

The 2016 Pennsylvania Presidential and U.S. Senate Elections

Breaking Pennsylvania's Electoral Habits

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This article uses pre-election survey data, post-election survey data, and voter registration and election data to interpret the outcomes of the 2016 presidential and U.S. Senate races in Pennsylvania. This analysis shows how changes in voter registration and voter turnout in specific areas of the Commonwealth, driven in large part by less-educated voters, those dissatisfied with the current direction of the country, and the performance of the incumbent president, explain the 2016 election results.

That a Republican won the White House in 2016 was not, according to political science forecasters, a breathtaking surprise. The surprise was that Donald Trump was the Republican nominee and that he won not only the White House but also Pennsylvania, a state that had supported the Democratic presidential candidate in six straight elections. This article uses pre-election survey data, post-election survey data, and voter registration and election data to interpret the outcomes of the 2016 presidential and U.S. Senate races in Pennsylvania. This analysis shows that significant changes in voter registration and voter turnout in specific areas of the Commonwealth, driven in large part by less-educated voters, those dissatisfied with the current direction of the country, and the performance of the incumbent president, explain the 2016 election results.

Data Sources

This article includes data from three primary sources. The pre-election polling data on candidate favorability, candidate preferences, and candidate characteristics come primarily from Franklin & Marshall College Polls conducted during July, August, September, and October 2016. Interviewing dates and sample sizes for each survey are as follows: July 29–August 1 ($n = 661$), August 25–29 ($n = 736$), September 28–October 2 ($n = 813$), and October 26–October 30 ($n = 863$).¹ The post-election polling data come from re-interviews with respondents from these four pre-election polls.² The registered voter samples for these surveys were obtained from L2 and all sampled respondents were notified by letter about the survey. Interviews were completed over the phone and online depending on each respondent's preference. Survey results were weighted (by age, gender, region, education, and party registration) using an iterative weighting algorithm to reflect the known distribution of those characteristics as reported by the Pennsylvania Department of State.

The data on polling averages leading up to Election Day come from the Huffington Post Pollster website. County-level election and registration data come from the Pennsylvania Department of State. The election results for 2016 were not official at the time the manuscript was being prepared, so final vote totals by county could differ slightly.

The Presidential Race

Political scientists expected the 2016 race for president to be closely contested because the election fundamentals predicted a tight contest. Still, the Trump candidacy caused some to wonder if such models would be valid because of his nontraditional candidacy—nontraditional both in the way he campaigned (relying on television advertising less and social media more than traditional candidates) and in the issues he emphasized. Some of Trump's signature issues were at odds with traditional Republican positions, such as his opposition to free trade agreements, his concerns about NATO and foreign intervention, and his desire to undertake massive infrastructure spending. By the end of September, models that relied on the election fundamentals gave Clinton a modest advantage, but it was also clear that economic conditions and voter fatigue with Democrats were liabilities that had the potential to harm her candidacy (Campbell 2016). A great many contemporary newspaper accounts and some scholarship also documented a sizable disaffection among rural, white, non-college-educated voters that had the potential to carry Trump to victory despite his personal liabilities.³ The following section documents the candidate ratings, pre-election polling, and election outcomes for the 2016 presidential race in Pennsylvania.

Candidate Ratings

Favorability

Both presidential candidates began the general election campaign as well-known among voters and with more voters feeling negatively than positively about their candidacies. In July, more than nine in 10 voters were able to offer an opinion about how favorably they viewed both Trump (95%) and Clinton (96%). Donald Trump was perceived far more negatively than positively by Pennsylvania voters with a minus 29 favorability rating. Hillary Clinton was also perceived more negatively than positively, but her rating was only minus two. The ratings of both candidates, although fluctuating a bit during the campaigns with the most notable movement taking place around the time of the party conventions, eventually ended at about the same place they started, as Table 1 illustrates. One of the unusual features of this election was that a large proportion of voters (16%) had an unfavorable opinion of both candidates.⁴ In 2012, only 3% of voters in Pennsylvania had an unfavorable opinion of both presidential candidates.⁵

Issues and Perceived Capabilities

Registered voters, when asked about the reasons they supported their candidate, most often said their candidate was the better option; Clinton voters also believed she was more qualified, while Trump's voters preferred him because he was not a typical politician. Specifically, in response to the question "What is the main reason you plan to vote for [the candidate]?" Clinton's supporters believed she was the better option (35%), was the more qualified (30%), was more aligned with their political views (17%), or had some desirable personal

Table 1. Favorability Ratings of Presidential Candidates, Pennsylvania 2016

Candidate	Month	Favorable	Unfavorable	Net Favorable Rating	Aware of Candidate
Donald Trump	July	0.33	0.62	-0.29	0.95
	Aug.	0.37	0.58	-0.21	0.95
	Sept.	0.32	0.60	-0.28	0.92
	Oct.	0.35	0.62	-0.27	0.97
Hillary Clinton	July	0.47	0.49	-0.02	0.96
	Aug.	0.38	0.54	-0.16	0.92
	Sept.	0.47	0.50	-0.03	0.97
	Oct.	0.46	0.52	-0.06	0.98

Source: July, August, September, and October 2016 Franklin & Marshall College Polls.

characteristic (11%). Trump’s supporters most often preferred him because they thought he was the better option (30%), because he was not a politician (17%), because his political views better aligned with theirs (16%), and because they believed he could fix the country’s problems (13%). Registered voters provided consistent responses throughout the campaign about their reasons for supporting each candidate.

Registered voters were also relatively consistent in which candidate they believed was better described by a series of statements about their perceived strengths. Secretary Clinton had a clear advantage in having sufficient experience to be president and in her ability to handle foreign policy, as Figure 1 shows. Clinton and Trump were rated similarly, however, in the ability to encourage change and to fix the economy.

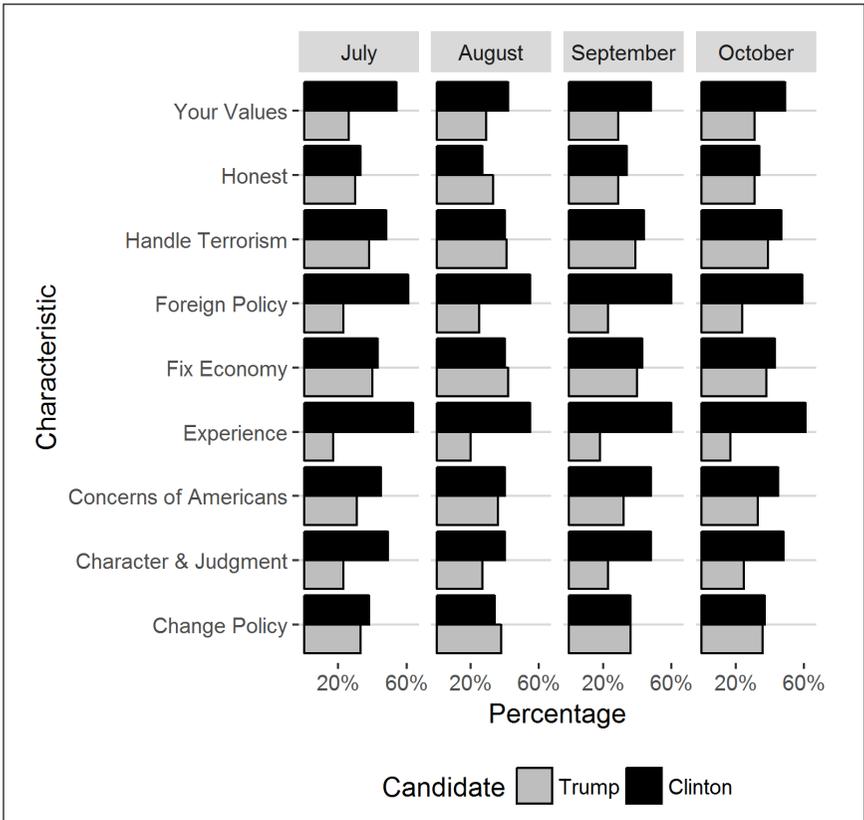


Figure 1. Percentage of Respondents Who Believe Trump or Clinton Is Best Described by Each Statement, by Month of Survey. Poll question: “Regardless of how you plan to vote, which of these Presidential candidates do you think is best described by each of the following statements?” (*Franklin & Marshall College Polls.*)

Pre-election Polling

Poll Averages

The average of polls conducted in Pennsylvania suggested that Hillary Clinton led Donald Trump throughout the entire fall campaign. Her monthly average lead was four points in July, eight points in August, five points in September, seven points in October, and three points in November.⁶ Only rarely did individual polls show either candidate with support from a majority of voters; the averages in the final week showed Clinton's expected vote share at 47% and Trump's expected vote share at 44%. The monthly polling averages showed a sizable number of undecided and other voters that, given the tightening of the race over the final weeks, suggested movement toward Trump. The undecided and third-party candidates totaled nearly 20 points in July, 19 in August and September, 14 in October, and 11 in November. The rate of undecided and third party voters was much higher in 2016 than in 2012. Polls released in the final month of the 2012 campaign found only 5% of voters were undecided or planning to vote for a third-party candidate.⁷ Figure 2 shows the results of

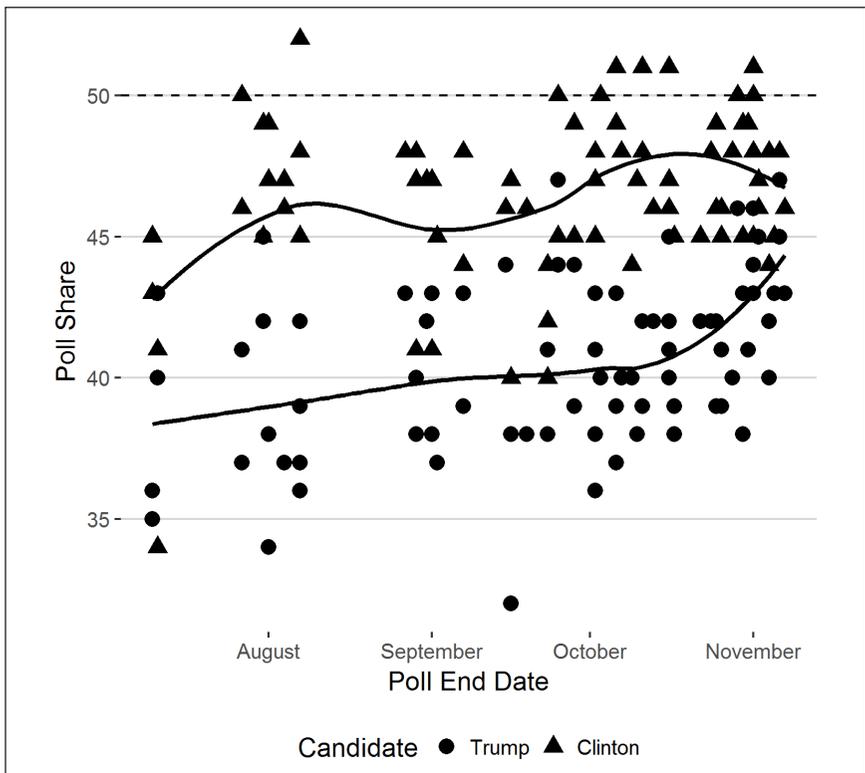


Figure 2. Pennsylvania 2016 Presidential Polling Results, July–November 2016. (Compiled and created by the authors using data downloaded from *Huffpost Pollster*, December 6, 2016.)

pre-election polls conducted during the fall campaign. Clinton’s share of the vote appeared to be increasing during the course of the fall campaign at the same time the margin between the two candidates converged in November.

Support within Demographic Subgroups

Much of the media narrative during the 2016 election had to do with sizable differences in the votes of white and nonwhite voters and the votes of college-educated and non-college-educated voters. These differences were apparent in Pennsylvania. Besides his expected support among conservatives and Republicans, Donald Trump’s strongest support throughout the campaign came from white, non-college-graduates. In addition, there were geographic differences likely reflecting some cultural or social features amplified by this demographic support within specific areas of the state. Notably, pre-election polls showed Trump performing strongly in western Pennsylvania outside of Pittsburgh. Figure 3 presents the demographic support for the candidates during the fall campaign.

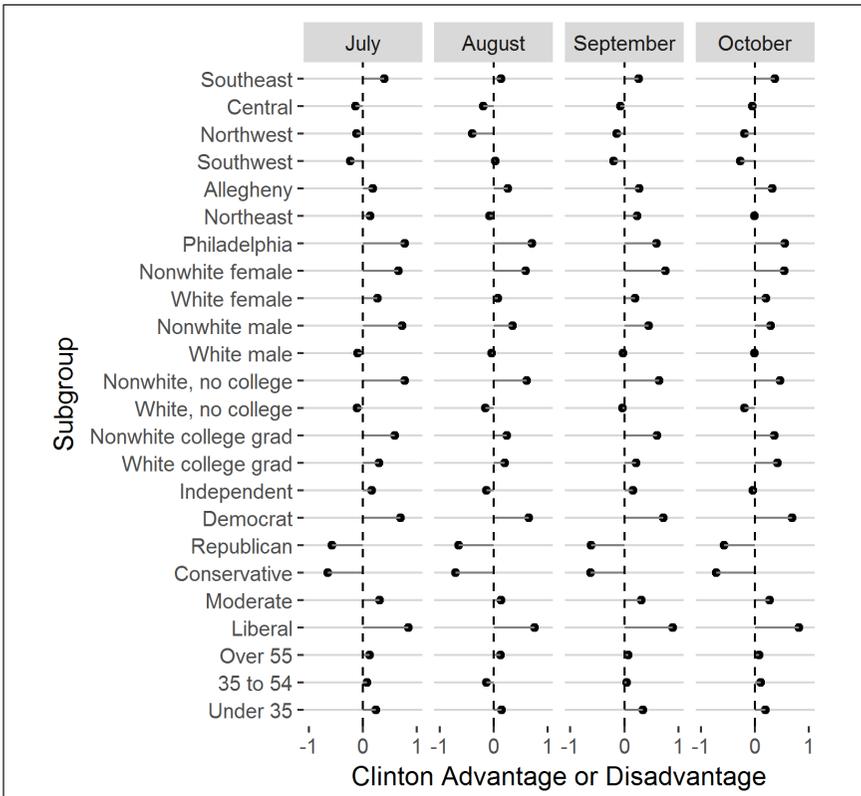


Figure 3. Clinton Advantage or Disadvantage in Percentage Points among Demographic Subgroups, by Month of Survey. (*Franklin & Marshall College Polls.*)

Election Results

Donald Trump won a narrow and to many a surprising victory over Hillary Clinton in Pennsylvania, 48.6% to 47.9%. Trump’s triumph came from having a significant advantage among late-deciding voters. Nearly all (97%) of the respondents who planned to vote for Trump in Franklin & Marshall’s pre-election polls and who made their final decision in the last week of the campaign did vote for him, while only three in four (74%) who planned to vote for Clinton and made their final decision in the last week of the campaign voted for her.⁸ The other sizable advantage for Trump came from voters who were undecided in our pre-election polls: Trump had a sizable advantage whether these undecided voters decided in the final week or earlier.⁹ Table 2 shows the composition of presidential voters pre- and post-election in Pennsylvania. Most voters had consistent preferences pre- and post-election. Trump had two major advantages: more voters who supported Clinton pre-election moved away from her than moved away from him, and more voters who preferred neither candidate prior to the election voted for Trump than for Clinton.

Post-election Survey Results: Regression Analysis

A logistic regression was performed to determine the effects of demographic characteristics (gender, age, education, race, marital status, employment, union membership, and veteran status), political characteristics (partisan affiliation and political ideology), and attitudinal characteristics (Obama job performance, expected future financial condition, and direction of the country) on the likelihood that respondents voted for Donald Trump for president. The logistic regression model was statistically significant, $\chi^2(23) = 1456.02, p < .0001$. The model explained 82.3% (Nagelkerke R^2) of the variance in presidential vote choice and correctly classified 92% of cases. Model sensitivity was 89.1% and model specificity was 92.6%. Table 3 provides the logistic regression coefficients and confidence intervals for the variables in the model.

Pre-election Preference	Post-election Preference		
	Clinton	Trump	Neither
Clinton	43.5%	0.6%	0.2%
Trump	—	41.5%	0.2%
Neither	4.2%	6.7%	3.3%

Source: July, August, September, and October 2016 Franklin & Marshall College Polls.

Table 3. Logistic Regression Model for Trump Preference, Pennsylvania 2016		
Dependent Variable: Probability Voting for Trump		
Party independent	0.134	(-0.566, 0.834)
Party Republican	1.616***	(1.116, 2.116)
Male	0.300	(-0.162, 0.761)
Over 55	-0.239	(-0.830, 0.351)
Under 35	-0.624	(-1.490, 0.243)
White	0.479	(-0.507, 1.466)
High school or less	1.238***	(0.654, 1.822)
Some college	0.877***	(0.363, 1.391)
Liberal	-1.758***	(-2.460, -1.057)
Moderate	-0.760***	(-1.218, -0.301)
Urban county	-0.193	(-0.702, 0.317)
Not married	0.299	(-0.291, 0.890)
Single, never married	0.336	(-0.361, 1.032)
Not retired or employed	-0.375	(-0.968, 0.218)
Retired	0.300	(-0.262, 0.863)
United States on wrong track	1.120***	(0.515, 1.726)
Obama poor job	3.597***	(2.951, 4.244)
Obama excellent job	-1.520**	(-3.009, -0.031)
Obama fair job	1.804***	(1.220, 2.388)
Better finances next year	0.402	(-0.150, 0.955)
Worse finances next year	0.074	(-0.568, 0.716)
Labor union Household	-0.169	(-0.715, 0.377)
Veteran	-0.278	(-0.877, 0.321)
Constant	-3.797***	(-5.203, -2.392)
Observations 1,556		
Log Likelihood -314.399		
Akaike Inf. Crit. 676.798		
<i>Note: *p < 0.1; **p < 0.05; ***p < 0.01</i>		
<i>Source: July, August, September, and October 2016 Franklin & Marshall College Polls.</i>		

Republicans were more likely to vote for Trump than were Democrats, and conservatives were more likely to vote for Trump than were liberals. Moderates were also less likely than conservatives to vote for Trump. Educational attainment also predicted vote choice: those with a high school degree or less and those who attended some college were more likely to vote for Trump than were college graduates. Those who believed the United States is on the wrong track were more likely to vote for Trump, and those who believed Obama was doing a poor job as president were more likely to vote for Trump.

Comparison with 2012 by County

There were strong and consequential regional differences in the presidential election results in Pennsylvania. Hillary Clinton outperformed Barack Obama’s vote totals in nonrural counties by 18,789 votes, but underperformed his vote totals by 82,606 votes in the state’s rural counties. These stark differences in voter preference are evident regionally. Clinton outperformed Obama by 52,258 votes in the Southeast and by 14,930 votes in Allegheny County, but underperformed his vote in all other parts of the state: Central (34,419), Northwest (34,072), Northeast (29,351), Southwest (28,382), and Philadelphia (4,781). Only 11 of the state’s 67 counties yielded more votes for the Democratic presidential candidate in 2016 than 2012. Figure 4 presents the county-level changes in support for the Democratic presidential candidate in Pennsylvania between 2012 and 2016. The counties in Figure 4 are color-coded by geographic region.¹⁰

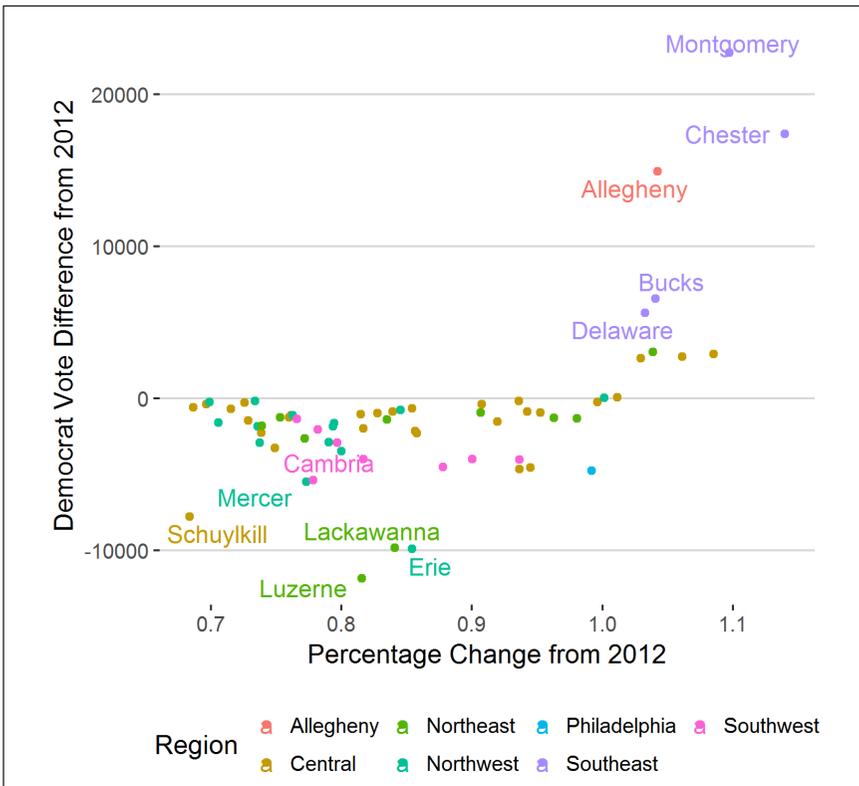


Figure 4. Change in County Presidential Votes, Pennsylvania, 2012 and 2016. Counties are color-coded by geographic region. (Compiled and created by the authors using data downloaded from the Pennsylvania Department of State website, January 24, 2017.)

The U.S. Senate Race

Incumbent Senator Pat Toomey was considered one of the most vulnerable Senate Republican incumbents in the 2016 election cycle. Although Toomey had significant crossover appeal, there was a belief that a strong Clinton victory in the state would be too much for him to overcome. During the campaign, Toomey emphasized his ability to work with Democrats and cited his efforts to close loopholes in gun background checks as proof. Toomey's challenger, Katie McGinty, touted her working-class roots and ran as a traditional Democrat while wholeheartedly embracing Hillary Clinton's candidacy. Toomey, on the other hand, seemed deeply concerned that his party's candidate might harm his chances of re-election. Toomey never endorsed Trump and he would not say whether he intended to vote for Trump until he admitted voting for the candidate one hour prior to the polls closing on election night (Stolberg 2016). Because of Toomey's perceived vulnerabilities, money from both sides poured into Pennsylvania and the Pennsylvania Senate race became the most expensive in the 2016 cycle; spending in the race was nearly \$125 million.¹¹ The following section documents the candidate ratings, pre-election polling, and election outcomes for the 2016 U.S. Senate race in Pennsylvania.

Candidate Ratings

Favorability

Neither U.S. Senate candidate began the general election with high name recognition and incumbent Senator Pat Toomey had clear disadvantages in his personal popularity and job performance ratings as the fall campaign began. In July, fewer than two in three voters were able to offer an opinion about how favorably they viewed Toomey (63%) and only one in two (50%) were able to offer an opinion about McGinty. By the end of the campaign more than three in four (77%) voters were able to offer an opinion about both candidates.

Senator Toomey was perceived far more negatively than his challenger throughout the campaign; he had a net favorability rating of minus 17 by the end of October compared to McGinty's net favorability of plus one.¹² Mirroring the course of the presidential campaign, the ratings of both Senate candidates eventually ended at about the same place they started, as Table 4 illustrates. More of a concern for Toomey than his lack of personal popularity was that only one in three (29%) voters believed he was doing an "excellent" or "good" job as U.S. senator by late October.

Table 4. Favorability Ratings of U.S. Senate Candidates, Pennsylvania 2016					
Candidate	Month	Favorable	Unfavorable	Net Favorable Rating	Aware of Candidate
Katie McGinty	July	0.25	0.25	0.00	0.50
	Aug.	0.28	0.29	-0.01	0.57
	Sept.	0.33	0.33	0.00	0.66
	Oct.	0.39	0.38	0.01	0.77
Pat Toomey	July	0.23	0.40	-0.17	0.63
	Aug.	0.29	0.37	-0.08	0.66
	Sept.	0.30	0.39	-0.09	0.69
	Oct.	0.30	0.47	-0.17	0.77

Source: July, August, September, and October 2016 Franklin & Marshall College Polls.

Pre-election Polling

Poll Averages

The polling averages in the U.S. Senate race in Pennsylvania showed a relatively tight race throughout the fall until there was some late movement toward McGinty as Election Day approached. The polling averages suggested the race was tied in July, but that McGinty's lead increased to about three points in August, slipped to one point in September and October, and then rose to three points in November.¹³ Only rarely did individual polls show either candidate with support from a majority of voters; the averages in the final week showed McGinty's expected vote share at 47% and Toomey's expected vote share at 44%. The estimated vote share in the Senate race mirrored the presidential vote shares precisely, suggesting there would be a strong relationship between the presidential and Senate votes. Another key feature of this race was the large proportion of undecided and third-party voters reported throughout the campaign. Undecided and third-party voters totaled 21 points in August, 24 points in September, 15 points in October, and 13 points in November. Figure 5 shows the results of pre-election polls conducted during the fall campaign. As with Clinton, McGinty's share of the vote appeared to be increasing during the course of the fall campaign although, unlike the presidential race, the margin between the two candidates appeared to be expanding in November.

Support within Demographic Subgroups

Pat Toomey's performance in pre-election polling among demographic subgroups was similar to Trump's. He did well as expected among conservatives

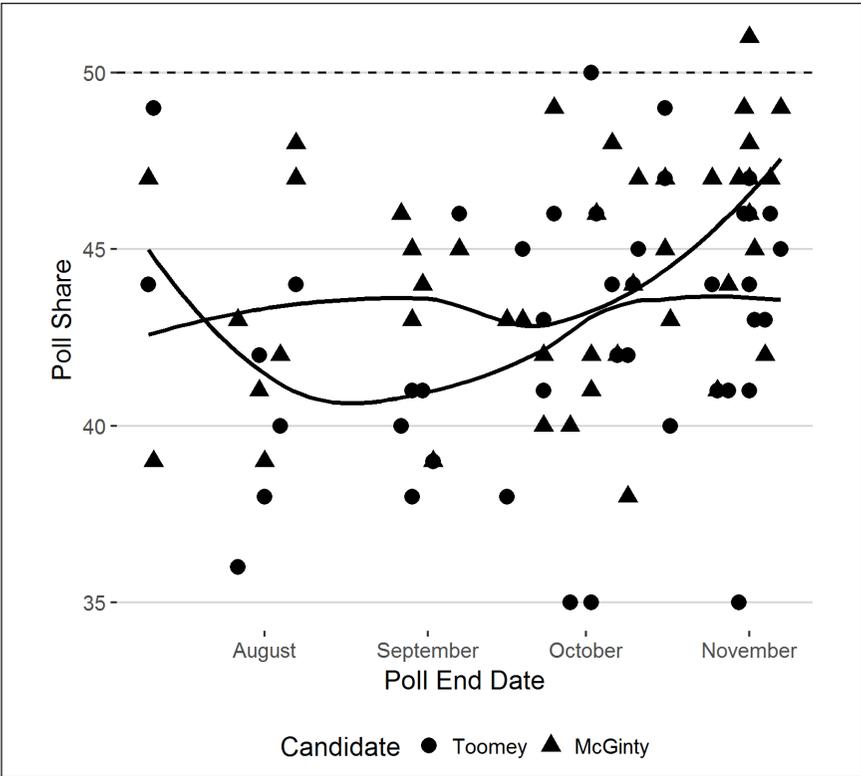


Figure 5. Pennsylvania 2016 U.S. Senate Polling Results, July–November 2016. (Compiled and created by the authors using data downloaded from *Huffpost Pollster*, December 6, 2016.)

and Republicans and his pattern of support geographically was also similar. Figure 6 presents the demographic support for the candidates during the fall campaign.

Election Results

Pat Toomey won a narrow victory over Katie McGinty in Pennsylvania, 48.8% to 47.3%. Table 5 shows the composition of U.S. Senate voters pre- and post-election in Pennsylvania. Most voters had consistent preferences pre- and post-election. More voters who preferred neither candidate prior to the election voted for Toomey than McGinty.

Post-election Survey Results: Regression Analysis

A logistic regression was performed to determine the effects of demographic characteristics (gender, age, education, race, marital status, employment, union membership, and veteran status), political characteristics (partisan

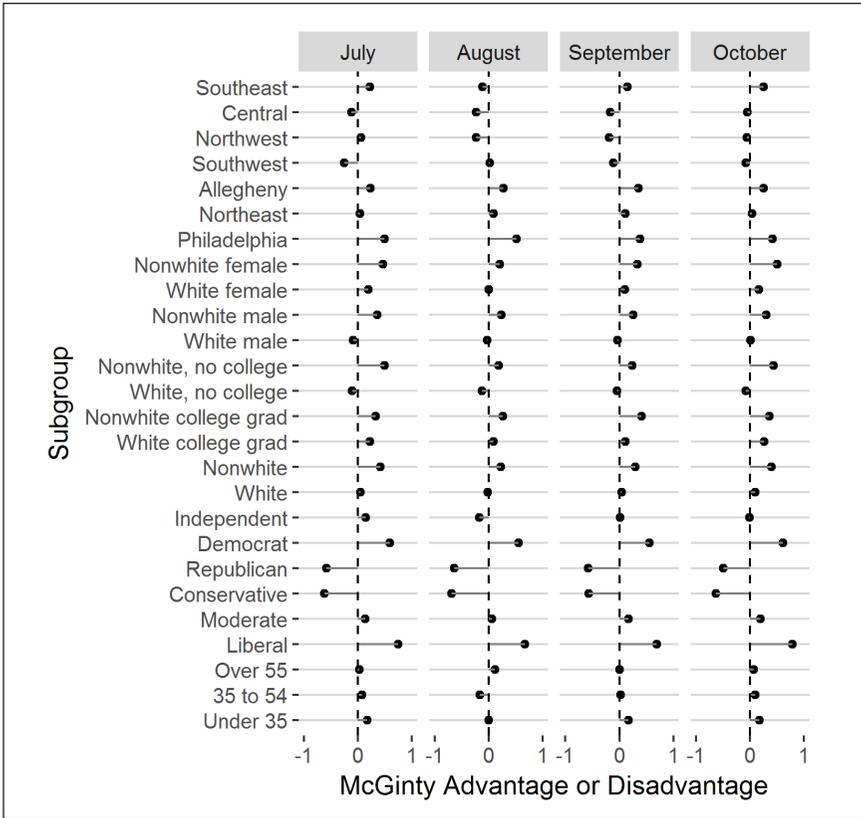


Figure 6. McGinty Advantage or Disadvantage in Percentage Points among Demographic Subgroups, by Month of Survey. (Franklin & Marshall College Polls.)

Pre-election Preference	Post-election Preference		
	McGinty	Toomey	Neither
McGinty	38.4%	1.4%	0.2%
Toomey	1.1%	36.3%	0.8%
Neither	8.5%	10.3%	3.0%

Source: July, August, September, and October 2016 Franklin & Marshall College Polls.

affiliation and political ideology), and attitudinal characteristics (Obama job performance, expected future financial condition, and direction of the country) on the likelihood that respondents voted for Pat Toomey for U.S. Senate. The logistic regression model was statistically significant, $\chi^2(23) = 1458.47$, $p < .0001$. The model explained 81.7% (Nagelkerke R^2) of the variance in U.S.

Senate vote choice and correctly classified 91% of cases. Model sensitivity was 89.3% and model specificity was 93%. Table 6 provides the logistic regression coefficients and confidence intervals for the variables in the model.

Republicans and independents were more likely to vote for Toomey than Democrats. Conservatives were more likely to vote for Toomey than were liberals or moderates. Those who believe the United States is on the wrong track were more likely to vote for Toomey, and those who believed Obama was

Table 6. Logistic Regression Model for Toomey Vote Share, Pennsylvania 2016	
Dependent Variable: Probability Voting for Toomey	
Party independent	0.658** (0.046, 1.269)
Party Republican	1.799*** (1.343, 2.255)
Male	-0.077 (-0.516, 0.362)
Over 55	-0.385 (-0.968, 0.198)
Under 35	-0.185 (-1.033, 0.663)
White	0.492 (-0.410, 1.394)
High school or less	-0.212 (-0.755, 0.332)
Some college	0.091 (-0.410, 0.593)
Liberal	-3.069*** (-3.751, -2.387)
Moderate	-1.228*** (-1.696, -0.760)
Urban county	0.109 (-0.398, 0.616)
Not married	-0.171 (-0.739, 0.397)
Single, never married	-0.405 (-1.078, 0.268)
Not retired or employed	-0.930*** (-1.507, -0.354)
Retired	-0.207 (-0.762, 0.347)
United States on wrong track	1.076*** (0.546, 1.606)
Obama poor job	2.314*** (1.720, 2.908)
Obama excellent job	-1.655*** (-2.743, -0.568)
Obama fair job	1.495*** (0.958, 2.032)
Better finances next year	0.347 (-0.174, 0.868)
Worse finances next year	0.121 (-0.544, 0.787)
Labor union household	-0.531** (-1.052, -0.010)
Veteran	-0.414 (-1.001, 0.173)
Constant	-1.310** (-2.580, -0.040)
Observations	1,556
Log Likelihood	-333.978
Akaike Inf. Crit.	715.956
<i>Note:</i> * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$	
<i>Source:</i> July, August, September, and October 2016 Franklin & Marshall College Polls.	

doing a poor job as president were more likely to vote for Toomey. Labor union households were less likely than nonunion households to vote for Toomey.

Comparison with 2012 by County

As in the presidential race, the change in support for the Democratic candidate at the county level was substantial. McGinty received fewer votes than Senator Bob Casey received in 2012 in all but five Pennsylvania counties. McGinty received significantly fewer votes than Casey in Lackawanna and Luzerne counties in the northeastern part of the state and from western counties, including Beaver, Cambria, Erie, Washington, and Westmoreland. Regionally, McGinty underperformed Bob Casey by 5,009 votes in Allegheny County, by 43,107 votes in central Pennsylvania, by 62,708 votes in western Pennsylvania, and by 12,077 votes in Philadelphia and the Southeast. Figure 7 displays the differences in the Democratic U.S. Senate voting by county between 2012 and 2016.

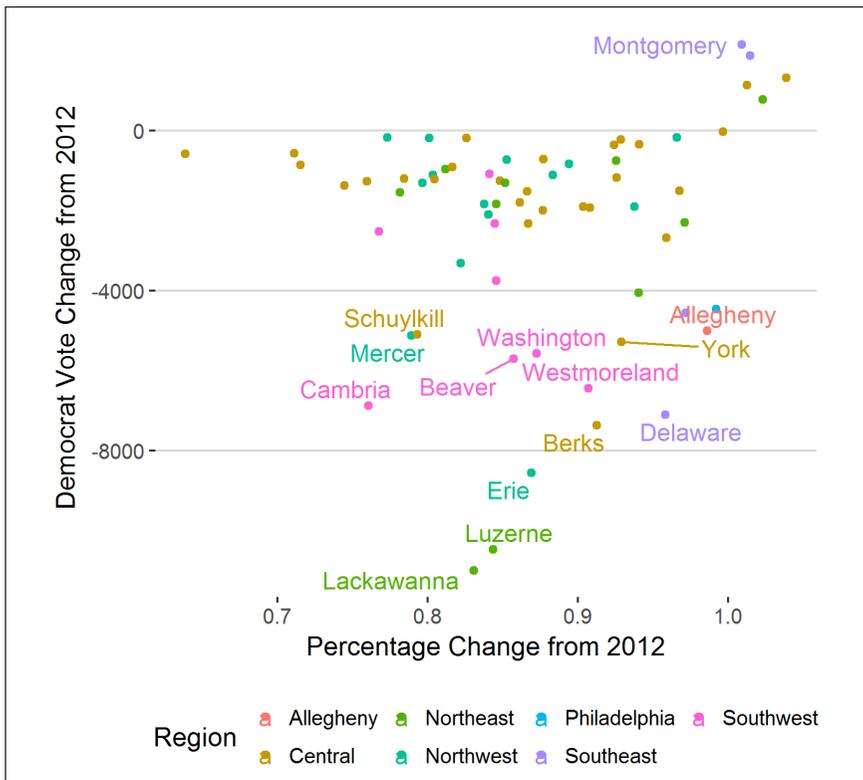


Figure 7. Change in County U.S. Senate Votes, Pennsylvania, 2012 and 2016. Counties are color-coded by geographic region. (Compiled and created by the authors using data downloaded from the Pennsylvania Department of State website, January 24, 2017.)

Split-Ticket Voting

Increased partisanship has produced less split-ticket voting in recent elections (Beck et al.1992), but Donald Trump’s nontraditional positions on key issues raised the possibility that split-ticket voting might be more common in 2016. Post-election survey data show that among those who cast a vote for both president and Senate, one in 10 (9%) split their tickets.¹⁴ A split-ticket voter is defined as a voter who voted for Trump for president but not Toomey for senator, or as a voter who voted for Toomey for Senate but not Trump for president. Figure 8 displays the geography of split-ticket voting in Pennsylvania for the 2016 election. Voters in southeastern Pennsylvania cast more votes for Senator Toomey than President Trump, while many more voters in western and northeastern Pennsylvania voted for President Trump.¹⁵

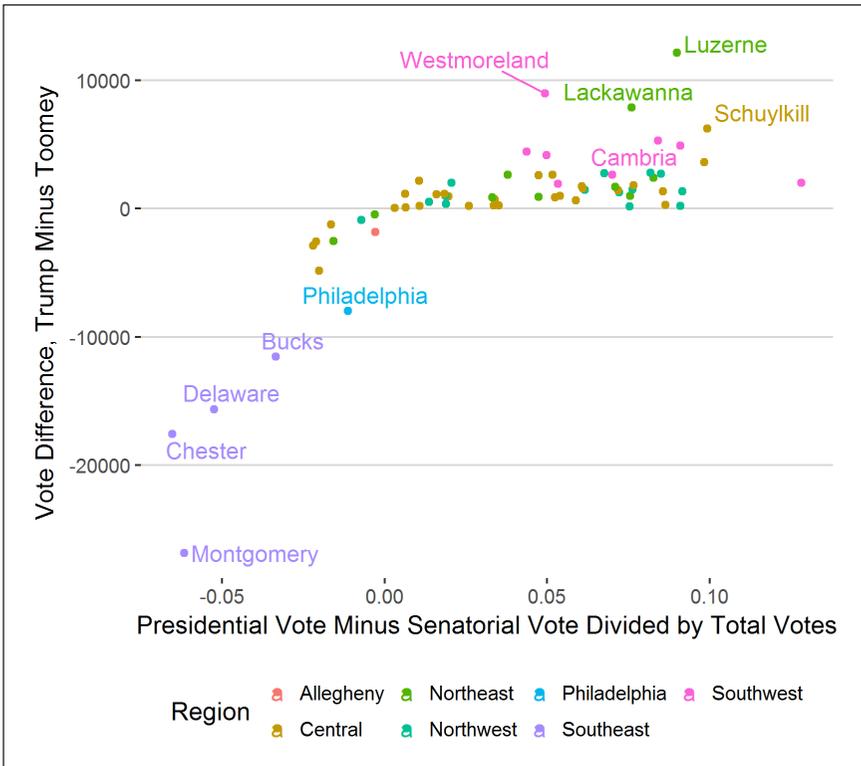


Figure 8. Difference in County Presidential and U.S. Senate Votes, Pennsylvania, 2016. Counties are color-coded by geographic region. (Compiled and created by the authors using data downloaded from the Pennsylvania Department of State website, January 24, 2017.)

Table 7 presents the regional variation evident in the vote differences between the Republican presidential and Senate candidates in 2012 and 2016 and demonstrates a likely increase in Republican ticket splitting. In 2012, Mitt Romney’s vote totals exceeded Senate candidate Tom Smith’s in every region of the state, with a difference between the two candidates of about 146,000 votes, which was about 5% of the votes cast for Romney. In 2016, Toomey actually outperformed Trump in Allegheny County, Philadelphia, and in the Southeast. The absolute difference in votes cast for the two candidates was about 182,000 votes or about 6% of the presidential vote total. In raw votes, Romney outperformed Trump in Allegheny County and the Southeast, while Toomey outperformed Smith in all parts of the state. These differences hint at the slightly different coalitions assembled by the two candidates; these differences are discussed in the next section.

Table 7. Regional Vote Totals for Republican Presidential Candidates in Pennsylvania, 2012 and 2016						
Region	Total Vote for President 2016	Registered Voters 2016	Trump Votes	Toomey Votes	Turnout	Trump Minus Toomey Votes
Allegheny	650,114	920,346	259,480	261,316	70.6%	(1,836)
Central	1,600,415	2,267,666	979,503	957,106	70.6%	22,397
Northeast	723,607	1,066,205	378,653	352,135	67.9%	26,518
Northwest	515,001	743,183	324,435	307,329	69.3%	17,106
Philadelphia	707,631	1,082,240	108,748	116,714	65.4%	(7,966)
Southeast	1,345,460	1,788,298	553,906	625,499	75.2%	(71,593)
Southwest	573,218	791,562	366,039	331,672	72.4%	34,367
Region	Total Vote for President 2012	Registered Voters 2012	Romney Votes	Smith Votes	Turnout	Romney Minus Smith Votes
Allegheny	634,608	916,470	262,039	236,546	69.2%	25,493
Central	1,491,431	2,167,498	860,579	820,589	68.8%	39,990
Northeast	665,181	1,038,882	305,170	282,261	64.0%	22,909
Northwest	496,141	722,563	275,170	266,370	68.7%	8,800
Philadelphia	690,724	1,055,319	96,467	84,461	65.5%	12,006
Southeast	1,274,517	1,712,173	566,653	534,492	74.4%	32,161
Southwest	543,385	801,859	314,356	284,413	67.8%	29,943

Source: Pennsylvania Department of State, available at <http://www.dos.pa.gov/Pages/default.aspx>. Calculations by the authors.

Regression Analysis: Split-Ticket Voting

A logistic regression was performed to determine the effects of demographic characteristics (gender, age, education, race, marital status, employment, union membership, and veteran status), political characteristics (partisan affiliation and political ideology), and attitudinal characteristics (Obama job performance, expected future financial condition, and direction of the country) on the likelihood that respondents split their tickets between the Republican presidential and Senate candidates. The logistic regression model was statistically significant, $\chi^2(23) = 139.2, p < .0001$. The model explained 18.5% (Nagelkerke R^2) of the variance in split-ticket voting and correctly classified 90.6% of cases. Model specificity was 90.6%. Table 8 provides the logistic regression coefficients for the model.

Independent voters were more likely than Republicans or Democrats to split their tickets. Moderates were more likely and liberals less likely than conservatives to split their tickets. Those who rated Obama's job performance as excellent were less likely to split their tickets, and those who rated Obama's job performance as fair were more likely to do so.

Voter Turnout

High voter turnout was a determinative factor in the presidential and Senate races. More than seven in 10 (70.6%) registered voters cast a ballot in the presidential election in 2016, which was higher as a proportion of registered voters than either 2008 or 2012. Table 7 earlier showed the changes in regional voter turnout between 2012 and 2016. That table showed increased turnout in every region of the state except Philadelphia and that turnout in the Northeast (3.8%) and Southwest (4.7%) showed the largest comparative change. Table 9 shows the regional changes in voter registration from 2012 to 2016. Since 2012, Republican registration increased markedly in western and central Pennsylvania.

The patterns of voter turnout were remarkable and are apparent in Figure 9. Figure 9 plots the turnout among registered voters in relation to Republican performance relative to Republican registration in each county. The upper-right-hand quadrant of Figure 9 (turnout above the state average of 71% on the x-axis and Republican performance that exceeded Republican registration, a ratio of 1.0 on the y-axis) shows that the Republican victory was made possible primarily by a surge in Republican performance in western Pennsylvania. The central Pennsylvania counties, the traditional Republican "T," underperformed relative to registration. Given the relatively high turnout in

Table 8. Logistic Regression Model for Ticket Splitting, Pennsylvania 2016	
Dependent Variable: Probability of Splitting Ticket for Republican Candidates	
Party independent	0.839*** (0.258, 1.419)
Party Republican	0.290 (-0.215, 0.795)
Male	-0.253 (-0.653, 0.146)
Over 55	-0.207 (-0.717, 0.303)
Under 35	0.265 (-0.443, 0.973)
White	0.644 (-0.438, 1.725)
High school or less	-0.417 (-0.942, 0.107)
Some college	-0.306 (-0.761, 0.150)
Liberal	-1.097*** (-1.838, -0.355)
Moderate	0.394* (-0.058, 0.846)
Urban county	0.101 (-0.359, 0.561)
Not married	0.017 (-0.518, 0.551)
Single, never married	0.046 (-0.535, 0.628)
Not retired or employed	-0.061 (-0.574, 0.453)
Retired	0.101 (-0.394, 0.597)
United States on wrong track	0.064 (-0.470, 0.598)
Obama poor job	-0.450 (-1.090, 0.190)
Obama excellent job	-1.946*** (-3.006, -0.887)
Obama fair job	0.683** (0.118, 1.249)
Better finances next year	-0.018 (-0.486, 0.449)
Worse finances next year	0.131 (-0.447, 0.708)
Labor union household	-0.371 (-0.892, 0.149)
Veteran	0.425 (-0.095, 0.946)
Constant	-2.642*** (-4.011, -1.273)
Observations 1,556	
Log Likelihood -414.800	
Akaike Inf. Crit. 877.600	
<i>Note: *p < 0.1; **p < 0.05; ***p < 0.01</i>	
<i>Source: July, August, September, and October 2016 Franklin & Marshall College Polls.</i>	

southeastern Pennsylvania, these overperforming counties coupled with low turnout in Philadelphia and Centre counties, made the difference for both Trump and Toomey.

The changes in turnout and in the Democratic share of the presidential vote between 2012 and 2016 display the county-level dynamics underlying the election. Table 10 shows the changes in turnout and Democratic vote share for

Table 9. Changes in Voter Registration between 2012 and 2016 by Region, Pennsylvania								
Region	Dem 2016	Rep 2016	Dem 2012	Rep 2012	Dem Change	Rep Change	% Dem Change	% Rep Change
Allegheny	538,103	258,946	553,099	249,086	(14,996)	9,860	-2.7%	4.0%
Central	808,739	1,128,228	803,384	1,063,054	5,355	65,174	0.7%	6.1%
Northeast	520,439	384,266	531,068	357,499	(10,629)	26,767	-2.0%	7.5%
Northwest	308,086	341,818	325,078	314,900	(16,992)	26,918	-5.2%	8.5%
Philadelphia	839,165	123,307	824,130	129,720	15,035	(6,413)	1.8%	-4.9%
Southeast	788,803	726,612	740,803	717,744	48,000	8,868	6.5%	1.2%
Southwest	385,344	319,258	436,961	282,865	(51,617)	36,393	-11.8%	12.9%
Totals	4,188,679	3,282,435	4,214,523	3,114,868	(25,844)	167,567	-0.6%	5.4%

Source: Pennsylvania Department of State, available at <http://www.dos.pa.gov/Pages/default.aspx>. Calculations by the authors.

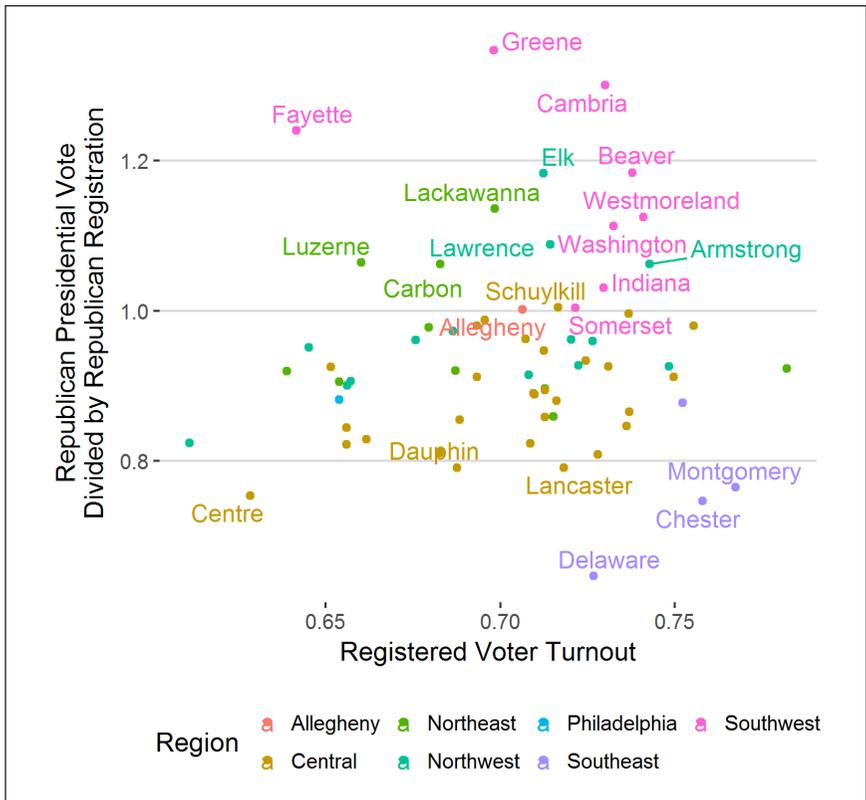


Figure 9. Registered Voter Turnout and Republican Presidential Performance by County, Pennsylvania, 2016. Counties are color-coded by geographic region. (Compiled and created by the authors using data downloaded from the Pennsylvania Department of State website, January 24, 2017.)

Table 10. Turnout and Democratic Vote Share for Selected Pennsylvania Counties, 2012 and 2016

County	Region	Clinton %	Turnout 2016	Obama %	Turnout 2012
Beaver	Southwest	38.9%	73.8%	45.3%	71.3%
Cambria	Southwest	29.9%	73.0%	40.1%	69.9%
Centre	Central	48.7%	62.8%	48.5%	65.3%
Philadelphia	Philadelphia	82.5%	65.4%	85.2%	65.5%
Westmoreland	Southwest	32.8%	74.1%	37.4%	71.9%

Source: Pennsylvania Department of State, available at <http://www.dos.pa.gov/Pages/default.aspx>. Calculations by the authors.

five counties, three with above-average turnout and above-average Republican performance and two with below-average turnout and below-average Republican performance. Turnout was markedly higher in the three western Pennsylvania counties included in the table, while the share of votes won by Hillary Clinton declined substantially in these counties compared to Barack Obama. In the two counties expected to favor Clinton, turnout actually declined in both and Clinton's share of the vote compared to Obama's decreased in one of them. This dynamic perfectly captures what happened in Pennsylvania in 2016: counties with more working-class voters turned out in greater numbers and gave less support to Democratic candidates than in previous elections, while areas that should have been supportive of Democrats had lower turnout and offered little change in support.

Discussion

This analysis shows that significant changes in voter registration and voter turnout in specific areas of the Commonwealth, driven in large part by less-educated voters, those dissatisfied with the current direction of the country, and the performance of the incumbent president, best explain the 2016 election results in Pennsylvania.

Trump overcame his pre-election polling deficit for two major reasons: more voters who supported Clinton pre-election moved away from her than moved away from him, and more voters who preferred neither candidate prior to the election voted for Trump rather than for Clinton. The high number of undecided and third-party voters throughout the campaign should have been a warning that such movement was possible, particularly in light of common electoral models that highlighted Clinton's many potential vulnerabilities.

The foundational importance of Trump's working-class supporters manifested itself by shifting traditional voting patterns in the state. Educational attainment predicted vote choice: those with a high school degree or less and those who attended some college were more likely to vote for Trump than were college graduates. The desire for change was also clear in the election results: those who believed the United States is on the wrong track were more likely to vote for Trump, and those who believed Obama was doing a poor job as president were more likely to vote for Trump. Taken together, these factors led to strong and consequential regional differences in the presidential election results in Pennsylvania compared to prior elections. Only 11 of the state's 67 counties yielded more votes for the Democratic presidential candidate in 2016 than 2012.

As in the presidential race, the change in support for the Democratic Senate candidate between 2012 and 2016 at the county level was substantial. McGinty received fewer votes than Senator Bob Casey received in 2012 in all but five Pennsylvania counties. Toomey voters were similar to Trump voters in their desire for change: those who believed the United States is on the wrong track were more likely to vote for Toomey as were those who believed Obama was doing a poor job as president.

But Toomey had a slightly different coalition than Trump. There were no educational differences among Toomey supporters, he attracted fewer independents than Trump, and union members were also less likely to support him. His support was more conservative and traditionally Republican than was Trump's, although there can be little doubt that the surge in Republican turnout driven by Trump's candidacy made the difference for Toomey.

High voter turnout was a determinative factor in the presidential and Senate races. More than seven in 10 (70.6%) registered voters cast a ballot in the presidential election in 2016, which was higher as a proportion of registered voters than either 2008 or 2012. Since 2012, Republican registration increased markedly in western and central Pennsylvania. The Republican victory was made possible primarily by that surge in Republican performance in western Pennsylvania.

This dynamic perfectly captures what happened in Pennsylvania in 2016: counties with more working-class voters turned out in greater numbers and gave less support to Democratic candidates than in previous elections, while areas that should have been supportive of Democrats had lower turnout and offered little change in their support for Democratic candidates.

Trump's victory in Pennsylvania scrambles what has been the state's traditional electoral habits and raises significant and important political questions about future state elections. The main questions include the durability

of Trump's electoral coalition, his ability to transfer his voters' energy to other Republican candidates in future elections, and the calculus that other elected and aspiring Republicans make in embracing his nontraditional positions. The answers to these questions will make clear the battle lines for future state races, beginning with the 2018 gubernatorial race.

NOTES

1. Most of the interviewing for the October survey (625 of the 863 interviews) was conducted prior to the FBI's statement about Secretary Clinton's emails on October 28.

2. The Center for Opinion Research at Franklin & Marshall College completed post-election interviews with 2,287 of the 3,077 individuals (74%) who had participated in our July, August, September, and October 2016 pre-election polls. The post-election interviews were completed over the telephone ($n = 1,202$) or using a self-administered online ($n = 974$) or paper and pencil ($n = 111$) format. Post-election interviews were completed from November 16, 2016 to January 13, 2017. The response rates for the post-election survey by month of pre-election interview were as follows: July ($n = 487/661$) = 74%, August ($n = 541/736$) = 73%, September ($n = 602/813$) = 74%, and October ($n = 657/863$) = 76%. The post-election survey did not verify whether respondents actually voted, so it is possible that some of those interviewed did not vote.

3. An excellent scholarly description of these voters is Cramer 2016. Examples of contemporary news accounts of these voters included Seib and O'Connor, "Republicans Rode Waves of Populism until They Crashed the Party." *Wall Street Journal*, October 26, 2016; Bob Davis and Gary Fields, "The Great Unraveling," *Wall Street Journal*, September 15, 2016; and Keith O'Brien, "Uprising in the Rust Belt," *Politico Magazine*, June 24, 2016.

4. This estimate is confirmed by the 2016 Pennsylvania exit poll estimate: Edison Research exit polls showed 17% of Pennsylvania voters had an unfavorable opinion of both candidates. The exit polling showed that these voters broke for Trump 56% to 31%.

5 These ratings are from the October 2012 Franklin & Marshall College Poll. The poll showed that Mitt Romney's net favorability rating was minus four and Barack Obama's net favorability was plus four.

6. Huffpost Pollster 2016a.

7. Authors calculation from data compiled: Yost and Borick 2013.

8. Although the survey asked voters in our post-election interviews when they decided they would vote for their candidate, it did not specifically ask about the effect on their choice of the FBI director's October 28 statement about reopening the investigation into Secretary Clinton's email server.

9. During the campaign, many speculated that there was a "hidden" Trump vote. It is possible that those who made their decision in October or before while claiming to be undecided were, in fact, hiding their support for Trump.

10. The regional breakdowns used in this article are those used by the Franklin & Marshall College Poll. For the counties included in each region, see <https://www.fandm.edu/fandmpoll/survey-releases>.

11. Data were provided by [opensecrets.org](https://www.opensecrets.org), accessed January 29, 2017.

12. In the 2012 Senate race, Republican Tom Smith's net favorability was even, although only about half (54%) of voters recognized him, and Bob Casey's net favorability was plus five, according to the October 2012 Franklin & Marshall College Poll (<https://www.fandm.edu/fandmpoll/survey-releases>).

13. Huffpost Pollster 2016b.

14. The proportion of voters who cast a vote for both parties in this election cycle would likely be much higher had I included all the different races on the ballot. For instance, Democratic candidates won all of the state's row offices in November, with more than 50% of ballots cast.

15. Although there were sizable differences in votes cast, there was a significant correlation in vote share. The correlation in county-level vote share for Toomey and Trump is $r(65) = 0.95, p < .001$.

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