Applied Economic Perspectives and Policy (2018) volume 0, number 0, pp. 1–20.
doi:10.1093/aepp/ppy026

Submitted Article

Explaining the 2016 Vote for President Trump across U.S. Counties

Stephan J. Goetz, Meri Davlasheridze, Yicheol Han*, and David A. Fleming-Muñoz

Stephan J. Goetz is a professor of Agricultural and Regional Economics in the Department of Agricultural Economics, Sociology and Education, Pennsylvania State University. Meri Davlasheridze is an assistant professor in the Department of Marine Sciences, Texas A&M University at Galveston. Yicheol Han is a research associate in the Department of Agricultural Economics, Sociology and Education, Pennsylvania State University. David A. Fleming-Muñoz is a fellow at Motu Economic and Public Policy Research. Any opinions expressed in this article are strictly those of the authors, and not those of their respective employers.
Editor: Craig Gundersen

*Correspondence may be sent to: yuh14@psu.edu.

Submitted 30 August 2017; accepted 16 August 2018.

Abstract *We examine how county characteristics affected voting outcomes in the 2016 presidential election, including the* populist *component represented by the President Trump to Mitt Romney vote difference. Different voter groups could be harmed or helped by policies proposed during the campaign, such as withdrawal from trade agreements, environmental deregulation, and spending cuts. We investigate whether average county-level voting patterns reflected such proposals. Race and educational attainment had large statistical impacts, but economic factors and religious adherence also mattered. The Trump vote share and Trump-Romney vote margin were larger in counties with more farming and coal employment.*

Key words: Trump, U.S. presidential elections, geography of votes, populism.

JEL codes: D72, P48, R11.

Many political observers were stunned by the 2016 election outcome, which followed a campaign unprecedented in American history. Labeled a populist (e.g., Friedman 2017; Serra 2017), then-candidate Donald Trump campaigned against immigration, the North American Free Trade Agreement (NAFTA) and the Trans Pacific Partnership (TPP), as well as the Paris climate agreement. In addition, candidate Trump promised to reverse rising economic inequality, provide health care insurance for all, reduce

regulations and income taxes, and rein in the federal deficit. A general post-election conclusion was that President Trump fared especially well, even more so than past Republican candidates, in rural areas, where residents increasingly feel "left behind" from their contemporaries living on the coasts (e.g., Lichter and Ziliak 2017; Goetz, Partridge, and Stephens 2018). Based on data from a panel of representative voters, Mutz (2018) found that the last election outcome was largely explained by fear of losing status among White American males.

While numerous election-related polls and surveys have been conducted on and since the 2016 election, few if any studies systematically and comprehensively examine the independent relationships between county-level characteristics and voting outcomes. In this paper we use county-level data to examine the extent to which regional socio-demographic factors such as rurality, shares of employment across economic sectors, percentage of veteran status, age cohorts and college education, race, and levels of income determined the final popular vote share cast for candidate Trump. We use both the percentage voting for President Trump (or the Republican Party) and the difference in votes received between candidate Trump in the 2016 election and candidate Mitt Romney in the 2012 presidential election as dependent variables to isolate the populist or "Donald J. Trump" component.[1] In addition, we test whether a set of auxiliary regional variables explains the aggregated county-level election outcome, independently of socio-demographic factors. We examine whether certain types of voters who are representative of particular counties may have voted against their own interests in the election, as reflected in campaign promises. While claims such as "voting against one's own interest" need to be made with caution, there is a body of literature that examines this phenomenon (Frank 2004; Lau, Andersen, and Redlawsk 2008). For example, a voter who relies on public welfare would *ceteris paribus* be ill-served by a presidential candidate who promises to shrink such a program.[2]

We complement previous studies on the 2016 election, which largely have been carried out by non-economists (e.g., Major, Blodorn, and Blascovich 2016; Monnat 2016; Serra 2017; Mutz 2018), by using county-level data. This allows us to examine as a dependent variable the actual vote percentages in the 2016 presidential election, rather than voting intention, or after-the-fact statements about the vote cast or preferences about the candidates. While such surveys are commonly used and reported, they may be influenced by respondent bias, in that the respondent tells the enumerator what he or she is believed to want to hear, or is intimidated by campaign workers – this is one reason these workers have to keep a minimum distance from polling places (Atkeson 1999). Another contribution is that we examine the Trump-Romney vote margin to develop insights into the *populist* component of the last election.[3]

[1]*We define this component as the "populism effect" given that it relates to the marginal effect that the promises of Candidate Donald Trump (such as "drain the swamp" or "build the wall") may have had over the more "politically correct" campaign promises of Candidate Romney in 2012.*

[2]*Furthermore, as a reviewer helpfully pointed out, "an individual may, for example, value a policy change which does not directly affect them but is of moral significance more than a policy which has a minor negative effect towards themselves". This makes the claim of voting against one's own interest even more questionable.*

[3]*As mentioned at the end of following section, we are aware of a potential ecological fallacy and Robinson's paradox in our analysis. We stress that our approach and findings are aggregated county-level estimations that should be understood on regional, rather than individual, bases.*

Supporting most post-election analysis, we find that counties with higher shares of African-American, college-educated and Hispanic populations, relative to Whites, were the least likely to vote for candidate Trump, as measured by standardized beta coefficients. In terms of the margin of Trump vs. Romney vote shares (the populism effect), counties with higher shares of Mormon adherents, college-educated and African-American or Hispanic populations, and lower levels of welfare receipts per capita, gave Trump a smaller vote margin over Romney. In addition, counties with higher shares of farmers and veterans, and unemployment rates, and higher voter turnout but lower shares of females, and counties that were more rural gave Trump a higher vote share overall, as well as a greater margin over Romney in the 2012 election.

This paper makes three distinct contributions. First, most previous work on elections outcomes is survey-based (e.g., Pew, other online polls) of registered voters, or on exit polls during voting events. While there is no obvious reason to distrust these survey results, our study relates actual or *revealed* vote outcomes to various county-level characteristics. While not without potential problems (e.g., the possibility of ecological fallacies), this provides a novel and different perspective. Second, this is the first such study to examine the 2016 election outcome. Third, the effort to examine separately the Romney vs. Trump vote is, to our knowledge, unprecedented.

Literature Review and Background

Studies on democracy and elections have been conducted by numerous economists and political sientists. Classical works include Downs (1957), who focuses on median voters, swing voters and voter rationality, among other factors, and Alvarez and Nagler (1998), who examined the role of economic considerations such as entitlements and social issues in earlier presidential elections. However, academic literature that examines the most recent American presidential election outcome is still lacking. A number of opinion pieces in newspapers have drawn on ad hoc descriptive data analyses (e.g., DelReal and Clement 2017; Leonard 2017), while Rothwell and Diego-Rosell (2016) used Gallup Zip Code-level survey data to examine how individual level and geographic variables related to favorable views of Trump prior to the election; they find greater support for Trump in areas with lower population densities, and among farmers, for example. Monnat (2016) examined the link between so-called "deaths of despair" (Case and Deaton 2015) and voter support for President Trump, and concludes that Trump performed better in counties in despair, but that this relationship was driven more by economic distress than deaths from drugs, alcohol, or suicide, even though the latter are higher in counties voting disproportionately for Trump. Monnat neither used regression analysis to control for independent effects of deaths compared to economic conditions, nor did she consider employment by sector and other salient sociodemographic factors. Similarly, Scala and Johnson (2017) examined voting patterns across the Rural-Urban continuum, but used a smaller set of regressors than we consider here, and like Rothwell and Diego-Rosell (2016), also did not examine the populist effect on the election results.

To identify the set of relevant factors affecting election results, we start with research related to determinants of general voter turnout in presidential elections, and then proceed to develop testable hypotheses by also

considering recent news media and other reports that were specific to the last presidential campaign season. Three major theoretical models have been used to describe voter election participation, as first postulated by Leighley (1995), and all are based on the premise that the cost of participation are important factors. These models include both the decision as well as the actual cost associated with registration and travel to the polling station. We briefly discuss these factors below and in part base our hypotheses on them.

The so called "socioeconomic status model" is one of the earliest and most widely accepted models (Almond and Verba 1963; Verba and Nie 1972) and suggests that participation is driven by individuals' resources including time and money, skills as well as civic orientation (Wolfinger and Rosenstone 1980). One of the primary foundations of this model is that lower socio-economic status individuals either cannot manage "tangible costs" associated with election participation (e.g., it may be more challenging for them to take time from work to participate in the election, or learn how to register and vote), or they have other more important concerns related to material welfare, which limit their civic participation and general interest in politics. Relatively recent voter ID laws may further increase the cost of participation by low-income individuals.

The second, so-called "rational choice model" also focuses on the costs and benefits of participation but from the viewpoint that political participation is a collective action problem (Aldrich 1993). Specifically, if the net benefit of participation, calculated as probability-adjusted benefits (realized if the preferred candidate wins), minus the cost of joining the collective action is positive, then the rational individual will participate in the election. In doing this "calculus of participation", the net benefit is strongly influenced by the probability of decisive participation, which is a function of the size of electorate (Riker and Ordeshook 1968). Generally, a large electorate renders insignificant the individual participant's impact.

The third model, "mobilization model", builds on the rational choice model and postulates that grassroots organizations may coordinate collective action and help reduce the individual cost of election participation (Rosenstone and Hansen 1993). This model places a greater emphasis on the importance of political organizations and their campaign efforts to energize unmotivated citizens by "getting out the vote". Government-imposed barriers have been identified as another significant obstacle to voter participation that also increase the cost of participation (Nagler 1991). Although empirically less tested, inclement weather conditions have also been suggested to lower voter turnout (Gomez, Hansford, and Krause 2007; Persson, Sundell, and Öhrvall 2014).

To summarize, factors that contribute to general voter participation, and indirectly to voting outcomes, can be grouped into (*a*) socioeconomic factors including income levels and distribution, gender, race/ethnicity, and jobs by sector; (*b*) civic engagement (e.g., social capital); (*c*) type of electorate (e.g., swing county); (*d*) social policy such as welfare programs and insurance; (*e*) natural environment; and (*f*) state-level policy differences to capture barriers to and ease of election participation. We draw on campaign promises of then-candidate Trump to develop hypotheses about the likely effects of these different variables on his victory.

A few authors have raised the possibility that individuals may not vote for the "correct" candidate in accordance to their values and interest

(Frank 2004). Lau, Andersen, and Redlawsk (2008) study this hypothesis using data from the eight presidential elections between 1972 and 2000, and suggest that one-quarter of all voters voted "incorrectly," while also discussing several factors that increase the probability of voting correctly. These factors include the following: political knowledge and interest; effective political heuristics (individuals have different cognitive rules of thumb, shortcuts or heuristics to cope with information overload on other domains, finding shortcuts in the similar fashion may not work in politics); strong policy differences among candidates (here voters and candidates have sharply different opinions about policy); and campaign intensity. The latter represents the fact that candidates may not campaign in the "correct" states; for example, candidate Hillary Clinton was reported in the media to have neglected states during the 2016 campaign that were considered "safe," including Michigan, Ohio, and Pennsylvania.

Another important campaign-related variable is that of a "swing county", defined as a county in which the margin between Republican and Democrat votes in the past presidential election was 5% or less.[4] The swing voter model, which is the most commonly used model of "tactical redistribution theory" (Dixit and Londregan 1996, 1998), is based on the premise that candidates emphasize policies of greatest perceived concern to swing voters during their campaigns to ensure a maximum number of votes per dollar spent in the campaign (e.g., Lindbeck and Weibull 1987; Dahlberg and Johansson 2002). Essentially, both candidates would target these voters, and the effect of the variable is indeterminate a priori.

During the campaign, candidate Trump specifically targeted certain population groups, which likely influenced their votes. He singled out military veterans as well as coal and manufacturing workers as being especially deserving of support from the federal government, and promised to reduce taxes while protecting social security and Medicare, which would favor high-income earners as well as senior citizens, respectively. For these groups we expect a tendency towards voting for Trump. On the other hand, candidate Trump made disparaging statements about Hispanics especially, and to a lesser extent and more indirectly about African-Americans, as well as women. For these demographics we would expect a vote against Trump and in favor of candidate Clinton, although Trump also courted African-American votes with "what have you got to lose"—implying that under his presidency they could not be any worse-off than they were at the time—and the promise to fix inner city problems. By seeking to dismantle NAFTA, candidate Trump threatened American farm exports and thus farmers' incomes; on the other hand, he promised extensive environmental deregulation, which would be attractive to farmers. In particular, he promised to roll back Environmental Protection Agency (EPA) programs and climate change-related regulations, while also rebuilding the country's transportation infrastructure.

[4]*We use the approach in Kousky, Michel-Kerjan, and Raschky (2018) to measure the swing vote as the absolute value of the difference between the vote margins (the narrower, the greater the swing potential). Another proxy that has been used in the literature is the third party candidate's vote share (e.g., Deryugina and Kirwan 2018; Davlasheridze, Fisher-Vanden, and Klaiber 2017).*

Data and Methods

To analyze the 2016 presidential elections outcomes we use cross-sectional linear regression models to predict the percentage of all votes received by Trump (TV) at the county level. To capture the populism effect we also examine the difference in shares of votes received by Trump compared to candidate Romney (RV) in 2012: (TV−RV). In additional sensitivity tests, we consider the relative Trump margin over Romney (TV/RV) as a dependent variable; results are reported in columns (1) and (2) of supplementary appendix table A1. To assess the robustness of the results we compare the President Trump vote difference to the average Republican vote of eight previous presidential elections. These results are reported in columns (3) and (4) of supplementary appendix table A1.

Figures 1 and 2 show maps for TV and TV−RV. The first variable (TV) primarily captures the Republican vote, whereas the second (TV−RV) in principle measures the populist component that candidate Trump represented (supplementary appendix figure A1 shows the map for TV/RV). A statistically significant, positive coefficient estimate in the populist vote equation implies that Trump especially appealed to voters in counties with larger shares of the various characteristics represented by the different independent variable, beyond just being a Republican (thus, his populist feature), and conversely for negative coefficient estimates.

Confirming the Romney effect among Republican voters, the map in figure 2 shows low ratios for President Trump's margins over Romney in Utah (and Arizona) because the Mormon vote for Romney was disproportionately higher in these areas. More generally, these maps highlight the industrial Midwest counties in Michigan, Ohio, and Pennsylvania that voted disproportionally more for candidate Trump in 2016, likely as a reflection of decline in the manufacturing sector, or coal mining in the case of southeast Ohio. The latter region appears to be one of the epicenters of Trump's electoral success.

As detailed in table 1, the independent variables consist of a vector of county-level sociodemographic factors (**S**) that include the following: average levels of income per capita; the Gini inequality coefficient as a measure of income inequality; three educational attainment categories (with less than a high school degree excluded); six racial categories (with "all other races" excluded); two age cohorts (the percentage of Millennials aged 20–34 years, and those 65 years or older); four religious affiliation categories, with Evangelicals excluded; the share of population that is female; social capital levels; the 2015 unemployment rate; and the share of veterans in the population. An employment by industry vector (**E**) includes key sectors that we argue held special prominence in the last election: self-employment and employment in coal, oil and gas, manufacturing, retail, logging, and farming.

Government transfers (**G**) include farm subsidies and welfare payments, while another set of election-related variables (**V**) includes "swing" counties in which the vote margin in the 2012 election was 5% or less, voter turnout in 2016, the population share that lacks health insurance, and natural amenities. These include variables capturing counties with high numbers or shares of individuals who may have a particular interest in the election outcome, or that have been listed in various popular media publications as factors contributing to the Trump vote. While these natural amenities include

Figure 1 Trump votes, 2016 (TV)

Data source: Dave Leip's Atlas of U.S. Presidential Elections, 2016.

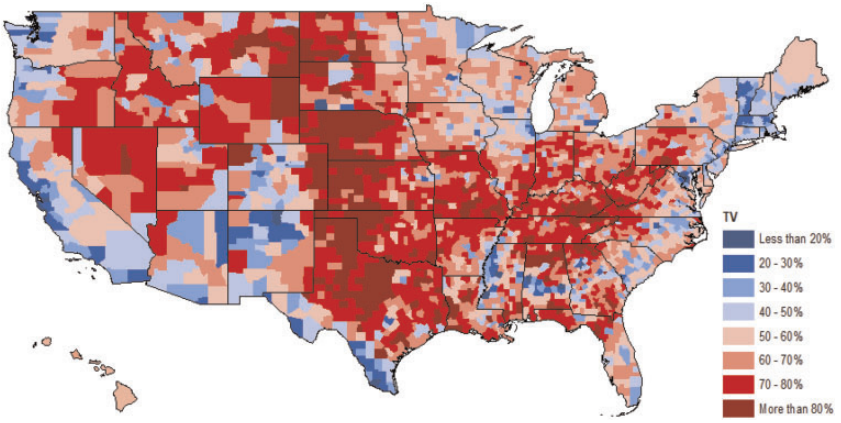
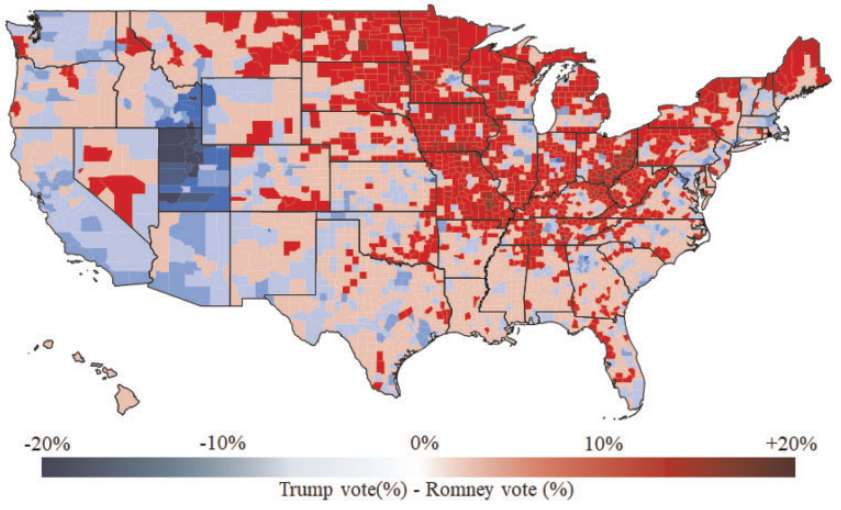


Figure 2 Shift in Republican share in presidential vote, 2012 to 2016 (TV−RV)

Data source: Dave Leip's Atlas of U.S. Presidential Elections, 2012 and 2016.



features (such as temperatures, topography, or water area) that would not be directly affected by reduced environmental regulations, any pollution-related changes in high-amenity counties could have adverse consequences for tourism and related activities, which would in turn reduce economic growth (Fan, Goetz, and Liang 2016).[5]

Last, we use population density as a simple measure of rurality (R_i), given the widely reported importance of this factor in the last election. All of the

[5]*The environmental quality of voters' county of residence may affect their political preferences. For example, individuals living where natural fires are a concern may vote for a candidate who promises more proactive management of fire hazard or more aid. Similarly, coastal counties may be concerned with water-related hazards or water pollution and may prefer candidates whose general agenda includes addressing such environmental problems.*

Table 1 County-Level Data Description and Summary

Variable name	Description	Mean	Std. dev.	Min.	Max.
voting_Trump	% voting for Trump	63.92	14.95	8.40	94.58
TV-RV	%Trump - % Romney	3.65	5.54	−38.14	23.12
TV/RV	%Trump/%Romney	1.06	0.10	0.26	1.49
income	Per capita Income, $1,000	40.19	10.98	16.01	194.86
Gini	Gini Coefficient	0.44	0.03	0.33	0.62
educ_high	% with high school diploma, associate degree, some college (no degree)	65.44	6.89	31.40	81.20
Bachelorsdegree	% with Bachelor's degree	13.17	5.24	2.70	42.20
Graduateorprofessionaldegree	% with Graduate degree or professional degree	6.80	3.71	0.40	31.30
AfricanAmericanalone	% African American population	9.23	14.49	0	85.53
AmericanIndianandAlaskaNative	% American Indian and Alaska Natives	2.03	6.51	0	87.88
Asianalone	% Asian population	1.26	2.12	0	35.73
NativeHawaiianandOtherPacific	% Native Hawaiian and Other Pacific Islanders	0.10	0.16	0	2.80
TwoorMoreRaces	% two or more races	1.86	1.08	0	10.31
hispanic	% Hispanic	8.95	13.81	0	98.71
millenials	% of population age 20-34	18.09	3.71	8.34	51.03
age65_up	% of population age 65 years and older	18.12	4.42	4.29	54.80
Mormons	% Mormon (out of adherence)	4.23	12.47	0	100
United Methodists	% United Methodist (out of adherence)	11.23	8.72	0	60.79
Non-Denom. Christ	% non-Denominational Christians (out of adherence)	5.73	6.00	0	79.49
Other incl. Evang	% Other religious adherence excluding categories listed here and % evangelicals	73.15	16.23	0	100
female_pct	% female population	49.20	2.48	28.36	56.85
socialcapital2014	Social Capital	0.03	1.26	−3.18	21.83
unemp_rate	% unemployed	5.45	1.93	1.8	24
veterans	% veteran population	8.18	2.18	1.15	34.02
selfemployment	% self-employed	23.49	5.97	2.35	50.98

Continued

Table 1 *Continued*

Variable name	Description	Mean	Std. dev.	Min.	Max.
Coal	% of employment in Coal mining,	0.26	1.83	0	34.26
Oil_Gas	% of employment in Oil and Gas extraction	0.34	1.52	0	34.31
Manufacturing	% of employment in Manufacturing	14.72	11.64	0	74.69
retailemp	% of employment in Retail	15.63	4.68	0	50
Loggingemp	% of employment in Logging	0.39	1.48	0	32.78
farmemp	% of Farm Proprietors	7.97	7.53	0.005	56.71
subsidy_FP	Farm Subsidy per Farm Proprietor, $1,000	7.21	9.73	0	76.61
tranfer_pc_2015	Welfare Transfers per capita, $1,000 (income maintenance, social security)	9.15	1.87	3.12	17.71
swing	Swing = 1 if |%dem - %rep| <=5% in 2012 election, 0 otherwise	0.09	0.28	0	1
uninsured	% of population without health insurance	12.04	5.06	2.7	33.3
Turnout_2016	Election turnout rate	0.68	0.08	0.33	0.97
NaturalAmenity	County Natural Amenity Scale	0.01	2.29	−6.4	11.17
pop_density	Population Density	56.37	166.8	0.11	4,503

Note*: Number of Observations: 2,869. Data sources are provided in table 2.*

Table 2 Data Sources

Variable	Source
voting_Trump	Dave Leip's Atlas of U.S. Presidential Elections, 2016
TV-RV	Dave Leip's Atlas of U.S. Presidential Elections, 2012; 2016
TV/RV	Dave Leip's Atlas of U.S. Presidential Elections, 2012; 2016
income	Bureau of Economic Analysis, 2015
Gini	U.S. Census Bureau, American Community Survey, 2011-2015
educ_high	U.S. Census, American Community Survey; 2011-2015
Bachelorsdegree	U.S. Census, American Community Survey; 2011-2015
Graduateorprofessionaldegree	U.S. Census, American Community Survey; 2011-2015
AfricanAmericanalone	U.S. Census, American Community Survey; 2011-2015
AmericanIndianandAlaskaNative	U.S. Census, American Community Survey; 2011-2015
Asianalone	U.S. Census, American Community Survey; 2011-2015
NativeHawaiianandOtherPacific	U.S. Census, American Community Survey; 2011-2015
TwoorMoreRaces	U.S. Census, American Community Survey; 2011-2015
hispanic	U.S. Census, American Community Survey; 2011-2015
millenials	U.S. Census, American Community Survey; 2011-2015
age65_up	U.S. Census, American Community Survey; 2011-2015
Mormons	The Association of Religious Data Archives (ARDA), 2010
United Methodists	The Association of Religious Data Archives (ARDA), 2010
Non-Denom. Christ	The Association of Religious Data Archives (ARDA), 2010
Other incl. Evang	The Association of Religious Data Archives (ARDA), 2010
female_pct	National Center for Health Statistics, 2014
socialcapital2014	Northeast Regional Center for Rural Development, 2014
unemp_rate	U.S. Bureau of Labor Statistics, 2015
veterans	U.S. Department of Veterans Affairs, National Center for Veterans Analysis and Statistics, 2016
selfemployment	Bureau of Economic Analysis, 2015
Coal	U.S. Census, County Business Patterns, 2014
Oil_Gas	U.S. Census, County Business Patterns, 2014
Manufacturing	U.S. Census, County Business Patterns, 2014
retailemp	U.S. Census, County Business Patterns, 2014

Continued

Table 2 *Continued*

Variable	Source
Loggingemp	U.S. Census, County Business Patterns, 2014
farmemp	Bureau of Economic Analysis, 2015
subsidy_FP	Bureau of Economic Analysis, 2015
tranfer_pc_2015	Bureau of Economic Analysis, 2015
swing	Dave Leip's Atlas of U.S. Presidential Elections, 2012
uninsured	U.S. Census, Small Area Health Insurance Estimates (SAHIE), 2015
Turnout_2016	Dave Leip's Atlas of U.S. Presidential Elections, 2016
NaturalAmenity	USDA, Economic Research Service
pop_density	Bureau of Economic Analysis, 2015

variables are described in detail in tables 1 and 2, which also show their sources and summary statistics.[6]

The model estimated using data for each county i is then defined by equation (1);

$$TV_i \ (\text{or } TV_i - RV_i) = f(\mathbf{S}_i, \ \mathbf{E}_i, \ \mathbf{G}_i, \ \mathbf{V}_i, \ R_i) + \mu_{st} + e_i \tag{1}$$

where the dependent variables were defined previously. Equation (1) also includes state-specific dummy variables (μ_{st}), which account for state-specific variation in policies that may have affected voter preferences across counties in each particular state. For example, states differ in allowing early voting and mail voting. Furthermore, presidential candidates' campaign efforts and spending vary by state (Lau, Andersen, and Redlawsk 2008), as does the political influence of their respecitve governors. Lastly, e_i is an idiosyncratic error term assumed to be normally distributed and clustered by state to account for error correlation within each state.

In addition to the basic regressions we also conducted a number of sensitivity tests, as discussed below and provided in the supplementary appendix. For example, because the rural vote was believed to be so important in the last election, and in fact changed the outcome as a result of the distribution of votes in the Electoral College, we use the USDA's Rural Urban Continuum Codes as an alternative measure of density, which tends to pick up agglomeration effects primarily. We also compare the vote share earned by Trump with the average of the Republican candidates' vote shares in the previous eight elections, as mentioned earlier. The supplementary appendix provides selected additional sensitivity test results, while others are available from the authors upon request.

Results

In the following we discuss the results presented in table 3 for the two equations concurrently, both for the sake of brevity and to highlight differences and similarities. The adjusted r-square values for the two equations

[6] *Appendix table A2 shows Variance Inflation Factors (VIF) associated with each variable: all VIFs are lower than 10, the threshold rule of thumb for a multicollinearity problem.*

Table 3 Determinants of Trump Vote (TV), and Populist (TV vs. Romney, TV-RV) Vote

	TV	TV-RV	TV	TV-RV
*SOCIODEMOGRAPHIC (**S**)*				
income	0.048*	−0.018	0.234***	−0.121***
	(1.92)	(−1.27)	(7.19)	(−2.64)
income_sq			−0.16***	0.089**
			(−6.68)	(2.15)
Gini	−0.007	0.019	−0.005	0.018
	(−0.59)	(1.58)	(−0.5)	(1.53)
educ_high	−0.013	0.084***	−0.028	0.092***
	(−0.55)	(2.98)	(−1.14)	(3.27)
Bachelorsdegree	−0.175***	−0.31***	−0.191***	−0.301***
	(−6.68)	(−11.79)	(−7.24)	(−11.39)
Graduateorprofessionaldegree	−0.243***	−0.083***	−0.26***	−0.074***
	(−9.66)	(−3.34)	(−10.65)	(−2.98)
AfricanAmericanalone	−0.732***	−0.161***	−0.734***	−0.16***
	(−52.84)	(−10.25)	(−53.27)	(−10.25)
AmericanIndianandAlaskaNatives	−0.224***	−0.035**	−0.219***	−0.037***
	(−16)	(−2.54)	(−15.6)	(−2.69)
Asianalone	−0.067***	−0.019	−0.071***	−0.017
	(−4.7)	(−1.04)	(−5.11)	(−0.94)
NativeHawaiianandOtherPacif	−0.008	−0.009	−0.008	−0.008
	(−0.87)	(−0.77)	(−0.92)	(−0.75)
TwoorMoreRaces	−0.002	0.025	0	0.023
	(−0.18)	(1.63)	(0.03)	(1.53)
hispanic	−0.478***	−0.151***	−0.489***	−0.145***
	(−18.32)	(−7.96)	(−18.87)	(−7.61)
millenials	−0.082***	−0.031	−0.066***	−0.04*
	(−4.69)	(−1.32)	(−4.06)	(−1.7)
age65_up	−0.084***	−0.003	−0.077***	−0.007
	(−4.1)	(−0.17)	(−3.79)	(−0.33)
Mormons	0.169***	−0.363***	0.178***	−0.369***
	(6.88)	(−8.29)	(7.27)	(−8.43)
United Methodists	0.097***	−0.013	0.098***	−0.013
	(6.88)	(−0.74)	(7.03)	(−0.78)
Non-Denom. Christ	0.074***	−0.049***	0.074***	−0.049***
	(7.16)	(−4.18)	(7.21)	(−4.22)
Other incl. Evang	0.145***	−0.024	0.148***	−0.026
	(6.97)	(−1.19)	(7.19)	(−1.28)
female_pct	−0.076***	−0.061***	−0.082***	−0.058***
	(−6.29)	(−4.46)	(−6.79)	(−4.17)
socialcapital2014	0.065***	−0.002	0.061***	0.0
	(4.01)	(−0.25)	(4)	(−0.06)
unemp_rate	−0.056***	0.064***	−0.043***	0.057**
	(−3.21)	(2.65)	(−2.62)	(2.37)
veterans	0.03***	0.029**	0.027**	0.031**
	(2.86)	(2.09)	(2.51)	(2.24)
*EMPLOYMENT VECTOR (**E**)*				
selfemployment	−0.065***	0.007	−0.059***	0.003
	(−6.17)	(0.57)	(−5.68)	(0.29)
Coal	0.011*	0.04***	0.011*	0.041***
	(1.81)	(4.85)	(1.72)	(4.96)

Continued

Table 3 *Continued*

	TV	TV-RV	TV	TV-RV
Oil_Gas	0.045***	0.01	0.041***	0.013
	(3.48)	(1.04)	(3.41)	(1.23)
Manufacturing	−0.018*	0.035***	−0.014	0.033***
	(−1.7)	(3.01)	(−1.37)	(2.84)
retailemp	0.012	0.005	0.014	0.004
	(1.17)	(0.53)	(1.4)	(0.41)
Loggingemp	0.006	−0.003	0.008	−0.004
	(1.16)	(−0.37)	(1.54)	(−0.5)
farmemp	0.048***	0.116***	0.05***	0.115***
	(3.5)	(7.63)	(3.67)	(7.58)
*GOVERNMENT TRANSFERS (**G**)*				
subsidy_FP	0.049***	−0.005	0.043***	−0.002
	(4.46)	(−0.59)	(4.04)	(−0.21)
tranfer_pc_2015	−0.025	0.096***	−0.024	0.095***
	(−1.31)	(4.39)	(−1.28)	(4.41)
*MISCELLANEOUS (ELECTION SPECIFIC, **V**)*				
swing	−0.046***	0.014*	−0.046***	0.014*
	(−6.45)	(1.8)	(−6.46)	(1.82)
uninsured	0.159***	−0.033	0.161***	−0.034
	(5.85)	(−1.11)	(5.93)	(−1.16)
Turnout_2016	0.073***	−0.171***	0.067***	−0.168***
	(3.6)	(−6.93)	(3.36)	(−6.78)
NaturalAmenity	−0.074***	0.053***	−0.074***	0.053***
	(−4.31)	(3)	(−4.33)	(3.01)
pop_density	−0.013	−0.029*	−0.018*	−0.026*
	(−1.3)	(−1.87)	(−1.83)	(−1.72)
State FE	Y	Y	Y	Y
Adjusted R-squared	0.84	0.8	0.84	0.8
N	2,890	2,890	2,890	2,890

*Note: Asterisks indicate the following: * =p < 0.1; **=p < 0.05; and *** =p < 0.01. Includes constant, reported in standardized beta coefficients, and parenthesis contain robust* t*-statistics clustered at the state level.*

and sensitivity tests are all above 0.80, which is high for county-level analyses of this sort and in part explained by the inclusion of state-specific dummy variables. Coefficient estimates are reported as standardized beta coefficients, so that the value represents a change in terms of standard deviations of the dependent variable in response to a one standard deviation shock in the explanatory variable.

Sociodemographic Factors

Counties with higher average income per capita voted for Trump in higher proportions, perhaps reflecting an expectation in these communities for income tax relief, although the absolute difference to the Romney vote four years earlier was statistically insignificant.[7] Including the squared value of average per capita income of the county reveals an inverse-U-shaped

[7]*The relative difference (reported in table A3) is significant and negative, on the other hand, signaling that wealthy counties in relative terms were less inclined to vote for Trump than for Romney.*

relationship: as counties become richer, the effect of income on the Trump vote share peaks at around $88,000 of average per capita income, and beyond that point, higher incomes are associated with a lower vote for Trump. This may reflect the "socioeconomic status model" in that voters in counties that were doing better than the rest (counties with higher incomes, on average) voted mainly in favor of maintaining the "status quo" by opting less for candidate Trump—although not necessarily less so than they did against Romney in 2012—in the populist equation neither the linear not the squared income term is statistically significant. Conversely, the effect of income on the populist vote margin (TV-RV) follows a U-shaped pattern, reaching a minimum at $82,000. Thus, both lower- and higher-income individuals gave President Trump a higher vote margin over candidate Romney, although just a handful of counties in the sample had an average income above these turning points.

Results for other basic regional sociodemographic variables are largely as expected, with counties containing higher shares of college-educated, African-Americans, American Indians and Alaska Natives, or Hispanics relative to Whites (the excluded category), and females, not only being *less* likely to vote for Trump but also giving him a lower margin over Romney. In all cases, the coefficient estimates are statistically different from zero at below the 1% level. In contrast, counties with higher shares of veterans not only voted more for candidate Trump, but did so at a statistically significant greater margin than for candidate Romney (both relatively and absolutely). Therefore, along with counties containing higher shares of Whites (relative to Hispanics and Americans Indians or Alaska Natives), males and those without college degrees (relative to high school drop-outs, see above), counties containing proportionally more farmers and coal workers (see below) and veterans shares consistently both voted for President Trump (Republican), and also supported President Trump to a greater extent than candidate Romney.

Counties with higher proportions of Millennials, or populations aged 65 years and older, were less likely to vote for Trump (or the Republican Party), with the preference for Trump over Romney depending on whether or not the squared income term is included. Counties reporting higher shares of the four religious affiliations used, relative to Evangelicals, were more likely to vote Republican. Mormons especially, but also non-denominational Christians, were significantly less likely to vote for Trump over Romney. For United Methodists and "other adherents", there was no difference in the relative Trump/Romney vote. Counties with higher social capital stocks voted in favor of President Trump, but showed no preference for him over candidate Romney.

Voters in counties with higher unemployment rates favored the Democratic candidate, perhaps because that party was expected to keep welfare programs in place within the county. However, the populist regression model shows a statistically significant positive effect, or a greater share of votes for President Trump relative to candidate Romney. Without reading too much into this result, it could suggest that the average voter in counties with high unemployment rates had greater confidence that a President Trump would be able to restore jobs, compared to Romney.[8] The same pattern, that is, overall voting against President Trump but giving him a greater

[8]*This result is robust in terms of both the relative and the absolute Trump-Romney vote margin.*

margin over Romney, is observed for swing counties and high Natural Amenity counties. Arguably similar motivations are driving the aggregate observed outcomes in these counties. In contrast, the opposite is observed for voter turnout: the higher the turnout, the larger the vote in favor of President Trump, but the more negative the populist margin. Thus, higher voter turnout worked in favor of Trump, but also reduced the populist component as evident from the negative sign in the TV-RV model.

Employment by Sector

Counties with proportionately more coal and oil and gas workers and farmers, holding other county characteristics constant, voted more for President Trump, and also voted for him at significantly higher rates than for Romney in 2012, except in the case of oil and gas workers. In contrast, counties with higher proportions of manufacturing and self-employed workers voted more for candidate Clinton, but in the case of manufacturing, shares did favor President Trump over Romney. For self-employed workers, the finding of a lower vote share for Trump than for candidate Clinton is counter to expectations, given the prominence of such workers in pre-election discussions and media reports.[9] Retailing has lost substantially more workers than the coal sector (e.g., Thompson 2017), but the effect of the retail employment share lacked statistical significance.

Counties with high proportions of farmers also voted for Trump at higher rates than for candidate Clinton, confirming a general tendency of voting for the political right by voters in farming counties. This is noteworthy because candidate Trump promised to rein in federal spending, which includes farm subsidies, along with ending or at least modifying NAFTA.[10] Given the importance of farm exports, withdrawal from this agreement would likely have profound adverse consequences, especially for corn-growing regions that export heavily to Mexico.[11]

Government Transfers

Counties that received more farm subsidies voted for the Republican candidate, likely reflecting conservative political preferences of farming counties (see also DelReal and Clement 2017). This effect appears even though we control for the share of farmers—the coefficient of correlation between these two variables is only 0.33. Counties with greater farm subsidies did not vote for Trump over Romney in a statistically significant manner, however.

[9] *As a reviewer also pointed out, the negative effect of self-employment on the Trump vote is unexpected, given the campaign promises to reduce taxes and regulations. The ecological fallacy not withstanding, self-employed businesses may have been concerned about the Trump campaign's rhetoric with respect to withdrawing from NAFTA and TPP. The recently implemented tax reform indeed favors the self-employed (Hall 2017) and Gallup polls show that Republican self-employed individuals strongly favored candidate Trump (Rothwell and Diego-Rosell 2016).*

[10] *Farmers may vote for the Republican party because they view themselves as self-reliant individuals (as a reviewer suggested), in spite of the fact that many receive public subsidies in the form of farm program payments. This represents a cognitive dissonance, and the interpretation is subject to a potential ecological fallacy.*

[11] *See, for example, http://farmpolicynews.illinois.edu/2017/11/usda-trade-data-nafta-perspectives-lawmakers-ag-secretary-farmers-mexico/.*

Counties relying more on welfare programs voted for Trump over Romney to a greater extent, possibly in the expectation that as president, Trump would help residents of these counties move off of welfare rolls with employment-stimulating policies that were more promising than those of candidate Romney. These counties did not vote for Trump over Clinton in a statistically significant manner, however. To a large extent, the welfare payments variable is picking up the effect of poverty—there was not enough independent variation in these two variables to include both.

Miscellaneous Variables

Beyond these general findings above, which are largely consistent with our hypotheses, the sign on swing counties flipped from negative to positive between the TV and TV–RV equations: Swing counties were less likely to vote for the Republican candidate, but they voted for Trump at a statistically significant higher rate than for Romney. Also, President Trump received a higher vote share in counties with a higher voter turnout, but in these counties he also received significantly fewer votes than candidate Romney in 2012. Counties with more medically uninsured populations were more likely to vote for President Trump, and there was no difference in the Trump-Romney vote margin.

Rural Status

Counties with higher population densities were less likely to vote for Trump and also voted for him at a lower rate than for Romney (the coefficient estimate being statistically significant and negative), but only when a squared income term is included in the equation. Conversely, less densely settled or rural areas voted for Trump (i.e., Republican) and also favored Trump over Romney.

Sensitivity Analyses

We carried out various supplemental sensitivity analyses to examine the robustness of results; some of these are reported in the supplementary appendix to this paper and others are available from the authors upon request. A supplemental analysis by Rural Urban Continuum Code (RUCC; see supplementary appendix table A3) shows more subtle effects on the vote for President Trump according to population size and adjacency status of a county (see supplementary appendix table A4). Counties in metro areas of fewer than 250,000 residents (RUCC 3), as well as counties with RUCC 5–7 and 9 were all more likely to vote Republican. However, only code 7 counties also gave Trump a higher vote share than Romney, after we hold all other factors constant (this includes codes 4 and 7 in the equation with the relative vote margin). This may imply that the last election turned more on the fact that rural areas tend to support Republican candidates, rather than the populist agenda.

A comparison of the vote share for President Trump compared to the average of the Republican candidates in the last eight Presidential elections using the same regressors as in the other tables reveals statistically significant positive effects on income, age 65+, religiosity, coal, oil & gas, logging and farm employment shares, as well as transfer receipts per capita. Negative

effects are obtained on college education, share of blacks and Hispanics, female shares, swing counties, the uninsured, natural amenity counties, and population density. These results are reported in columns (3) and (4) of supplementary appendix table A1.

When we examine the *relative* margin of votes for Trump (TV/RV) rather than the *absolute* margin (TV–RV), results are generally consistent, with the following exceptions. The coefficient on per capita income becomes statistically significant (negative), while the coefficient estimates on Hispanic share, female share, and manufacturing employment share are no longer statistically different from zero—see columns (1) and (2) of supplementary appendix table A1. Thus, subtle differences exist depending on whether the populist component is measured in absolute or relative terms.

Finally, we caution readers that we are not able to draw conclusions about how different population groups voted, because we do not have individual-level data. For example, a positive coefficient estimate for veteran or farmers shares does not suggest that these individuals more likely voted for President Trump. Because of the potential for ecological fallacies and Robinson's paradox in particular, we can only conclude in this case that counties with higher shares of veterans and farmers were more likely to vote for Trump, whether or not this reflects the votes of veterans or farmers.

Discussion and Conclusion

In the last election voters faced with declining economic prospects may have felt a tension in terms of the choices available to them. The choices were to keep the status quo by voting for the Democrat candidate, or to seek change and hope for expanded employment opportunities from the Republican candidate who promised to restore manufacturing and coal jobs. This could explain the result that counties with higher average unemployment rates voted against President Trump but also favored him over Romney.[12] Similarly, counties with higher rates of residents who lacked medical insurance clearly voted for President Trump, a finding worth exploring in future research. Counties with relatively more female voters largely favored candidate Clinton, as well as candidate Romney in 2012 relative to Trump.

Both manufacturing and coal counties favored Trump over Romney in statistically significant fashion, but on average only coal counties voted for the Republican candidate in higher proportions than the Democrat; in counties with more manufacturing employment, candidate Clinton fared better. Oil and gas counties, on the other hand, voted more for President Trump, perhaps in anticipation of reduced environmental regulations, but did not favor candidate Trump over Romney.

As noted, farming regions were both more likely to vote for President Trump and also voted for him at a statistically significant higher margin compared to Romney. They joined veterans and coal counties as the only county demographic characteristic showing this tendency. Given the potential threats to farm programs in a more austere federal budget, one implication is that farming regions in aggregate *may* have voted against their own

[12]*The Gini coefficient had effects similar to the poverty rate, but these variables along with welfare payments (transfers_pc) were too highly correlated to allow all three to be included in the regression at the same time.*

economic interests. Also of interest, counties relying more on farm subsidies per farmer were not more likely to vote for Trump over Romney, but they did favor President Trump overall in the 2016 election.

While areas other than the urban core, as measured by the RUCC, on balance were more likely to vote Republican, confirming Conservative rural political preferences, they did not favor Trump over Romney, with the exceptions of counties with code 7 (supplementary appendix table A4). Candidate Trump fared better as population density declined, but only when squared per capita income is included in the equation; he also outperformed Romney in such communities. Places with better natural amenities were less likely to vote for Trump, as the Republican candidate. However, they voted for him with higher margins than for Romney. Communities with more social capital, all else being equal, also favored the Republican candidate, but showed no preference for Trump over Romney.

A final important insight into the 2016 election can be gained by comparing the relative sizes of the beta coefficients, which show the effect of a one standard deviation shock in the independent variable on the dependent variable, again measured in standard deviations. Keeping in mind the potential for an ecological fallacy, on this count the most important county factors in the last election were race and education: no other variable had a stronger effect statistically than the percentage of residents who are Black (relative to the excluded category, Whites), followed by Hispanics and the college educated in third place—all against candidate Trump. In terms of the margin of votes for President Trump over Romney, Mormon adherents ranked first, followed by the voter turnout rate and shares of Blacks and Hispanics.

Supplementary Material

Supplementary material is available online at *Applied Economic Perspectives and Policy* online.

Acknowledgment

The authors gratefully acknowledge the valuable comments of two anonymous reviewers in addition to those of the editor. An earlier version of this article was presented at the Fragmented Regional Worlds: Inequality and Populism in a Global World, Regional Studies Association Australasia Conference 2017, 3–5 July 2017, Sydney, Australia. The authors thank participants in the session for their comments.

References

Aldrich, J.H. 1993. Rational Choice and Turnout. *American Journal of Political Science* 37 (1): 246–78.

Almond, G.A., and S. Verba. 1963. *The Civic Culture*. Princeton, NJ: Princeton University Press.

Alvarez, R.M., and J. Nagler. 1998. Economics, Entitlements, and Social Issues: Voter Choice in the 1996 Presidential Election. *American Journal of Political Science* 42 (4): 1349–63.

Atkeson, L.R. 1999. "Sure, I Voted for the Winner!" Overreport of the Primary Vote for the Party Nominee in the National Election Studies. *Political Behavior* 21 (3): 197–215.

Case, A., and A. Deaton. 2015. Rising Morbidity in and Mortality in Midlife Among White Non-Hispanic Americans in the 21st Century. *Proceedings of the National Academy of Sciences of the United States of America* 112 (49): 15078–83.

Dahlberg, M., and E. Johansson. 2002. On the Vote-Purchasing Behavior of Incumbent Governments. *American Political Science Review* 96 (1): 27–40.

Davlasheridze, M., K. Fisher-Vanden, and H.A. Klaiber. 2017. The Effects of Adaptation Measures on Hurricane Induced Property Losses: Which FEMA Investments Have the Highest Returns? *Journal of Environmental Economics and Management* 81: 93–114.

DelReal, J.A., and S. Clement. 2017. Rural Divide. *The Washington Post*. June 17. Available at: https://www.washingtonpost.com/graphics/2017/national/rural-america/?utm_term=.683b70d0120c&wpisrc=al_alert-COMBO-politics%252Bnation&wpmk=1.

Deryugina, T., and B. Kirwan. 2018. Does the Samaritan's Dilemma Matter? Evidence from U.S. Agriculture. *Economic Inquiry* 56 (2): 983–1006.

Dixit, A., and J. Londregan. 1996. The Determinants of Success of Special Interests in Redistributive Politics. *The Journal of Politics* 58 (4): 1132–55.

——. 1998. Ideology, Tactics, and Efficiency in Redistributive Politics. *The Quarterly Journal of Economics* 113 (2): 497–529.

Downs, A. 1957. *An Economic Theory of Democracy*. New York, NY: Harper.

Fan, Q., S.J. Goetz, and J. Liang. 2016. The Interactive Effects of Human Capital and Quality of Life on Economic Growth. *Applied Economics* 48 (53): 5186–200.

Frank, T. 2004. *What's the Matter with Kansas?* New York, NY:Henry Holt & Co..

Friedman, U. 2017. What is a Populist? And is Trump One? *The Atlantic*. February 27, 2017.

Goetz, S.J., M. Partridge, and H. Stephens. 2018. The Economic Status of Rural America in the President Trump Era. *Applied Economic Perspectives and Policy* 40 (1): 97–118.

Gomez, B.T., T.G. Hansford, and G.A. Krause. 2007. The Republicans Should Pray for Rain: Weather, Turnout, and Voting in U.S. Presidential Elections. *Journal of Politics* 69 (3): 649–63.

Hall, K. 2017. A Gift for the Self-Employed: Tax Reform Simplifies Completing and Filing IRS Forms. The Hill. December 23, 2017. Available at: http://thehill.com/opinion/finance/366168-a-gift-for-the-self-employed-tax-reform-simplifies-completing-and-filing-irs.

Kousky, C., E.O. Michel-Kerjan, and P.A. Raschky. 2018. Does Federal Disaster Assistance Crowd out Flood Insurance? *Journal of Environmental Economics and Management* 86: 150–64.

Lau, R.R., D.J. Andersen, and D.P. Redlawsk. 2008. An Exploration of Correct Voting in Recent U.S. Presidential Elections. *American Journal of Political Science* 52 (2): 395–411.

Leighley, J.E. 1995. Attitudes, Opportunities and Incentives: A Field Essay on Political Participation. *Political Research Quarterly* 48 (1): 181–209.

Leonard, S. 2017. Why are So Many Young Voters Falling for Old Socialists? *The New York Times*. June 18. https://nyti.ms/2sxg2Yh.

Lichter, D.T., and J.P. Ziliak. 2017. The Rural-Urban Interface: New Patterns of Spatial Interdependence and Inequality in America. *Annals of the American Academy of Political and Social Science* 672 (1): 6–25.

Lindbeck, A., and J.W. Weibull. 1987. Balanced-Budget Redistribution as the Outcome of Political Competition. *Public Choice* 52 (3): 273–97.

Major, B., A. Blodorn, and G.M. Blascovich. 2016. The Threat of Increasing Diversity: Why Many White Americans Support Trump in the 2016 Presidential Election. *Group Processes and Intergroup Relations*. doi:10.1177/1368430216677304.

Monnat, S.M. 2016. *Deaths of Despair and Support for Trump in the 2016 Presidential Election*. Department AESE Research Brief, Pennsylvania State University. Available at: https://aese.psu.edu/directory/smm67/Election16.pdf.

Mutz, D.C. 2018. Status Threat, Not Economic Hardship, Explains the 2016 Presidential Vote. *Proceedings of the National Academy of Sciences of the United States of America*. doi:10.1073/pnas.1718155115.

Nagler, J. 1991. The Effect of Registration Laws and Education on U.S. Voter Turnout. *The American Political Science Review* 85 (4): 1393–405.

Persson, M., A. Sundell, and R. Öhrvall. 2014. Does Election Day Weather Affect Voter Turnout? Evidence from Swedish Elections. *Electoral Studies* 33: 335–42.

Riker, W.H., and P.C. Ordeshook. 1968. A Theory of the Calculus of Voting. *The American Political Science Review* 62 (1): 25–42.

Rosenstone, S.J., and J.M. Hansen. 1993. *Mobilization, Participation, and Democracy in America*. New York, NY: MacMillan Publishing.

Rothwell, J., and P. Diego-Rosell. 2016. Explaining Nationalist Political Views: The Case of Donald Trump. Gallup Working Paper, November 2. Available at: http://dx.doi.org/10.2139/ssrn.2822059.

Scala, D.E., and K.M. Johnson. 2017. Political Polarization along the Rural-Urban Continuum? The Geography of the Presidential Vote, 2000–2016. *The Annals of the American Academy of Political and Social Science* 672 (1): 162–84.

Serra, G. 2017. The Electoral Strategies of a Populist Candidate: Does Charisma Discourage Experience and Encourage Extremism? *Journal of Theoretical Politics* 30 (1): 45–73.

Thompson, J. 2017. The Silent Crisis of Retail Employment. What To Do When Department-Store Jobs-or Mining and Manufacturing Jobs-Go Away. The Atlantic. April 18, 2017. Available at: https://www.theatlantic.com/business/archive/2017/04/the-silent-crisis-of-retail-employment/523428/.

Verba, S., and N.H. Nie. 1972. *Participation in America: Political Democracy and Social Equality*. New York, NY: Harper & Row.

Wolfinger, R.E., and S.J. Rosenstone. 1980. *Who Votes*? New Haven, CT: Yale University Press.