# THE PENNSYLVANIA STATE UNIVERSITY SCHREYER HONORS COLLEGE 

## DEPARTMENT OF POLITICAL SCIENCE

# POLITICAL GEOGRPAHY OF PENNSYLVANIA: A DEMOGRAPHIC ELECTORAL ANALYSIS, 1936-2014 

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A thesis<br>submitted in partial fulfillment<br>of the requirements<br>for a baccalaureate degree<br>in Political Science<br>with honors in Political Science

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#### Abstract

Why are some counties in Pennsylvania trending in the Democratic direction while others are not? In this paper, I study the influence of demographic and economic factors on the county vote shares won by Republicans and Democrats in presidential, gubernatorial, and U.S. Senate elections in Pennsylvania from 1936 through 2014. This study finds an increasingly prominent role post-1980 for racial minorities in Pennsylvania elections as part of a Democratic coalition, particularly at the presidential level, while other factors have a much less consistent role.


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## Chapter 1

## Introduction

Pennsylvania's importance in national elections is a subject popular with political analysts, with some speculating variously that Pennsylvania remains a "swing state" while others disagree. As a result, electoral trends in Pennsylvania are a subject of interest for both scholars and pundits. It would be a simple exercise to look at a distribution of electoral victories per party and make a superficial conclusion pertaining to electoral trends in the state. However, this sort of analysis does not tell the researcher why those elections result in the ways that they do. To do this, one must look beyond election returns by delving into the demographic trends underlying them. This is precisely what this study attempts to do.

The purpose of this study is to generate a better and more complete understanding of electoral trends in Pennsylvania, using counties as geographical sub-units to divide the state into pieces. Using county-level demographic and economic data, as well as county-level election returns, this study aims to develop a clearer idea of what impacts how Pennsylvania's counties vote, which will contribute to the body of knowledge on Pennsylvania politics in general. Using Pennsylvania as a case study, this analysis will also provide some insight potentially generalizable to trends in the "Rust Belt" states.

## Chapter 2

## Literature Review and Theories

There is a varied scholarly literature regarding Pennsylvania electoral politics and the trends therein. Much of the research conducted has concluded that Pennsylvania, although once dominated by the Republican Party prior to the mid- $20^{\text {th }}$ century, has trended in a direction leading to more competitive statewide elections and, in some cases, towards the Democratic Party (Cooke, 1960; Frey \& Teixeira, 2007; Gosnell \& Coleman, 1940). Even in the early $20^{\text {th }}$ century, a pattern of more competitiveness and less single-party dominance in Pennsylvania during Franklin D. Roosevelt's New Deal era was becoming more evident (Cooke, 1960; Gosnell \& Coleman, 1940), with some predicting that the pattern would continue in the form of more even two-party competition in Pennsylvania statewide elections (Cooke, 1960).

A number of investigations have as a common denominator the use of a geographical analysis in examining statewide election results in Pennsylvania. These vary from the comparison of two cities (Heineman, 2008), counties synthesized into larger regions throughout the Commonwealth (Frey \& Teixeira, 2007) and the 67 individual counties themselves (Cooke, 1960). Indeed, the use of lower-level geographic units is not unique to the analysis of Pennsylvania elections. In a similar vein, state-level elections data can be used to assemble a more nuanced understanding of electoral trends in the United States (Springer, 2014). Population trends in Pennsylvania counties, moreover, are popular independent variables in the analysis of electoral politics in the state (Frey \& Teixeira, 2007; McKenna, 1962; Gosnell \& Coleman, 1940). Approaches to assessing population trends in a county or subset of counties range from
measuring simple population changes, to more specific analyses of the evolution of demographic makeups (Frey \& Teixeira, 2007; Gosnell \& Coleman, 1940; Cooke, 1960).

Minority population, particularly Hispanics, is a factor in how Pennsylvania counties vote, and ethnic minorities are growing as a proportion of total county populations, with recent Democratic victories in Pennsylvania attributable in part to minority support (Frey \& Teixeira, 2007). College education is also a variable used in analyses of Pennsylvania elections, with college-educated whites remaining a large segment of the voting-eligible population (Frey \& Teixeira, 2007). Economic indicators are prominent factors in election outcomes as well.

Much of the literature has focused on recent (relative to time of publishing) or short-term trends in Pennsylvania electoral politics, with the findings discussed above. A long-term analysis of Pennsylvania elections would seem to be a logical way to build upon current literature. Such would generate not only an analysis of recent elections, but an analysis of elections from the early $20^{\text {th }}$ century to the present to gain a perspective as to the longevity, durability and tendency of electoral trends.

## Theories/Hypotheses

A common denominator in some of the research outlined previously on the subject of electoral politics in Pennsylvania is whether or not the state is trending in a Democratic direction in light of a simple analysis of electoral outcomes in the Keystone State since the New Deal era, especially over the last 20 years. The Democratic Party has carried the state in each of the last six presidential elections, yet the Governor's Mansion has changed party hands on three occasions during the same period of time. This would seem to indicate that electoral trends in Pennsylvania
are more nuanced than a simple count of elections won over a certain period of time. A simple analysis of statewide trends misses any variations that may exist between counties.

As such, my research question in this study is as follows: "Why have some Pennsylvania counties trended toward voting for the Democratic Party while others have not?" An answer to this question will reveal how the coalitions of the parties have evolved, taking Pennsylvania as an example of broader trends in the United States over the past 80 years.

To examine the closeness of elections, I will use two-party vote shares in each election to focus on competition between Republicans and Democrats. The Democratic share of the twoparty vote, over time, will be the dependent variable of the research while the independent variables will be a set of demographic characteristics. Using the two-party vote share method will provide stability in comparing elections over time by removing the potentially obfuscating effects of third party candidates (see, for instance, the three-way 1998 gubernatorial election between incumbent Governor Tom Ridge, Democratic challenger Ivan Itkin and Constitution Party challenger Peg Luksik, in which Ridge's two-party vote proportion was higher than the total vote share he received).

My general theory, based on a review of the literature, is that demographic characteristics impact how Pennsylvania's 67 counties vote in presidential, gubernatorial and U.S. Senate elections in the ways described in the following hypotheses. In particular, I am interested in six county-level concepts as independent variables: income, minorities, education, urban vs. rural, turnout and employment. I hypothesize that the higher the proportion of minorities in a county, the more higher the county Democratic vote share. I base this particularly on the conclusions of Frey and Teixeira (2007), who suggest that minorities in Pennsylvania have contributed to recent Democratic victories. Similarly, I hypothesize that the more densely populated a county is, the
higher the county Democratic vote share. Dense population is an indicator for how urban a county is, and one would expect Democrats to fare better in urban areas with more minorities and pro-union blue-collar laborers. For unemployment, I hypothesize that the higher the proportion of a county's population is unemployed, the higher the county Democratic vote share. This is based on the Democratic Party's historical support for unemployment and entitlement programs benefiting the unemployed. I also hypothesize that county income will have an inverse relationship with Democratic Party vote share. In comparing presidential and midterm elections, I expect that turnout will have a stronger effect in midterms, and that higher turnout in midterms will benefit the Republican candidate when comparing counties. I also expect that counties with higher proportions of college-educated residents will be more likely to vote Democratic, because of the exposure to diversity higher education gives to those pursuing it and, with it, liberal perspectives.

## Chapter 3

## Data and Methodology

The data for this research come primarily, but not exclusively, from two sources: the Wilkes University Election Statistics Project and United States Census datasets retrieved from the University of Minnesota's National Historical Geographic Information System (NHGIS). The Wilkes Project contains county-level elections data for all gubernatorial, U.S. Senate, and presidential elections from Pennsylvania's statehood until 2006. Returns for post-2006 elections were retrieved from the website of the Pennsylvania Secretary of State, which also contains county-level data.

The county demographic data collected for this study include: total population, proportion identifying as minorities, proportion with college degrees, county per capita income, and unemployment rate. These data were all collected in their raw form from the NHGIS and incorporated into the dataset which included the elections data. Please refer to table 1 below for more detailed information on each of the individual variables. One variable, county voter turnout, was obtained from Allegheny College's Pennsylvania Counties Archive.

Table 1: Variables Collected for Study

| Variable | Definition | Operationalization | Years | Source(s) |
| :--- | :--- | :--- | :--- | :--- |
| County <br> Democratic vote <br> share (DV) | Proportion of the <br> two-party vote <br> share won by <br> Democratic <br> candidate | Proportion: <br> Democratic <br> vote/total two-party <br> vote |  | $1936-2014$ | Wilkes | University |
| :--- |
|  |
|  |

In order to examine elections taking place between the decennial censuses, it was necessary to interpolate estimates of some county population variables for even-numbered years and one odd-numbered year (1991) in between. To do this, I calculated simple linear interpolation estimates using Microsoft Excel; after taking the difference of the before and after census estimates for each variable (i.e. 1960 and 1970), I divided this difference by five (to
estimate the change every two years in between) and added this constant to each previous estimate to generate interpolated estimates (i.e. for 1962, 1964, 1966, and 1968). For the 1991 estimates, I simply averaged the estimates for 1990 and 1992 to create a midpoint. I chose not to attempt interpolation of county per capita income and unemployment, due to the volatility and non-linearity of economic indicators-rendering it dangerous to attempt to draw conclusions from those estimates. As a result, these variables are only included when directly available. County per capita income was left unadjusted for inflation, as I did not compare amounts from different years. The county voter turnout data measures voting-age turnout in the "highest" election on the ballot (from high to low, for the purpose of this study: presidential, gubernatorial, U.S. Senate).

To analyze the data, I employed a modified time-series analysis using multivariate regression. For each individual election, I pooled all counties and estimated a separate regression equation for each election year. Table 2 details the variables included in the models and over what periods of time they cover. Then, I graphed the estimated coefficients of the variables from these regressions over time to visualize the variable's evolving impact over time, along with its upper and lower boundaries as estimated by doubling the standard errors of the models. I repeated this process for each type of election: presidential, gubernatorial, and U.S. Senate. All regressions included a lagged independent variable: Democratic vote share in the previous election. This was to help provide a cleaner estimate of the other variables' impact on the dependent variable of the research, the Democratic percentage share of the two-party vote, by accounting for the general slowness of political transformation and thus, the two party's share of the vote, over time.

When running regressions to generate the figures in the analysis, I included all available variables for a particular year per the availability specified in Table 1. For the minority population variable, I ran regressions including only that variable and the lag variable throughout the entire analysis, 1940 through 2014.

Table 2: Summary of Models Estimated

| Years | Variables Included |
| :--- | :--- |
| 1940-2014 | Minority population + lagged Democratic vote share (lagged Dem.) <br> 1940-1972Minority population + unemployment (when available) + college educated <br> (when available) + lagged Dem. |
| 1972-1990 | Minority population + turnout + income (when available) + unemployment <br> (when available) + college educated + lagged Dem. | | Minority population + turnout (when available) + income (when available) + |
| :--- |
| unemployment (when available) + college educated + lagged Dem. |

## Chapter 4

## Analysis

## Descriptive Statistics

Table 3: Variable Distributions in 1940, 1976 and 2014

| Variable | 1940 | 1976 | 2014 |
| :---: | :---: | :---: | :---: |
| Minority population | Mean: 0.015 <br> St. Dev.: 0.024 <br> Max.: 0.13 <br> Min.: 0 | Mean: 0.027 <br> St. Dev.: 0.051 <br> Max.: 0.385 <br> Min.: 0 | Mean: 0.078 <br> St. Dev.: 0.069 <br> Max.: 0.418 <br> Min.: 0.019 |
| Turnout | N/A | Mean: 0.529 <br> St. Dev.: 0.053 <br> Max.: 0.687 <br> Min.: 0.432 | N/A |
| College-educated | N/A | Mean: 0.055 <br> St. Dev.: 0.022 <br> Max.: 0.13 <br> Min.: 0.027 | Mean: 0.146 <br> St. Dev.: 0.052 <br> Мах.: 0.328 <br> Min.: 0.072 |
| Per-capita income | N/A | N/A | Mean: 25,634 <br> St. Dev.: 4604 <br> Max.: 42,323 <br> Min.: 13,680 |
| Unemployment rate | Mean: 0.047 <br> St. Dev.: 0.015 <br> Мах.: 0.093 <br> Min.: 0.025 | N/A | N/A |

Table 3 contains the variable distributions for all of the independent variables early (1940), at the midpoint (1976) and at the end (2014) of the dataset's time period. Where available, the mean, standard deviation, maximum and minimum values of the variables are supplied. Of interest is the significant growth of the mean minority population as a proportion of county population, from $1.5 \%$ in 1940 to $7.8 \%$ in 2014 , with a progressively wider distribution as indicated by the standard deviations in those years.

## Population Characteristics

This section discusses the portion of the analysis pertaining to the following variables relating to population: minority population, population density, college graduates and voter turnout. After beginning the analysis, there was a lack of statistical significance in most elections for both population density and minority population when included in the same models, but significance when one or the other was left out, suggesting an interaction between the two. This suspicion was confirmed by a simple calculation of correlation between the two (which, in 2012 for instance, was very high at 0.76 ). This is perhaps due to the racial diversity of more urban and, thus, more densely populated areas relative to rural areas (as suggested by the heavy correlation). Because these two variables seemed to be measuring very similar concepts, I chose to omit county population density and devote my interest to minority population.

Figure 1 illustrates the relationships between county minority population and Democratic vote share in presidential elections from 1940 (not 1936, because of the lag variable) through 2012, with $95 \%$ confidence intervals represented with vertical error bars (upper and lower bounds calculated by doubling the standard error and adding and subtracting that number from the estimated coefficient).


As the plot illustrates, the percentage of a county's population consisting of racial minorities had no consistent effect on how counties voted in presidential elections until about 1980. After about 1980, the estimates were, for the most part, clustered together and very consistently above zero, favoring the Democratic Party, at about 0.2 . Also of note are the much narrower 95\% confidence intervals, as represented by the vertical error bars in the plot. Minority
population seemed to have a greater and more consistent effect in these more recent elections, and the estimates are more precise than those produced by models of earlier elections.

This suggests a significant political transition in Pennsylvania during the Ronald Reagan administration and thereafter. Part of the high variance prior to 1980 might be attributed to a smaller sample size of minorities in preceding elections, with the sample growing as Pennsylvania's counties have become more racially diverse. However, the consistency of the post-1980 models suggests a new Democratic coalition in presidential elections, which includes racial minorities. Also interesting to note is the inverse and statistically significant effect of minority population on county Democratic voting in 1964, the year in which Republican Barry Goldwater-an opponent of the Civil Rights Act and advocate of states' rights-was defeated by President Lyndon Johnson. I suggest two possible explanations. First, there was little variance between the counties in the manner they voted (Goldwater won only four out of 67 counties). Second, with the exception of a few counties (particularly Philadelphia and Dauphin, at 29\% and $10 \%$, respectively), 51 of the state's 67 counties counted $2 \%$ minorities or less (with 38 counties counting less than $1 \%$ ). This lack of variation in minority population across counties, perhaps combined with low minority turnout, could account for this unexpected finding in 1964, as it might account for the inconsistency before and after 1964 until around 1980.


Figure 2 puts into context the pattern identified in figure 1. The plot illustrates the proportion of the total population identifying as minorities for four of the five largest Pennsylvania counties by population: Allegheny, Montgomery, Bucks and Delaware. A Democratic coalition in presidential elections that includes minorities will likely have an impact on future elections as well, with large counties becoming more diverse.

Interestingly, the results of the two similar analyses (with minority population and the lag variable as independent variables) did not produce results as clear for gubernatorial and U.S. Senate elections in Pennsylvania.


Figure 3 was created using the same approach, but for gubernatorial elections. As in the presidential elections, there is high degree of variation in the influence of minority population on the tendency of counties to vote Democratic in gubernatorial elections. However, this effect does not become much more consistent after 1980, as it seemed to in presidential elections. I suggest the following explanation for this phenomenon: because midterm elections (as all Pennsylvania gubernatorial elections are) are marked by lower turnout generally than presidential elections, there are generally smaller and thus less representative samples of voters in gubernatorial
elections, perhaps leading to the inconsistent results indicated by the figure above. Further, those voters casting ballots in low-turnout midterm elections tend to be the most interested and partisan voters.

Figure 4: Minority Population and County Democratic U.S. Senate Vote Share


As before, Figure 4 illustrates the effect of minority population on a county's tendency to vote Democratic, this time for U.S. Senate elections (classified as either Class I or Class III, for Pennsylvania's two seats). There is quite a bit of variation, but the models yielded more consistent and significant results for the Class I elections than for the Class III elections,
particularly after around 1980, as in the presidential models. The 1976, 1982, 1988, 1994 and 2000 Class I U.S. Senate elections follow this pattern. One potential explanation for the statistically insignificant impact of minority population on county Democratic vote share in many of the Class III elections is Arlen Specter's tenure in that seat from 1981 until 2011. Specter, a moderate Republican for much of his tenure in the Senate and a former Democrat, performed relatively well in counties mostly dominated by Democrats in more recent elections, such as Philadelphia; Specter won $44 \%$ of the two-party vote there in 1986, for example, outperforming Republican Governor Dick Thornburgh's $36 \%$ in the same year and Ronald Reagan's 35\% in 1984.

Figure 5: College Education and County Democratic Presidential Vote Share


Figure 5 illustrates the relationship between the percentage of a county's population holding a college degree and its tendency to vote Democratic in presidential elections. The results of this test were varied and inconsistent. Three of the four elections for which there was statistical significance, with the $95 \%$ confidence interval fully above or below the $x$-axis (1976, 1992, 2004, 2008) indicated a direct relationship between the two variables (counties with a higher percentage of its population holding college degrees more likely to vote Democratic than those with a smaller percentage). However, there was a lack of statistical significance in the
other seven elections (1972, 1980, 1984, 1988, 1996, 2000, 2012). The impact of college education in gubernatorial and U.S. Senate elections, illustrated in Figures 6 and 7, respectively, were similarly inconsistent.

Figure 6: College Education and County Democratic Gub. Vote Share


As in the presidential models, there was very little statistical significance, but when there was (1970, 1978, 1982, 1990, 2002, 2010), it was divided between favoring the Democrats and Republicans. In 1970, 2002 and 2010, counties with higher percentages of its population holding college degrees were more likely to vote Democratic, but the opposite was true in 1978, 1982
and 1990. In both 1978 and 1982, the Republican nominee won counties that include populous and relatively well-educated Philadelphia suburbs, including Montgomery, Chester and Bucks counties, which might have contributed to this discrepancy. In 1990, Democrat Bob Casey Sr. won all but one county (Montgomery).

Figure 7: College Education and County Democratic U.S. Senate Vote Share


In U.S. Senate elections, there was again very little statistical significance or any discernable trend in the impact of college education on county Democratic vote share. The findings relating to education and county voting were not expected, but it is possible that
calculating the percentage of a county with college degrees as a proportion of the total population might have caused some of the inconsistency. A future study might calculate this as a proportion of the population 22 years of age and older.

Figure 8: Voter Turnout and County Democratic Vote Share


Figure 8 is a plot of the relationships between voting-age turnout in a county and its tendency to vote Democratic in presidential and gubernatorial (midterm) elections. Contrary to my expectation, there was not any obvious difference between the coefficients in presidential and midterm elections. I had suspected that turnout would have more of an impact in midterm
elections, inversely related to Democratic vote share, because of higher Republican turnout in midterm elections relative to presidential elections. However, the analysis did not support this hypothesis. A competing hypothesis might speculate that higher turnout simply favors the winner, rather than any particular party.

## Economic Characteristics

This section discusses the portion of the analysis relating to the following county economic characteristics: per capita income and unemployment rate. Due to the limited availability of historical economic data at the county-level, I combined the analyses for presidential and gubernatorial elections for both income and unemployment rate; as a result, these two types of elections will be displayed on the same plot.

Figure 9: County Income and County Democratic Vote Share


There was very little statistical significance in the impact of a county's per capita income and its tendency to vote Democratic when controlling for other factors, illustrated in Figure 9 in presidential and gubernatorial elections. For the two elections where there was statistical significance (2010 and 2014 gubernatorial elections), the coefficients were negative and very small; in those two elections, counties with higher per capita incomes were slightly less likely than counties with lower per capita incomes to vote Democratic.

Figure 10: County Unemployment and County Democratic Vote Share


When controlling for other factors, county unemployment had no consistent impact on how counties voted, but there was statistical significance for the 2010 gubernatorial election; counties with higher unemployment rates tended to vote Democratic more so than counties with lower unemployment rates, which would be expected. This was also the case in the 1940 presidential election, with incumbent Franklin D. Roosevelt on the top of the ticket. As with the college education variable, the unemployment rate was calculated as a proportion of the total county population, which might have contributed to the result.

## Chapter 5

## Conclusions

The most interesting finding of this research pertained to the effect of county minority population on the manner in which counties voted in presidential elections, which suggested a post-Reagan realignment in Pennsylvania. Surprisingly, this did not materialize during the height of the Civil Rights movement in the 1960s, but rather nearly two decades after. Since that time, there seems to have been a Democratic coalition in presidential elections that includes racial minorities. One possible explanation of the trend's late emergence might be smaller and less varying minority populations across most Pennsylvania counties before the 1980s, as suggested earlier in this paper.

Clearly, however, racial minorities have had an impact favoring the Democratic Party in presidential elections since that time. This trend is visible in gubernatorial and U.S. Senate elections, to a lesser extent. A potential for future research lies in distinguishing individual minority groups and identifying which groups seem to be behind this trend, rather than combining them into a single group. Future research might also account for voter turnout among specific groups, if such data exist. However, the results of this study provide support for the hypothesis that counties with larger minority populations as a proportion of total population tend to deliver larger vote shares to the Democratic Party. This is a relatively recent trend, which will likely have a continuing impact as counties become more diverse.

However, the results were less clear for the remainder of the variables: education, voter turnout, income and unemployment. The effect of these four variables on Democratic vote share
was less consistent than the trend identified in the case of minority population, providing little support for the hypotheses pertaining to them. In the case of the latter two variables, income and unemployment, the limited availability of the data likely hindered the analysis and precluded any definitive conclusions. Future research might focus on more widely available monthly or quarterly county economic data, rather than decennial economic indicators from the U.S. Census.

There is much more affecting how counties vote than what is included in this study. Election-specific factors that might affect outcomes, such as candidate ideology, were absent from this study. As suggested earlier, in the portion of the analysis discussing minority population and U.S. Senate elections, the ideology of the candidates (among other variables) could account for variations in the data where demographic variables do not (as in the case of Arlen Specter and Class III Senate elections). This is another potential starting point for future research. However, unfortunately, the data are not available to test many county-level competing hypotheses (public opinion, for instance). Other variables, such as age and religion, are likely to have an impact as well.

This research perhaps led to just as many questions as it answered, but the findings suggest a role for the demographic characteristics of a county in the manner in which it votes. Pennsylvania is an interesting case study for an analysis because of its urban vs. rural breakdown (Pittsburgh and Philadelphia contrasting with many rural communities in between) and socioeconomic diversity. In a broader sense, the role of the variables studied in this thesisparticularly minority population-might be a microcosm of larger-scale trends in the "Rust Belt" states in general, major players in national politics.

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