groups have been shown to use the library regardless of stated political affiliation. Furthermore, members of city councils were surveyed and indicated high levels of library support (even in comparison to the general population). The authors of the report conclude that "library funding support is an attitude, not a demographic" (De Rosa & Johnson, 2008); support cuts across groups, rather than being directly affiliated with any one group in particular.

While a few studies have looked at relationships between library usage and political leanings as part of larger studies of library use predictors, there are no specific longitudinal analyses on this topic. Carlozzi's (2018) study, for instance, examined a myriad of factors that may contribute to usage of a specific public library system. Using regression analysis, a model that indicated a small effect attributable to political leaning was provided. This study, however, examined only one specific context (public libraries in Massachusetts), rather than a broader scope such as state-wide correlations across the U.S.

Aims

The aim of this study is to examine whether any correlation exists between election outcomes and public library usage in the U.S. The findings of this study may inform advocacy or outreach to underserved populations, as well as potentially serving as a counter or justification against politicized library funding decisions. This study facilitates a more complete understanding of the typical library user, by providing an indication for whether political affiliation is a key distinguishing factor related to the frequency of library use. This study is therefore guided by the following research question:

Does a correlation exist between state-wide voting share in federal elections and state average per capita visits to public libraries in the U.S.?

Methods

This study analyzes data acquired from 3 publicly-available data sets: 1) the IMLS' PLS data for the fiscal years 2010, 2012, 2014, and 2016, 2) United States Census data for the same 4 years, and 3) the election results by state for the

House elections in 2010, 2012, 2014, and 2016, the Presidential elections in 2012 and 2016, and the composition of the state Senates for the 2016 legislative sessions.

For the House data, a percentage was found by dividing the number of House positions won by Democratic representatives against the total number of seats available. For the Presidential data, the percentage of votes for the Democratic candidates were collected by state. For the Senate composition, the number of Democratic seats held was compared to the total number of seats on the states' Senates.

Only Democratic party voting data were considered, as an assumption was made that given the U.S.' two-party system, a direct, inverse relationship exists between Democratic vote share and Republican vote share. However, there are some third-party votes in every election, for example the particularly high third-party share of 2016. The data analysis methods may therefore lead to some discrepancy in the relationship between the vote share of the two major parties, which is a limitation that may be examined further in future studies.

The data were analyzed using Tableau, a free data visualization and business intelligence software. From the PLS, data on the number of visits for each state were accumulated by adding the total visits for each public library system within it. The U.S. Census data provides the most accurate measure of the population of each state. The average number of visits per person was then calculated using a simple Excel function. Visits per person by state was the first factor in every comparison, as calculating in this way rather than using the number of visits alone eliminates the influence of population size on the totals.

Election data were gathered from data.gov and transformed into percentages. Subsequently, these data were transferred from Excel to Tableau, where they could best be manipulated. First, a scatter plot was developed for each set, with the percent Democratic vote on the x-axis and average library visits per person on the y-axis. A trend line was placed in this plot using the slope-intercept formulation. Spearman correlation coefficients and corresponding p-values were also retrieved from Tableau.

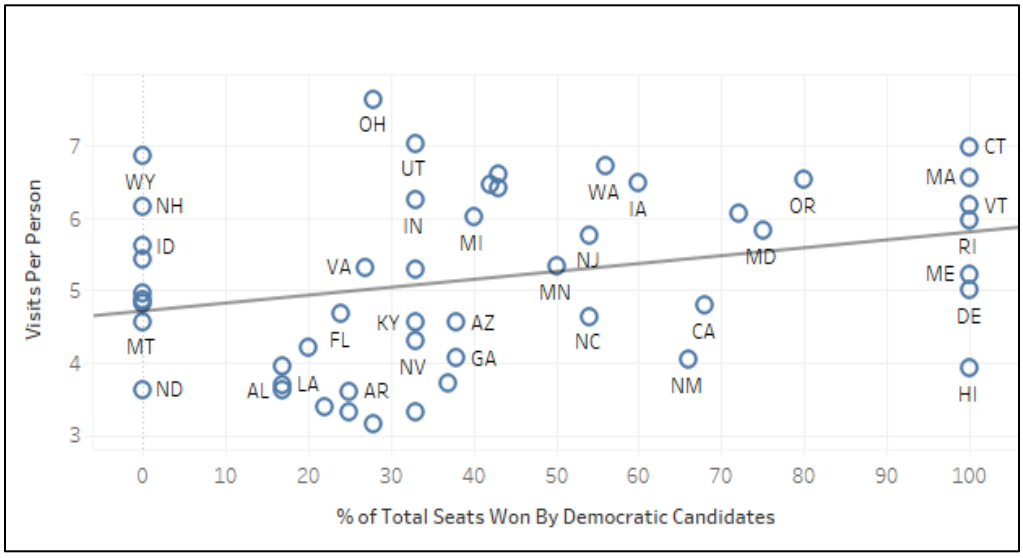

Figure 1
Correlation between 2010 House vote and number of library visits.

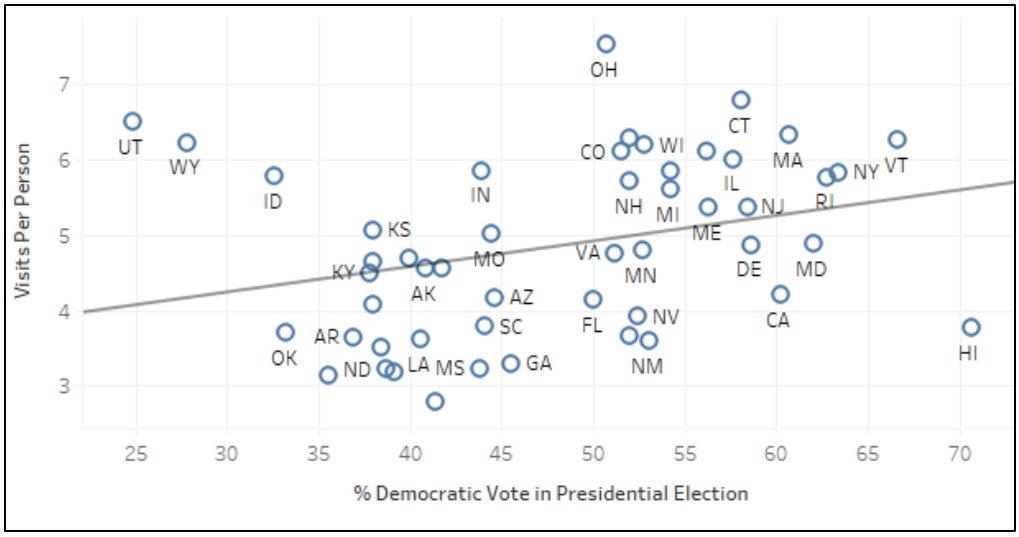

Figure 2
Correlation between 2012 Presidential vote and number of library visits.

Results

Figure 1 displays the data visualization for the 2010 House election. Average library visits per person range from 3.14 in Texas to 7.65 in Ohio, with an average among all states of 4.67. The percentage of Democratic representatives ranges from 0% in nine states to 100% in seven states, with an average of 12.5%. Among the states with 0 seats won by Democratic candidates, visits per person range from 3.6 in North Dakota to 6.9 in Wyoming. Among those with 100% of seats awarded to Democrats, visits per person range from 3.92 in Hawaii to 6.98 in Connecticut. The correlation for these data sets is 0.29 with a p-value of 0.04. There is a statistically significant increase in visits per person based on the percentage of Democratic vote, but the relationship is very weak.

The data visualization for the 2012 Presidential election is shown in Figure 2. In the 2012 election, Utah has the lowest percentage of Democratic votes at 24.8%, but the third highest number of visits per person. Hawaii has the highest percentage of Democratic votes at 70.6, though just an above average number of visits per person. The correlation for these data is 0.3 with a p-value of 0.03. There is a very weak relationship between the Presidential vote by state and the number of library visits per person.

Shown in Figure 3 is the data plot for the correlation between visits per person and the number of Democratic representatives elected in the 2012 House election. Ten states elected no Democratic representatives, ranging from 3.2 visits per person in North Dakota to 6.2 visits per person in Wyoming. Eight states elected 100% Democratic representatives ranging from 3.8 visits per person in Hawaii to 6.8 visits per person in Connecticut. The correlation for these data is 0.34 with a p-value of 0.01.

Figure 4 displays the data for the 2014 House election. Overall visits in 2014 ranged from 2.7 in Texas to 7.1 in Ohio. In this year, 6 states elected Democratic representatives to all open positions while 11 states elected no Democratic representatives. Among the former group, the number of visits per person ranged from 3.4 in Hawaii to 6.2 in Massachusetts. The latter group ranged from 2.9 in West Virginia to 6.3 in Wyoming. The correlation for this comparison is 0.28 with a p-value of 0.05. The results show only a slight significance with a very weak positive correlation for Democratic-favoring states.

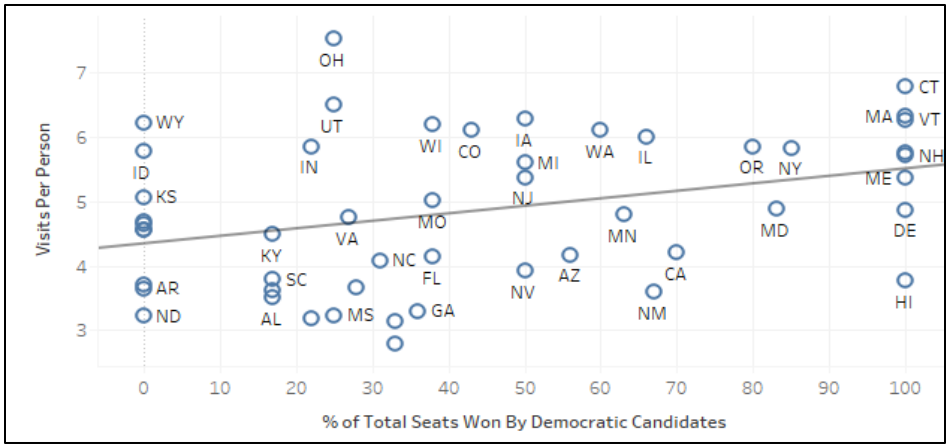

Figure 3
Correlation between 2012 House vote and number of library visits.

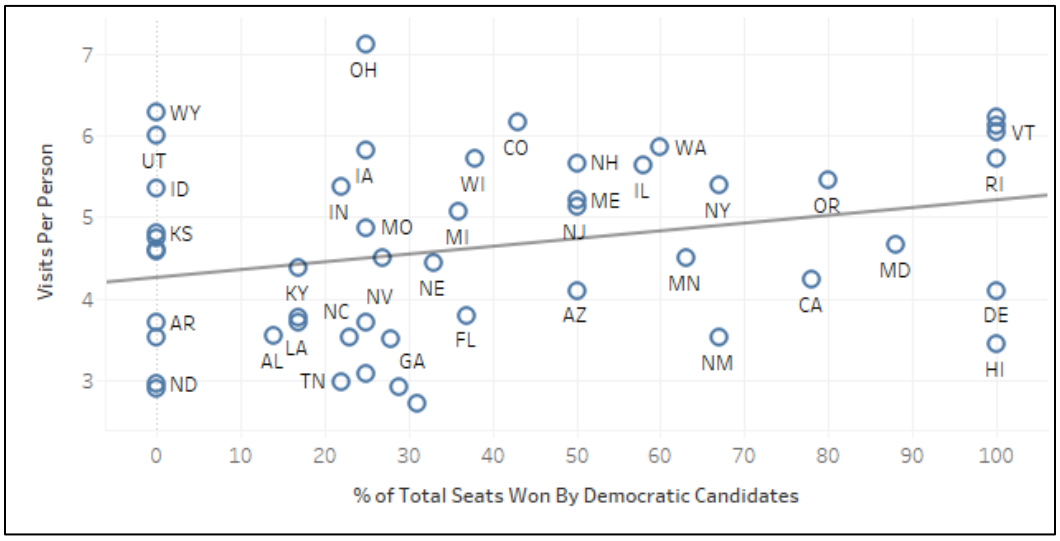

Figure 4
Correlation between 2014 House vote and number of library visits.

Three different data sets were compiled for the 2016 elections. The first, the 2016 Presidential election, is shown in Figure 5. This Presidential election seemed to be very unique and polarizing compared to preceding elections; this is reflected to a small extent in the data findings. Wyoming had the lowest Democratic vote percentage at 21.6% but continued to have very high visits per person at 6.1 (ranking only behind Ohio for the most). Hawaii continued to have the highest Democratic percentage at 62% and continued to have a low visit per person rate at 3.15. There continued to be a small positive relationship between percentage of Democratic votes and visits, but the correlation is the weakest so far at 0.22 with a p-value of 0.11. This means that, for the first time in the data, the positive correlation falls well within the margin of error.

The results for the 2016 House election are displayed in Figure 6. Eleven states elected no Democratic candidates, with visits per person ranging from 2.53 (Arkansas) to 6.1 (Wyoming).

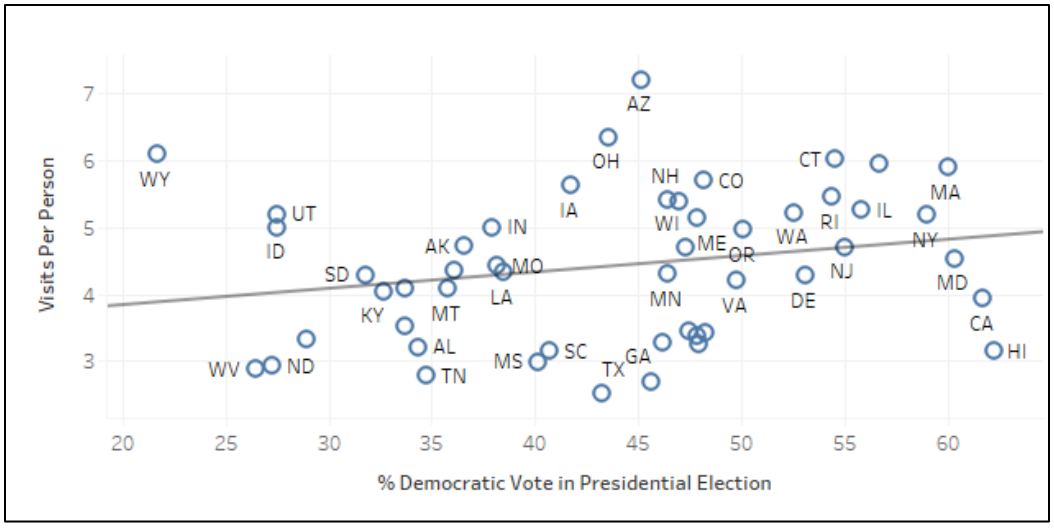

Figure 5
Correlation between 2016 Presidential vote and number of library visits.

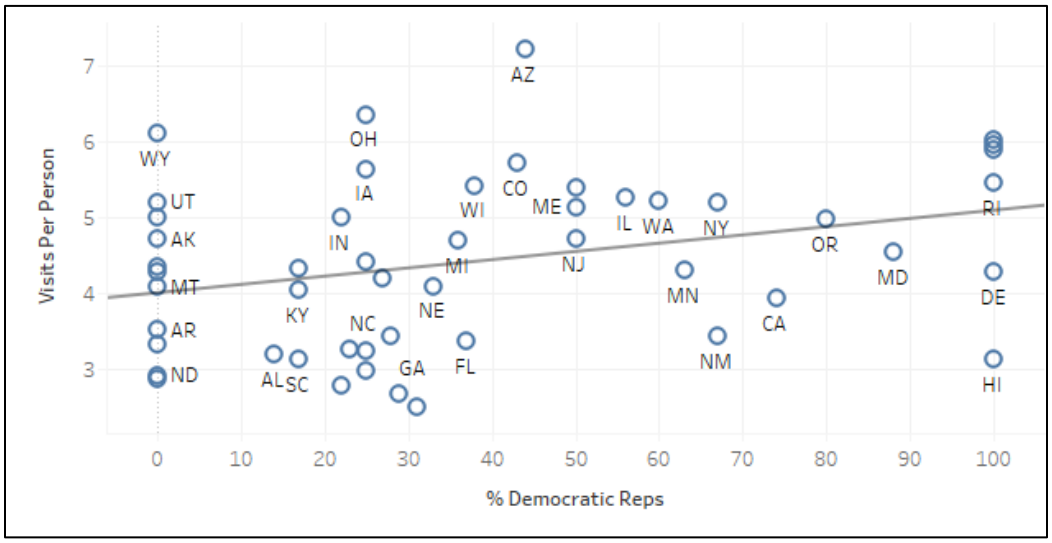

Figure 6
Correlation between 2016 House vote and number of library visits.

Six states elected all Democratic candidates, with visits per person ranging from 3.15 (Hawaii) to 5.97 (Vermont). The correlation among these data is 0.32 with a p-value of 0.02.

The third set of data for the 2016 election cycle is the composition of the state Senates, shown in Figure 7. As state and local governments are mostly responsible for funding public libraries, one might project that these data would show the strongest correlation yet, however the exact opposite is true. Wyoming has the smallest composition of Democrats within its state Senate at 10%, with the second largest number of visits per person. Regarding Hawaii, 100% of the state Senate identifies with the Democratic party, while the state averages only 3.15 visits per person. Although 3 of the 5 states with the smallest Democratic compositions fall in the top 10 of states by visits per person, this is identical

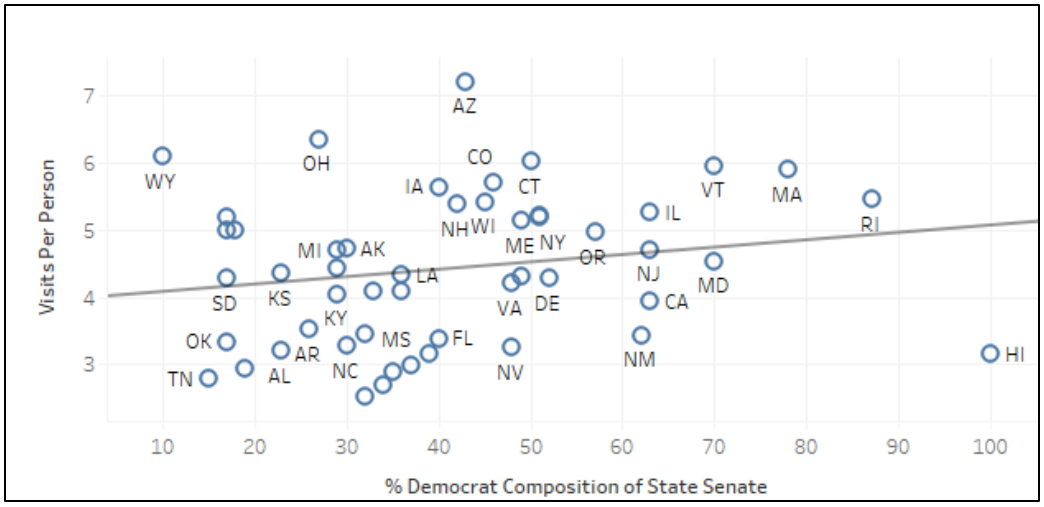

Figure 7
Correlation between composition of state Senate and number of library visits.

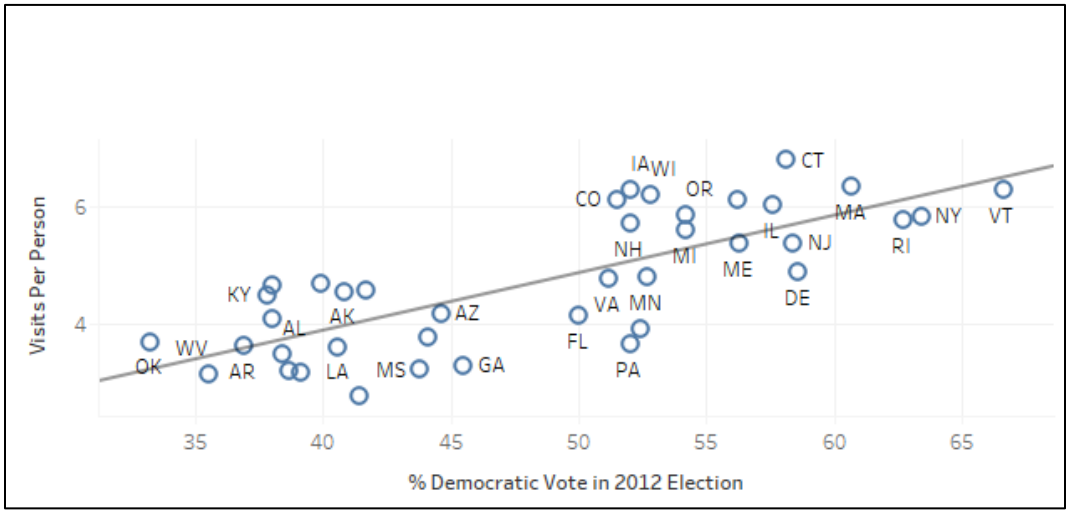

Figure 8
Correlation between 2012 Presidential election vote and number of library visits, with the 10 biggest outliers removed.

to the 5 states with the highest Democratic compositions. The correlation for these data is only 0.2 with a p-value of 0.18. The slope of the trend line is 0.011 visits per person per percent point of Democratic senators. In other words, a 20% shift in a state's senate composition in favor of Democrats would only correspond to a 0.2 increase in library visits per person.

Figure 8 depicts the relationship for the 2012 Presidential election, if the 10 biggest outliers such as Wyoming and Hawaii, were removed from the data. In this case, the correlation between the two variables rises to 0.71, with a p-value <0.001. This indicates a strong positive relationship between library visits and the percentage of Democratic vote, however it also removes 20% of the overall data. So, while there

is an underlying relationship among some states, it is not evident in the complete data set.

Finally, Figure 9 displays longitudinal data for library visits in the entire U.S. alongside the percentage of votes for the Democratic party in each House election from 2010 to 2016. There is a very weak, non-significant correlation (0.26; p-value of 0.73) for this data set. While there was a small but steady drop in visits per person over this six-year period, the percentage of Democratic votes rose by five percentage points in 2012, before dropping in 2014 and 2016. Overall, there seems to be very little statistical evidence that politics influences library visits, or even that there is a marked relationship among these variables.

Discussion

This study indicates that, in general, no correlation exists between election vote share and public library visits within a state. One important potential reason for this lack of relationship is that library use statistics remained relatively consistent from 2010 to 2016, while vote shares did not. For instance, Minnesota saw a 15% jump in Democratic vote share from 2010 to 2012, though the average number of library visits remained relatively stable. Notably, the "rust belt" states of Wisconsin, Michigan, and Pennsylvania, which voted majority Democratic in 2012, flipped to majority Republican in 2016, however they did not experience a proportional drop in library use. Political opinions, at least in the short term, appear to be simply too volatile. Longer-term shifts, like that of the Southeastern U.S. from majority Democratic to majority Republican from the 1960s to 1990s, may be more likely to reveal a significant trend.

State Senate race outcomes seem to be particularly indicative of the lack of correlation between voting outcomes and library use, as state Senate voting occurs at a more local scale. For instance, in Kansas, there are 40 Senate seats, including over 20 divided among the state's 3 major metropolitan areas (Kansas City, Wichita, and Topeka). However, this approach is complicated by partisan gerrymandering, which is an approach to drawing congressional districts used by states dominated by a single political party, in order to increase the likelihood of their party retaining power during elections. This makes the composition of state Senates one of the least reliable indicators of political sentiment. As noted in the limitations below, municipal (city council, mayoral) voting may be the best outcomes for future studies to utilize.

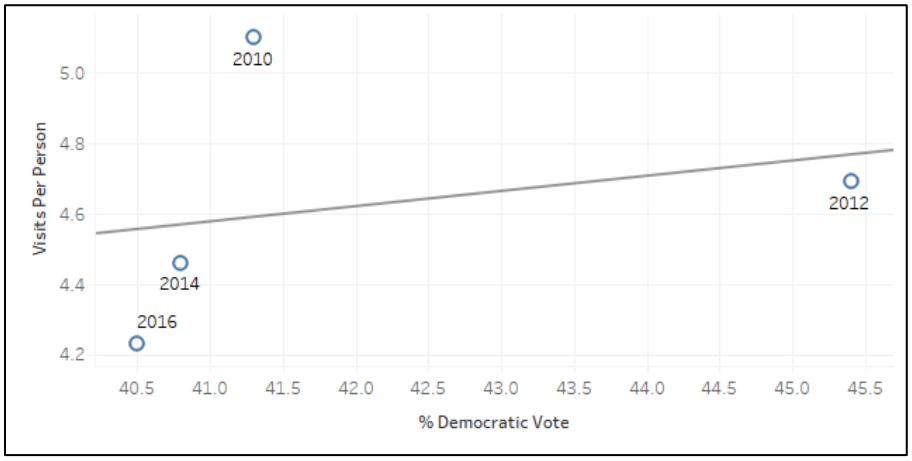

Figure 9
House vote percent Democrat for all states and average number of library visits.

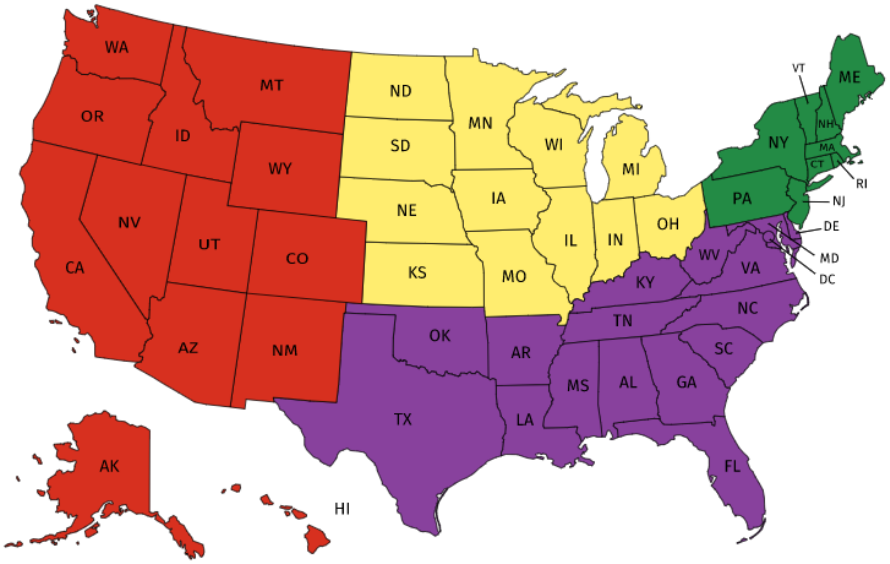

Figure 10
United States Census regions: West, Midwest, Northeast, and South.

Perhaps the most compelling findings in this study may be in Figure 8, where the 10 biggest outliers from the general trend are removed. In the case of the 40 remaining states, a significant positive relationship does exist. However, this is true of many datasets; if enough data that disagree with a trend are removed, eventually that trend will emerge from the remaining data. This is one of the major shortcomings of sampling methods in empirical research and why a sampling of states was not used in this study.

Furthermore, the potential for hidden variables that explain variation in the data must be considered. One such potential variable evident in Figure 8 is geography. The states in the upper-right corner with high Democratic share and high library visits are located in the Northeast: Vermont, New York, Rhode Island, Massachusetts, New Jersey, and Connecticut. Most states in the lower-left corner with low Democratic share and low library visits are located in the South: Oklahoma, West Virginia, Arkansas, Kentucky, and Alabama. So, even if a relationship did exist, the geographic alignment suggests that this might be the hidden variable that explains both politics and library visit frequency.

Given the above observation about geographic relationships in both politics and public library visit frequency, an interesting follow up to this study may be to statistically evaluate relationships among geographic regions, such as the U.S. Census regions shown in Figure 10. Regarding the 2016 Presidential election data and library visit data, for instance, a significant difference can be found using a Kruskal-Wallis H test (non-parametric ANOVA) for regional differences in both vote share ($H = 4.06$, $p = .02$) and public library visits ($H = 5.55$, $p < .01$). Particularly, the South (in purple in Figure 10) experiences low levels of both variables, while the Midwest (yellow) has a lower Democratic vote share compared to the West (red), but a higher number of library visits. This suggests that general cultural effects (including both library use and political leaning) attached to geography are a much more likely cause of variation.

Limitations

A few limitations should be noted for this study. As mentioned earlier, only Democratic party voting data were considered, which may lead to some discrepancy in the relationship between the vote share of the two major parties. This is a limitation that may be examined further in future studies. Furthermore, this study, while technically longitudinal (using data from 2010 to 2016), selected a fairly short period of time in terms of politics; as noted above, the examination of an extended period of transition in American politics may be more insightful. Also, this study used states as the unit of analysis, but most public libraries in the U.S. are municipally supported. Looking at city politics, such as voting for city councils, and use of specific public libraries may offer some unique insight. Carlozzi (2018) did examine this variable as a possible explanatory factor for libraries' municipal appropriation and did find that a small effect existed. Finally, there are always some limitations with incomplete data sources. If a library did not include its visits data in the PLS data, then it had to be excluded from this analysis.

Conclusion

This study investigated whether a correlation exists between the state-wide outcomes of elections and public library visits. The results demonstrate that state-wide voting share in the U.S. generally has no measurable relationship with public library usage in these states. Regional variation is a much greater predictor of both of these variables. This finding separates political diversity from other variables like educational diversity, that may be used to estimate the rate of library visits. Populations encompassing all different combinations of political affiliations, from the most conservative to the most liberal, utilize public libraries at similarly high levels. Public library administrators may find this result useful for advocacy and outreach purposes, as it demonstrates to political decision makers that library use itself is not a political issue and that libraries may be treated as a neutral public good. These findings contribute to a growing body of literature that examine correlates of public library usage in the U.S., indicating that political polarization is not a factor that has a meaningful influence on library use.

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