

Trustee Area Analysis

Anaheim Union High School District

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Exhibits

- Exhibit A:** Map 1 – Geographic Profile
- Exhibit B:** Map 2 – Density of Hispanic/Latino Total Population by Census Block
- Exhibit C:** Map 3 – Density of Hispanic/Latino CVAP Estimate by Census Block (2005-2009)
- Exhibit D:** Map 4 – Density of Hispanic/Latino CVAP Estimate by Census Block (2007-2011)

- Exhibit E:** Ecological Regression Explanation and Methodology

I. Introduction

This Trustee Area Analysis ("Analysis") has been prepared for the Anaheim Union High School District ("AUHSD" or "School District") to provide information related to the obligations of AUHSD under the California Voting Rights Act of 2001 ("CVRA") as it relates to the method it employs to elect members of the Board of Trustees.

This Analysis, after providing background on the CVRA and the current election method of the School District, discusses the demographics of the School District and a history of election results for the Board of Trustees in elections from 2002 through 2012. The Analysis then walks through the election history and provides statistical analyses to determine if racially polarized voting has occurred within elections for the Board of Trustees. This statistical analysis is accomplished through the use of ecological regression, which is the standard methodology utilized in analyzing racially polarized voting in voting rights cases.

A. California Voting Rights Act of 2001

The CVRA was signed into law by Gov. Gray Davis on July 9, 2002 and specifically deals with at-large elections. At-large elections consist of candidates being elected by all voters within a district's boundaries regardless of where they reside. This is the current method utilized by the School District for elections to the Board of Trustees.

Section 14027 of the Elections Code, as enacted by the CVRA, contains the following:

An at-large method of election may not be imposed or applied in a manner that impairs the ability of a protected class to elect candidates of its choice or its ability to influence the outcome of an election, as a result of the dilution or the abridgment of the rights of voters who are members of a protected class, as defined pursuant to Section 14026.

An at-large election method violates Section 14027 of the Elections Code if it can be shown that racially polarized voting has occurred either in past elections for members of the governing board of a political subdivision or in elections that include other choices by voters within that area that prevents members of a protected class from being able to influence the outcome of an election. Racially polarized voting means voting in which a difference can be seen between the candidates or other electoral choices preferred by members of a protected class and those preferred by the rest of the electorate.

B. AUHSD Board of Trustees

AUHSD is governed by a five-member Board of Trustees. Each member of the Board of Trustees serves a four-year term and is elected at-large by the voters within AUHSD. Table 1 lists the current members of the Board of Trustees and the beginning and ending dates of their current terms.

**Table 1
Current Members of Board of Trustees**

Members	Position	Start of Current Term	End of Current Term
Brian O'Neal	President	December 2012	December 2016
Annemarie Randle-Trejo [1]	Clerk	December 2012	December 2014
Anna L. Piercy	Assistant Clerk	December 2010	December 2014
Katherine H. Smith	Member	December 2012	December 2016
Al Jabbar [2]	Member	February 2013	December 2014
[1] Elected on November 6, 2012 to fill the remainder of the term; vacancy created by the death of Jan Domene.			
[2] Appointed on January 31, 2013 to fill the vacancy created by the election of Jordan Brandman to the Anaheim City Council.			

II. Demographic Data

The data on total population and population age 18 and over in Table 2 are from the 2010 United States Census as provided in the 2010 Census Redistricting (Public Law 94-171) File for California released on March 8, 2011. Table 2, below, shows the ethnic/racial composition of the population and the population age 18 and over in AUHSD, while Exhibit A provides a geographic profile of the School District.

**Table 2
Anaheim Union High School District 2010 Census Data**

Population	Total Population		Age 18 and over	
	Total	%	Total	%
Hispanic/Latino	196,984	50.83%	127,577	45.23%
White	96,412	24.88%	82,316	29.18%
Black/African American	10,288	2.65%	7,795	2.76%
Am. Indian/Alaska Native	913	0.24%	721	0.26%
Asian	72,943	18.82%	57,473	20.38%
Native Hawaiian/Pac. Islander	1,912	0.49%	1,377	0.49%
Other	741	0.19%	484	0.17%
Two or More Races	7,351	1.90%	4,326	1.53%
Total Population	387,544	100.00%	282,069	100.00%

Table 3 provides the citizen voting age population ("CVAP") estimates for AUHSD based on both the 2005-2009 American Community Survey and the 2007-2011 American Community Survey.

**Table 3
Anaheim Union High School District Citizen Voting Age and Registered Voter Data**

Population	2005-2009 CVAP		2007-2011 CVAP	
	Total	%	Total	%
Hispanic/Latino	55,933	29.76%	66,214	33.60%
White	84,116	44.76%	79,128	40.16%
Black/African American	6,349	3.38%	6,461	3.28%
Am. Indian/Alaska Native	1,050	0.56%	416	0.21%
Asian	36,669	19.51%	41,453	21.04%
Native Hawaiian/Pac. Islander	1,073	0.57%	1,008	0.51%
Other	N/A	N/A	N/A	N/A
Two or More Races	2,752	1.46%	2,374	1.20%
Total Population	187,942	100.00%	197,054	100.00%

To further illustrate the demographics of the communities served by AUHSD, Exhibits B, C, and D show the densities of the total Hispanic/Latino population, 2005-2009 Hispanic/Latino CVAP estimates, and 2007-2011 Hispanic/Latino CVAP estimates within AUHSD by Census Block, respectively.

III. Past Election Results for AUHSD

Table 4 on the following page provides the election results for positions on the AUHSD Board of Trustees from 2002 through 2012. Those candidates who were incumbents are marked with an asterisk (*).

Table 4
Election Results for AUHSD Board of Trustees 2002 – 2012

Election	Candidate	Vote Count	Percentage
General Election 2012 – Board of Trustees Full Term, Vote for 2	Katherine H. Smith*	44,204	31.86%
	Brian O'Neal*	39,159	28.22%
	Thomas "Hoagy" Holguin	32,106	23.14%
	Gerald C. Adams	23,292	18.54%
General Election 2012 – Board of Trustees Short Term, Vote for 1	Annemarie Randle-Trejo*	40,516	50.82%
	Vernon F. Beckett	24,423	30.64%
	Thomas Peters	14,778	18.54%
General Election 2010 – Board of Trustees, Vote for 3	Jordan Brandman*	38,517	26.67%
	Anna L. Piercy*	35,144	24.33%
	Jan Domene	25,289	17.51%
	Vernon F. Beckett	23,845	16.51%
	Jose Luis "Jose" Moreno	21,646	14.99%
General Election 2008 – Board of Trustees, Vote for 2	Katherine H. Smith*	42,426	30.46%
	Brian O'Neal*	37,778	27.13%
	Annemarie Randle-Trejo	35,237	25.30%
	Vernon F. Beckett	23,825	17.11%
Primary Election 2008 – Board of Trustees, Vote for 1	Jordan Brandman	23,574	42.58%
	Vernon F. Beckett	17,111	30.90%
	Denis Fitzgerald	7,959	14.37%
	Robert J. Flores	6,724	12.14%
General Election 2006 – Board of Trustees, Vote for 3	Thomas "Hoagy" Holguin*	22,027	15.93%
	Anna L. Piercy	21,860	15.81%
	Denise Jane Mansfield-Reinking*	18,632	13.47%
	Jordan Brandman	18,194	13.16%
	Robert "Rob" Stewart*	18,055	13.06%
	Annemarie Randle-Trejo	16,835	12.17%
	Harald G. Martin	11,468	8.29%
	Vernon F. Beckett	11,227	8.12%
General Election 2004 – Board of Trustees, Vote for 2	Brian O'Neal*	37,372	27.46%
	Katherine H. Smith*	36,283	26.66%
	E.M. "Speed" Castillo	23,037	16.93%
	Margaret M. Trousedale	19,810	14.56%
	Dennis T. Doi	12,237	8.99%
	Anthony Marmaduke Clark	7,354	5.40%
General Election 2002 – Board of Trustees, Vote for 3	Thomas "Hoagy" Holguin*	15,956	13.33%
	Denise Jane Mansfield-Reinking	15,188	12.69%
	Robert "Rob" Stewart	14,726	12.30%
	Frank G. Cozza, Jr.	13,884	11.60%
	Harald G. Martin*	13,000	10.86%
	David G. Vill	11,119	9.29%
	Dennis T. Doi*	8,248	6.89%
	Christine V. Villegas	7,963	6.65%
	Judy Velasquez Ashbaugh	7,477	6.25%
	Anthony Marmaduke Clark	6,288	5.25%
	Amin David	4,677	3.91%
Vernon F. Beckett	1,152	0.96%	

» All analyses were conducted at the precinct-level, and were based on voter totals for each Candidate as shown on the Statement of Votes (County of Orange Registrar of Voters) and racial composition data (Statewide Database, University of California, Berkeley). The analyses of results were based on actual voter turnout data, broken out by racial composition.

IV. Analysis of Racially Polarized Voting

A. Background and Application of Ecological Regression Analysis

Ecological regression is the statistical analysis of aggregate (historically, "ecological") data to draw conclusions about individual-level data. In the absence of direct information on how individuals actually voted in each of the previous elections, voting behavior can be inferred through an analysis of the relationship between each voting precinct's racial/ethnic composition and the voting outcome for each candidate. Racially polarized voting can be identified as occurring when there is a consistent relationship between the race/ethnicity of a voter and how he or she votes.

B. Summary of Analysis of Racially Polarized Voting

Dolinka Group, LLC has analyzed election results from the Orange County Registrar of Voters and demographic data of voters from the Statewide Database at the University of California, Berkeley to determine the presence of racially polarized voting within AUHSD. Dolinka Group utilized ecological regressions to identify the voting preferences of Hispanic/Latino and non-Hispanic/Latino voters.

This data establish the following:

In November 2012, there was the opportunity to elect two (2) candidates for a full term and one (1) candidate for a two-year term. Katherine Smith and Brian O'Neal were the preferred candidates of all registered voters, both Hispanic/Latino and non-Hispanic/Latino. For the two-year term, Annemarie Randle-Trejo was the preferred candidate for both Hispanic/Latino and non-Hispanic/Latino registered voters.

Based on this analysis it does not appear that racially polarized voting occurred in the November 2012 elections. The preferred candidates of the Hispanic/Latino voters were the same as that for non-Hispanic/Latino voters.

In November 2010, there was the opportunity to elect three (3) candidates for a full term. Candidate Jose Luis "Jose" Moreno was the first choice among Hispanic/Latino voters, receiving an estimated 33.45 percent of the vote among Hispanic/Latinos. Candidate Moreno received an estimated 8.75 percent of the vote among non-Hispanic/Latino voters and as a result overall received 14.99 percent of the vote and came in fifth place among the five (5) candidates seeking three (3) seats in that election.

Based on this analysis, racially polarized voting appears to have occurred in the November 2010 election.

In November 2008, there was the opportunity to elect two (2) candidates for a full term. Annemarie Randle-Trejo was the preferred candidate among Hispanic/Latino Voters, receiving an estimated 38.16 percent of the Hispanic/Latino votes while being the third most preferred candidate among non-Hispanic/Latino voters. Candidate Randle-Trejo finished third in that election where only two (2) seats were open.

Racially polarized voting appears to have occurred in the November 2008 election.

In February 2008, there was the opportunity to elect one (1) candidate for remainder of a term. Jordan Brandman was the preferred candidate of all registered voters, both Hispanic/Latino and non-Hispanic/Latino.

Thus racially polarized voting does not appear to have occurred in the February 2008 election. The preferred candidate of the Hispanic/Latino voters was the same as that for non-Hispanic/Latino voters.

In November 2006, there was the opportunity to elect three (3) candidates for a full term. Annemarie Randle-Trejo was the second choice among Hispanic/Latino voters, receiving an estimated 15.39 percent of the Hispanic/Latino votes while being the sixth most preferred candidate among non-Hispanic/Latino voters. Candidate Randle-Trejo finished sixth in that election where three (3) seats were open.

Racially polarized voting appears to have occurred in the November 2006 election.

In November 2004, there was the opportunity to elect two (2) candidates for a full term. Candidate E.M. "Speed" Castillo was the preferred candidate among Hispanic/Latino voters, receiving an estimated 30.55 percent of the vote. Candidate Castillo came in fourth place among non-Hispanic/Latino voters, with an estimated 13.21 percent of the non-Hispanic/Latino vote. Overall, Candidate Castillo came in third place in the election for two (2) seats.

Racially polarized voting appears to have occurred in the November 2004 election.

In November 2002, there was the opportunity to elect three (3) candidates for a full term. Candidates Christine V. Villegas and Judy Velasquez Ashbaugh were the preferred candidates among Hispanic/Latino voters, receiving an estimated 18.65 percent and 18.05 percent of the vote, respectively. Among non-Hispanic/Latino voters, candidates Villegas and Velasquez Ashbaugh came in ninth and tenth place with an estimated 4.20 percent and 3.60 percent of the non-Hispanic/Latino vote, respectively. Among all voters, candidates Villegas and Velasquez Ashbaugh came in eighth and ninth place, respectively.

Racially polarized voting appears to have occurred in the November 2002 election.

Table 5 on the following page shows the analysis for the elections for the Board of Trustees of AUHSD from 2002 through 2012. The winning candidates in Table 5 are noted with a plus sign (+). Exhibit E to this Analysis provides additional background information on the methodology utilized in the ecological regressions.

Table 5
Racial Polarized Voting in Hispanic/Latino v. Non-Hispanic/Latino Voters

Election	Candidate	Percent Hispanic/Latino Vote, [Rank]	Percent Non-Hispanic/Latino Vote, [Rank]
General Election 2012 – Board of Trustees Full Term, Vote for 2	Katherine H. Smith ⁺	34.95% [1]	30.84% [1]
	Brian O'Neal ⁺	29.26% [2]	27.79% [2]
	Thomas "Hoagy" Holguin	17.51% [4]	25.13% [3]
	Gerald C. Adams	18.27% [3]	16.24% [4]
General Election 2012 – Board of Trustees Short Term, Vote for 1	Annemarie Randle-Trejo ⁺	68.20% [1]	43.57% [1]
	Vernon F. Beckett	22.39% [2]	34.24% [2]
	Thomas Peters	9.41% [3]	22.19% [3]
General Election 2010 – Board of Trustees, Vote for 3	Jordan Brandman ⁺	24.14% [2]	27.55% [1]
	Anna L. Piercy ⁺	16.86% [3]	26.84% [2]
	Jan Domene ⁺	12.51% [5]	19.09% [3]
	Vernon F. Beckett	13.05% [4]	17.78% [4]
	Jose Luis "Jose" Moreno	33.45% [1]	8.75% [5]
General Election 2008 – Board of Trustees, Vote for 2	Katherine H. Smith ⁺	25.65% [2]	32.18% [1]
	Brian O'Neal ⁺	21.51% [3]	29.23% [2]
	Annemarie Randle-Trejo	38.16% [1]	20.52% [3]
	Vernon F. Beckett	14.68% [4]	18.07% [4]
Primary Election 2008 – Board of Trustees, Vote for 1	Jordan Brandman ⁺	34.99% [1]	45.02% [1]
	Vernon F. Beckett	27.01% [3]	32.23% [2]
	Denis Fitzgerald	3.41% [4]	17.89% [3]
	Robert J. Flores	34.59% [2]	4.87% [4]
General Election 2006 – Board of Trustees, Vote for 3	Thomas "Hoagy" Holguin ⁺	21.19% [1]	14.64% [2]
	Anna L. Piercy ⁺	9.01% [6]	17.51% [1]
	Denise Jane Mansfield-Reinking ⁺	13.77% [4]	13.48% [4]
	Jordan Brandman	9.90% [5]	13.95% [3]
	Robert "Rob" Stewart	14.01% [3]	12.91% [5]
	Annemarie Randle-Trejo	15.39% [2]	11.20% [6]
	Harald G. Martin	8.39% [7]	8.22% [7]
General Election 2004 – Board of Trustees, Vote for 2	Vernon F. Beckett	8.34% [8]	8.08% [8]
	Brian O'Neal ⁺	25.02% [3]	28.16% [1]
	Katherine H. Smith ⁺	26.51% [2]	26.82% [2]
	E.M. "Speed" Castillo	30.55% [1]	13.21% [4]
	Margaret M. Trousdale	12.92% [4]	15.11% [3]
	Dennis T. Doi	2.41% [6]	10.60% [5]
General Election 2002 – Board of Trustees, Vote for 3	Anthony Marmaduke Clark	2.60% [5]	6.09% [6]
	Thomas "Hoagy" Holguin ⁺	10.04% [4]	13.84% [2]
	Denise Jane Mansfield-Reinking ⁺	7.93% [7]	14.02% [1]
	Robert "Rob" Stewart ⁺	10.59% [3]	12.89% [3]
	Frank G. Cozza, Jr.	9.77% [5]	12.09% [4]
	Harald G. Martin	7.72% [8]	11.44% [5]
	David G. Vill	8.00% [6]	9.55% [6]
	Dennis T. Doi	-0.31% [12]	8.03% [7]
	Christine V. Villegas	18.65% [1]	4.20% [9]
	Judy Velasquez Ashbaugh	18.05% [2]	3.60% [10]
	Anthony Marmaduke Clark	2.19% [10]	6.14% [8]
	Amin David	6.56% [9]	3.23% [11]
Vernon F. Beckett	0.83% [11]	0.99% [12]	

» All analyses were conducted at the precinct-level, and were based on voter totals for each Candidate as shown on the Statement of Votes (County of Orange Registrar of Voters) and racial composition data (Statewide Database, University of California, Berkeley). The analyses of results were based on actual voter turnout data, broken out by racial composition.

C. Analysis of Racially Polarized Voting within AUHSD

1. November 6, 2012 General Election Results AUHSD Board of Trustees Member, Full Term, Vote for 2

In the 2012 General Election for AUHSD Board of Trustees, voters could vote for as many as two (2) candidates in the election to fill two four-year seats. The four (4) candidates running were Katherine H. Smith, Brian O'Neal, Thomas "Hoagy" Holguin, and Gerald C. Adams. Figures 1a through 1d shown below represent the relationship between a precinct's percentage of Hispanic/Latino voters and the percentages of votes for each of the candidates, respectively.

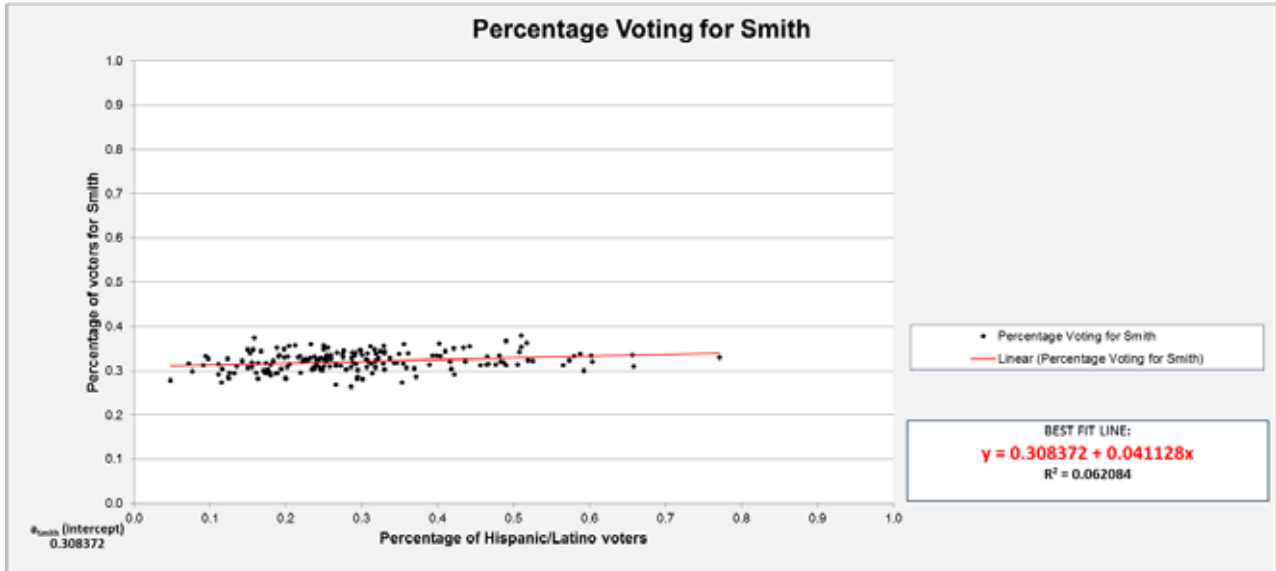


Figure 1a: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Katherine H. Smith.

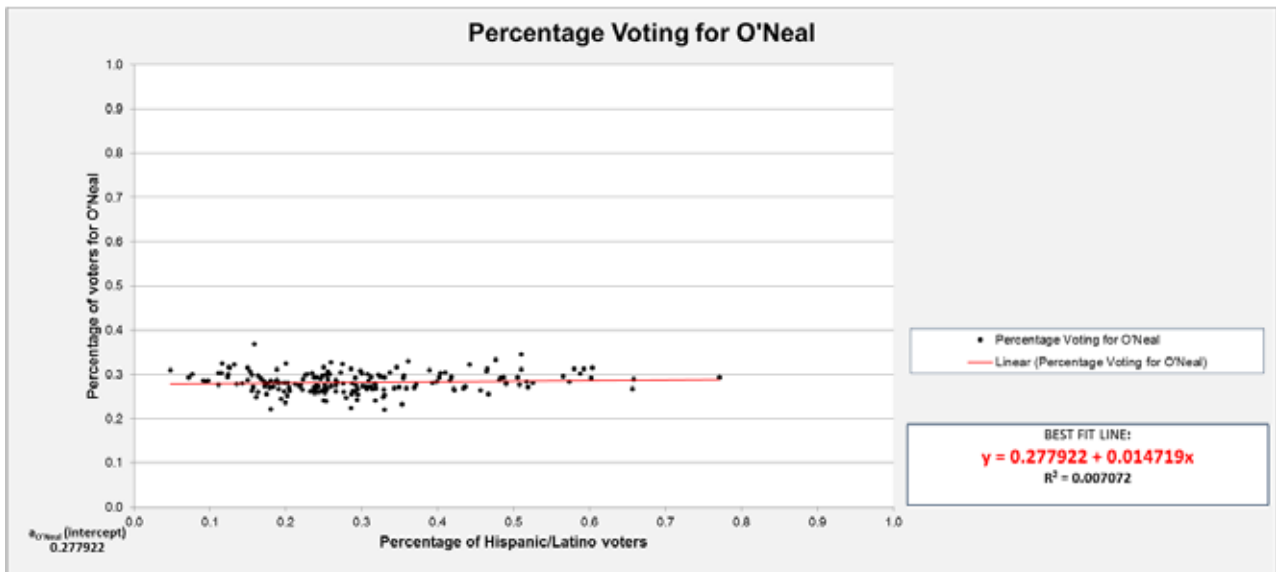


Figure 1b: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Brian O'Neal.

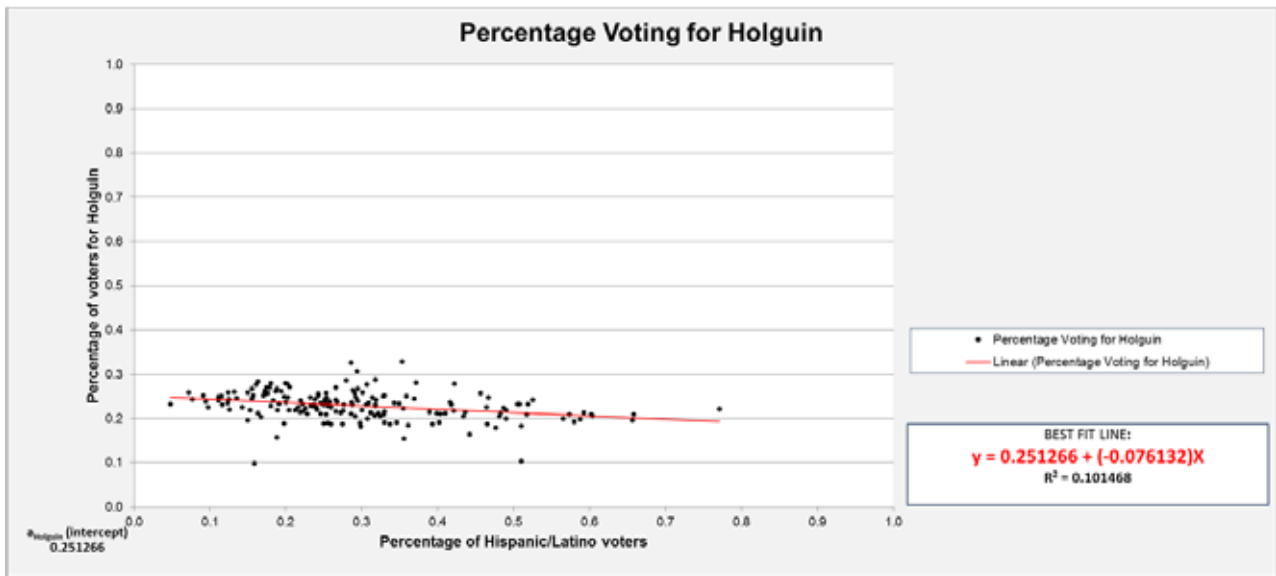


Figure 1c: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Thomas "Hoagy" Holguin.

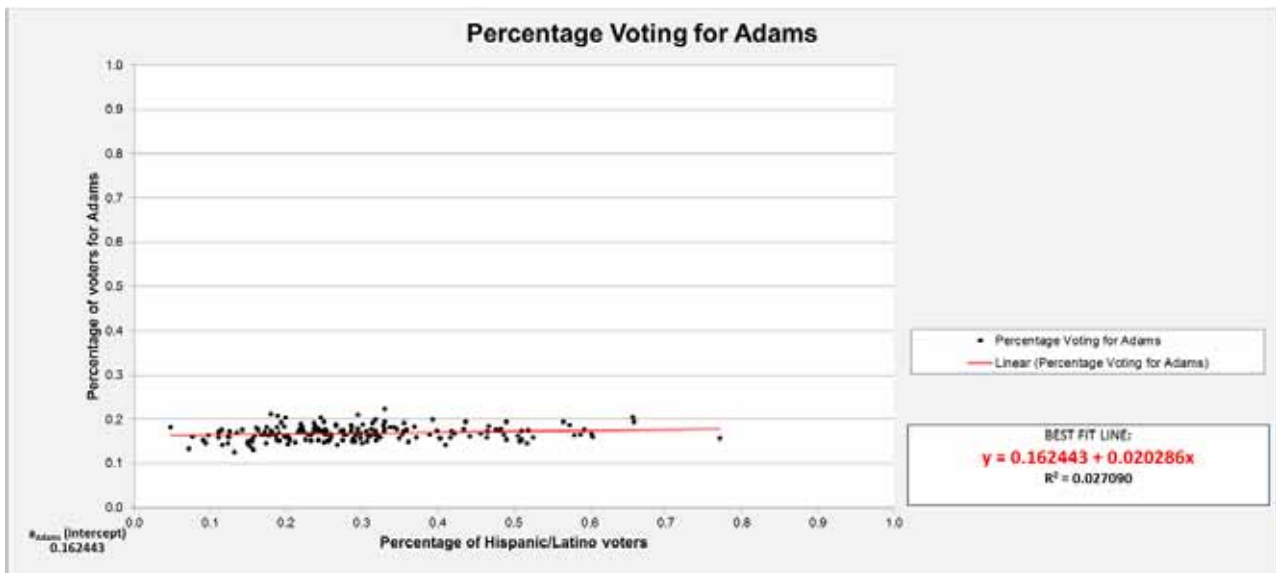


Figure 1d: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Gerald C. Adams.

In the case of the November 2012 Board of Trustees full term election, the R² range (as discussed in Exhibit E) of 0.0071 to 0.1015 is low. This value indicates that the percentage of Hispanic/Latino voters in a precinct explains up to 10.15 percent of the variation in percent votes received by a given candidate.

Utilizing the ecological regression analysis method described above, Dolinka Group calculated the estimated percentages of Hispanic/Latino and non-Hispanic/Latino voters voting for each of the candidates. Table 6 shows the results of this analysis.

Table 6
Racial Polarization in Hispanic/Latino v. Non-Hispanic/Latino Voters
AUHSD Board of Trustees 2012, Full Term, Vote for 2
Ecological Regression Estimates

Candidate	Percent of Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Hispanic/Latino Voters	Percent of Non-Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Non-Hispanic/Latino Voters	Actual 2012 Voting Outcome
Katherine H. Smith	34.95%	1	30.84%	1	31.86%
Brian O'Neal	29.26%	2	27.79%	2	28.22%
Thomas "Hoagy" Holguin	17.51%	4	25.13%	3	23.14%
Gerald C. Adams	18.27%	3	16.24%	4	16.79%

2. November 6, 2012 General Election Results
AUHSD Board of Trustees Member, Short Term, Vote for 1

In the 2012 General Election for AUHSD Board of Trustees, voters could also vote for one (1) candidate to fill the remaining two (2) years in a term. The three (3) candidates running were Annemarie Randle-Trejo, Vernon F. Beckett, and Thomas Peters. Figures 2a through 2c shown below represent the relationship between a precinct's percentage of Hispanic/Latino voters and the percentages of votes for each of the candidates, respectively.

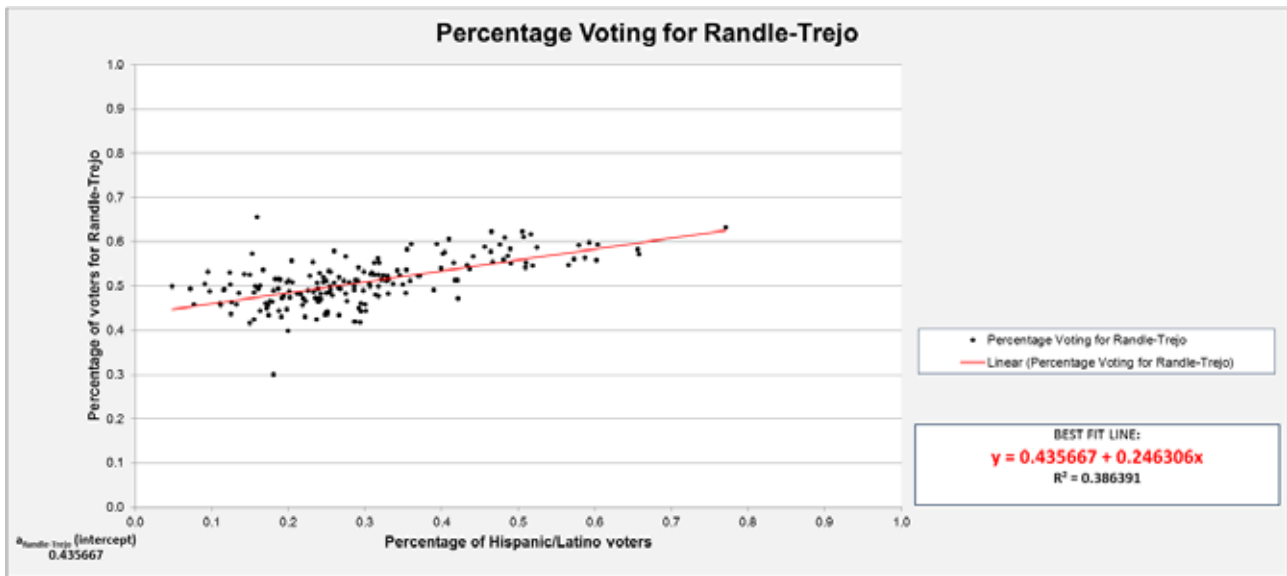


Figure 2a: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Annemarie Randle-Trejo.

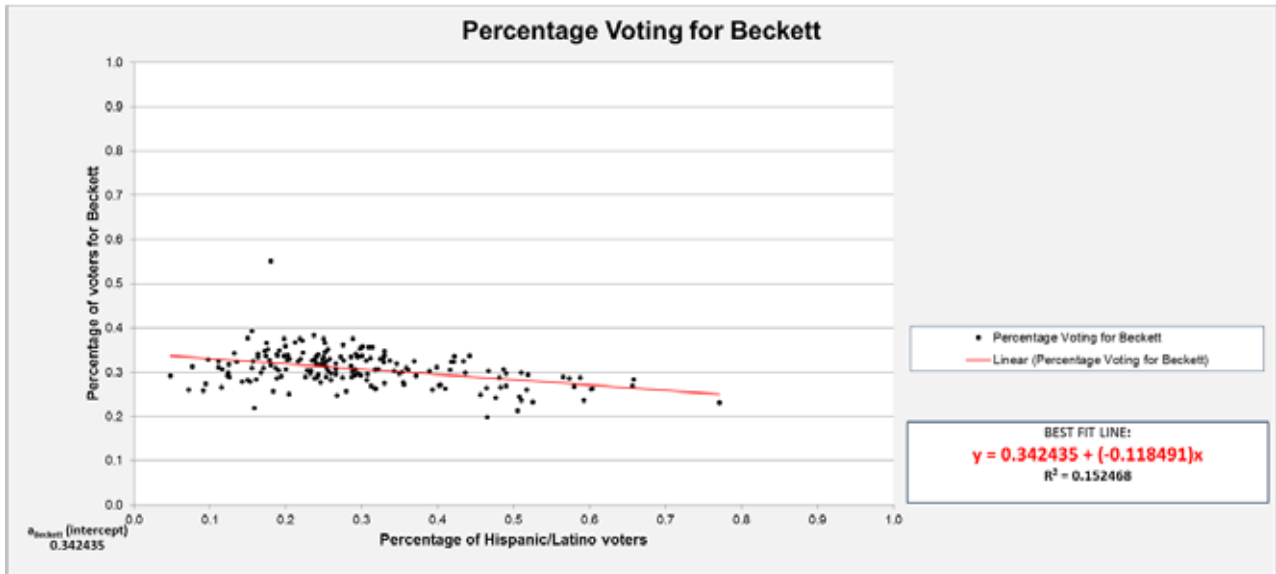


Figure 2b: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Vernon F. Beckett.

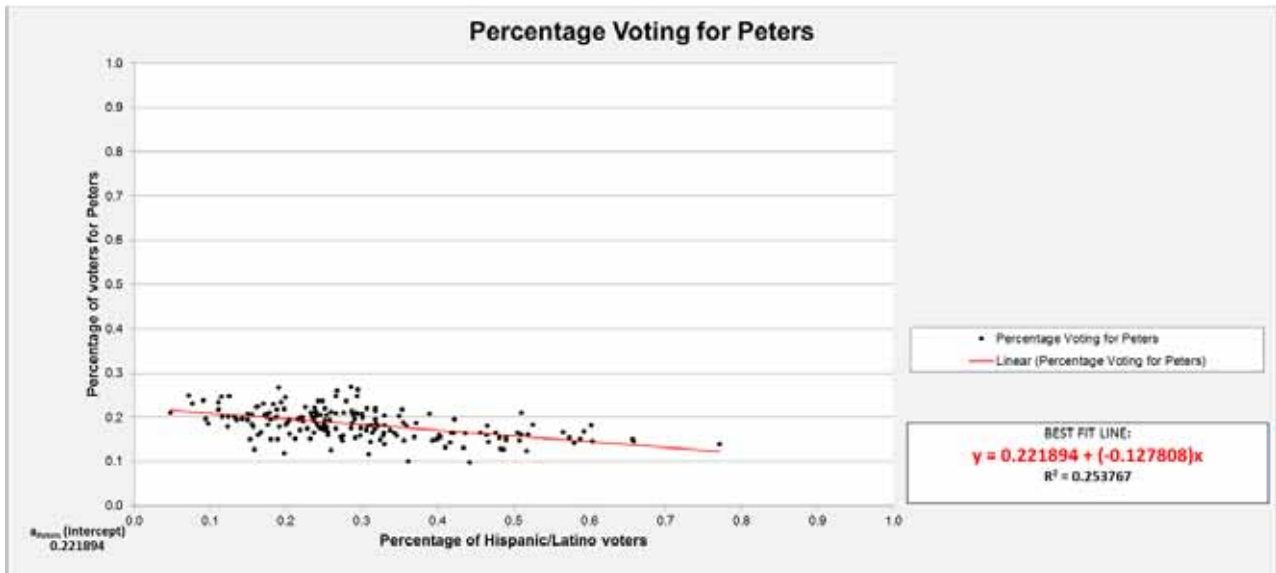


Figure 2c: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Thomas Peters.

In the November 2012 Board of Education short term election, the highest R^2 value of 0.3864 is moderate. This value indicates that the percentage of the Hispanic/Latino voters in a precinct explains up to 38.64 percent of the variation in percent votes received by a given candidate. Utilizing the ecological regression analysis method described above, Dolinka Group calculated the estimated percentages of Hispanic/Latino and non-Hispanic/Latino voters voting for each of the three (3) candidates. Table 7 shows the results of this analysis.

Table 7
Racial Polarization in Hispanic/Latino v. Non-Hispanic/Latino Voters
AUHSD Board of Trustees 2012, Short Term, Vote for 1
Ecological Regression Estimates

Candidate	Percent of Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Hispanic/Latino Voters	Percent of Non-Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Non-Hispanic/Latino Voters	Actual 2012 Voting Outcome
Annemarie Randle-Trejo	68.20%	1	43.57%	1	50.82%
Vernon F. Beckett	22.39%	2	34.24%	2	30.64%
Thomas Peters	9.41%	3	22.19%	3	18.54%

3. November 2, 2010 General Election Results
AUHSD Board of Trustees Member, Vote for 3

In the 2010 General Election for AUHSD Board of Trustees, voters could vote for as many as three (3) candidates. The five (5) candidates running were Jordan Brandman, Anna L. Piercy, Jan Domene, Vernon F. Beckett, and Jose Luis "Jose" Moreno. Figures 3a through 3e shown below represent the relationship between a precinct's percentage of Hispanic/Latino voters and the percentages of votes for each of the candidates, respectively.

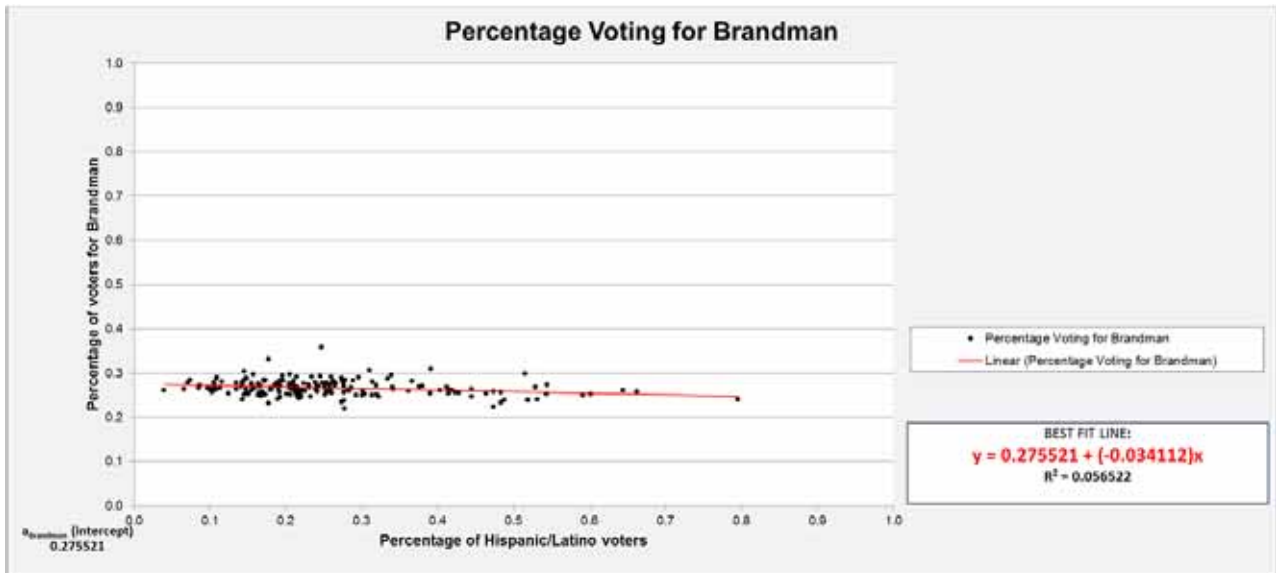


Figure 3a: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Jordan Brandman.

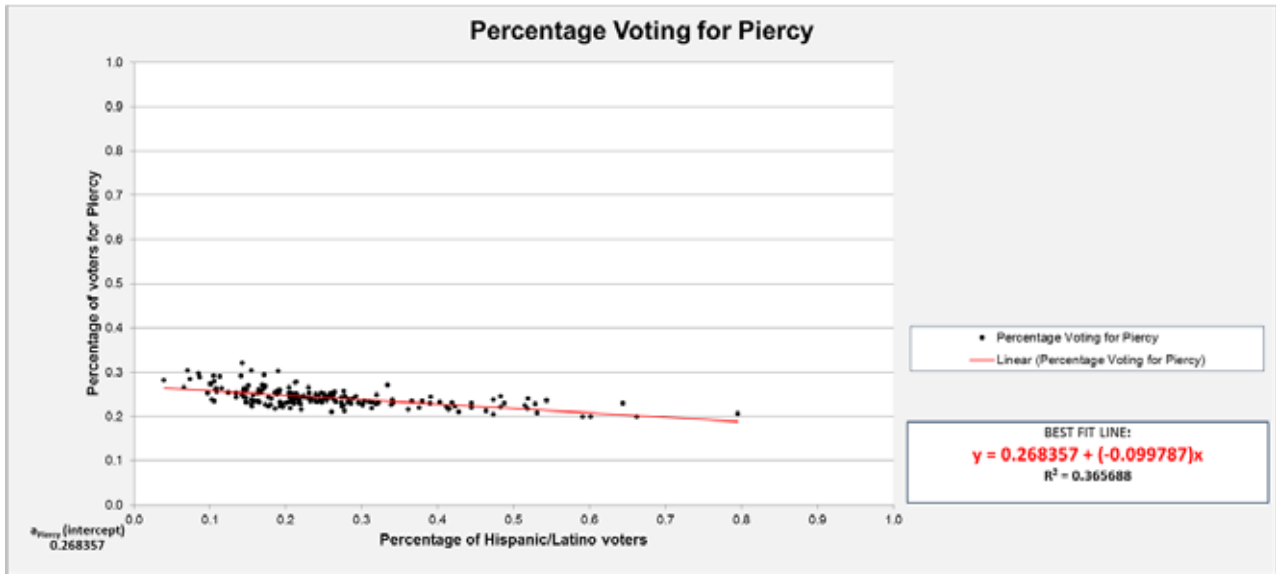


Figure 3b: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Anna L. Piercy.

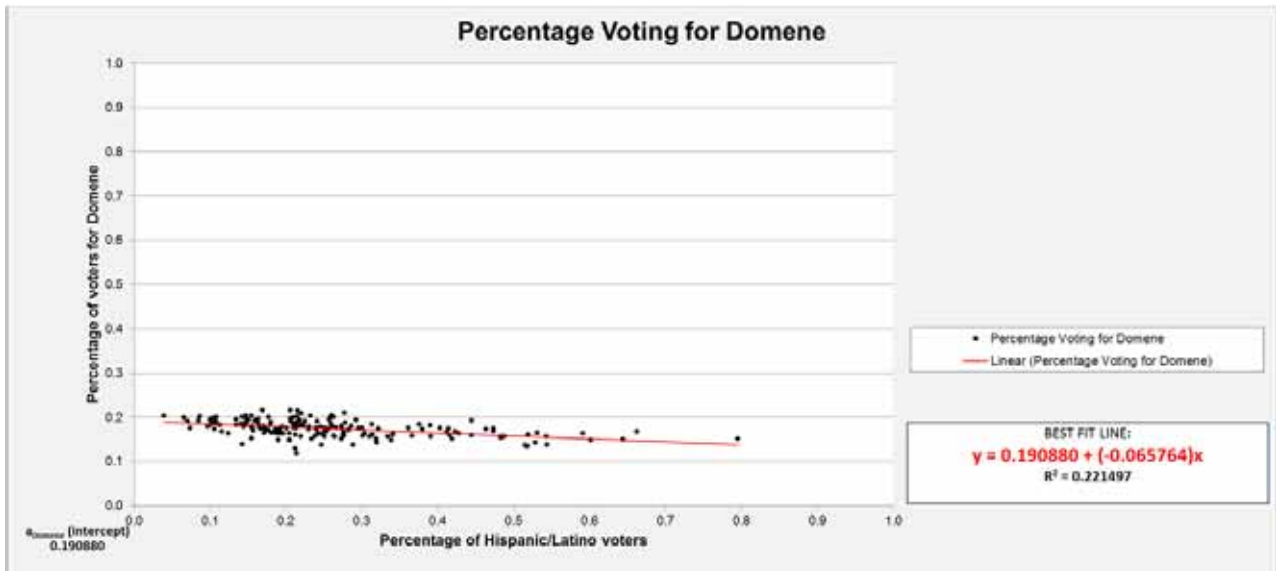


Figure 3c: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Jan Domene.

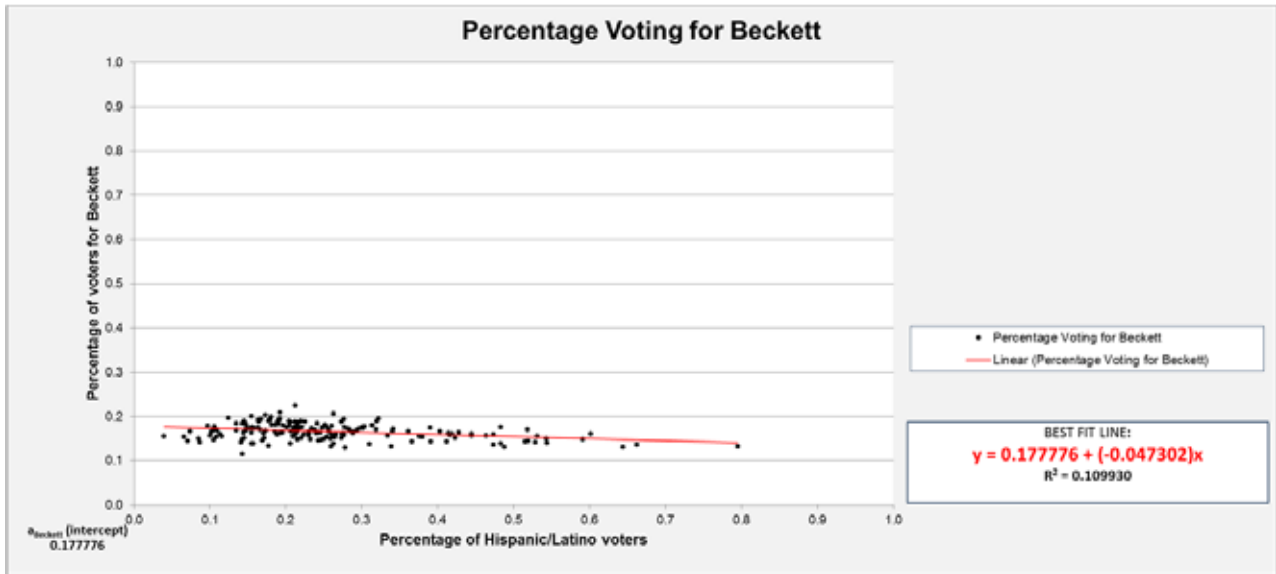


Figure 3d: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Vernon F. Beckett.

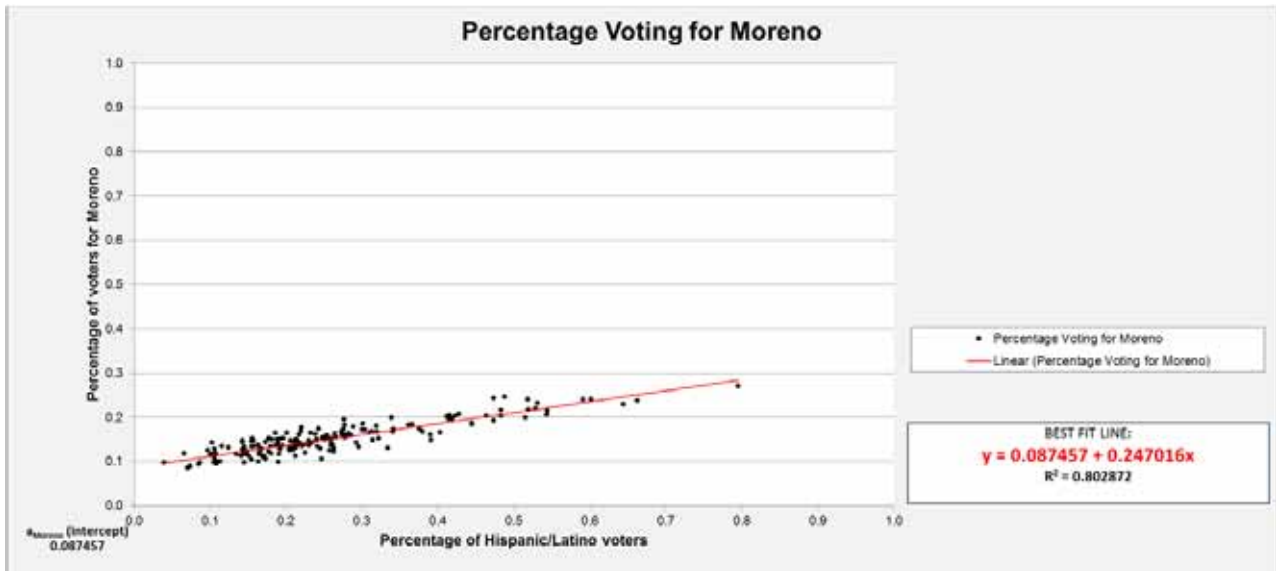


Figure 3e: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Jose Luis "Jose" Moreno.

In the November 2010 Board of Education election, the highest R^2 value of 0.8029 is high. This value indicates that the percentage of the Hispanic/Latino voters in a precinct explains up to 80.29 percent of the variation in percent votes received by a given candidate. Utilizing the ecological regression analysis method described above, Dolinka Group calculated the estimated percentages of Hispanic/Latino and non-Hispanic/Latino voters voting for each of the five (5) candidates. Table 8 shows the results of this analysis.

Table 8
Racial Polarization in Hispanic/Latino v. Non-Hispanic/Latino Voters
AUHSD Board of Trustees 2010, Vote for 3
Ecological Regression Estimates

Candidate	Percent of Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Hispanic/Latino Voters	Percent of Non-Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Non-Hispanic/Latino Voters	Actual 2010 Voting Outcome
Jordan Brandman	24.14%	2	27.55%	1	26.67%
Anna L. Piercy	16.86%	3	26.84%	2	24.33%
Jan Domene	12.51%	5	19.09%	3	17.51%
Vernon F. Beckett	13.05%	4	17.78%	4	16.51%
Jose Luis "Jose" Moreno	33.45%	1	8.75%	5	14.99%

4. November 4, 2008 General Election Results
AUHSD Board of Trustees Member, Vote for 2

In the 2008 General Election for AUHSD Board of Trustees, voters could vote for as many as two (2) candidates. The four (4) candidates running were Katherine H. Smith, Brian O'Neal, Annemarie Randle-Trejo, and Vernon F. Beckett. Figures 4a through 4d shown below represent the relationship between a precinct's percentage of Hispanic/Latino voters and the percentages of votes for each of the candidates, respectively.

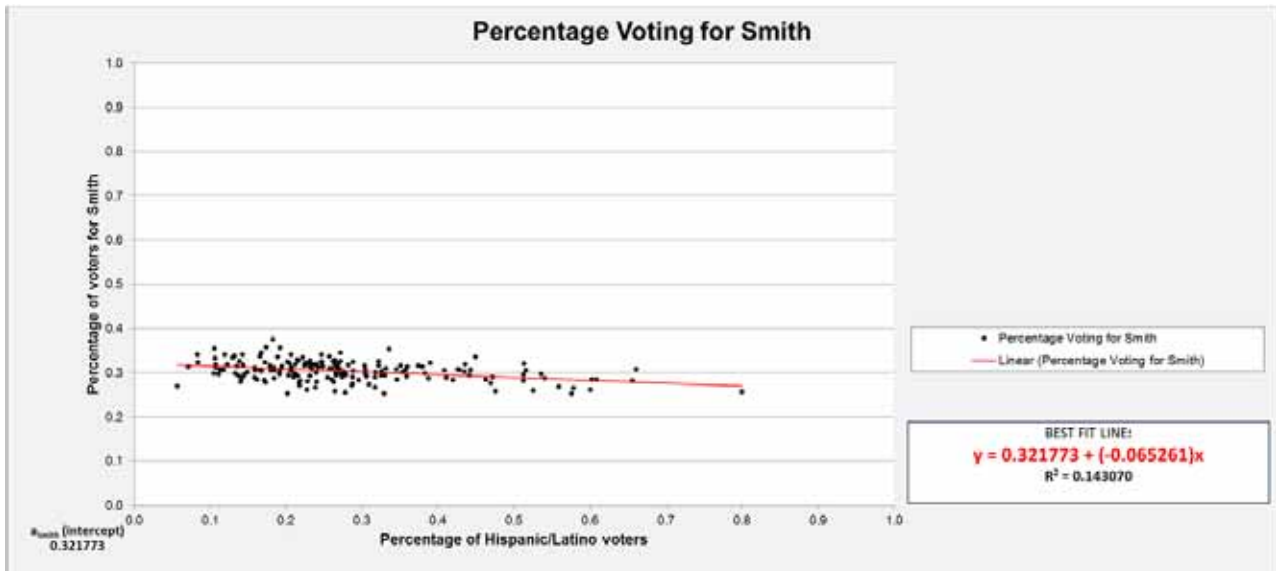


Figure 4a: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Katherine H. Smith.

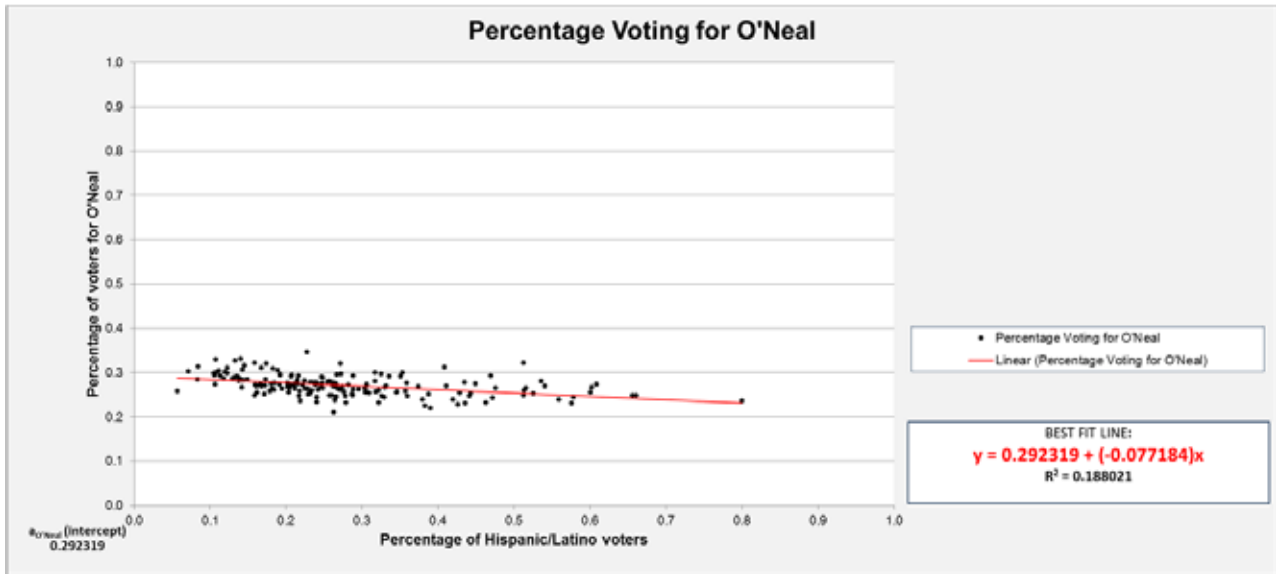


Figure 4b: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Brian O'Neal.

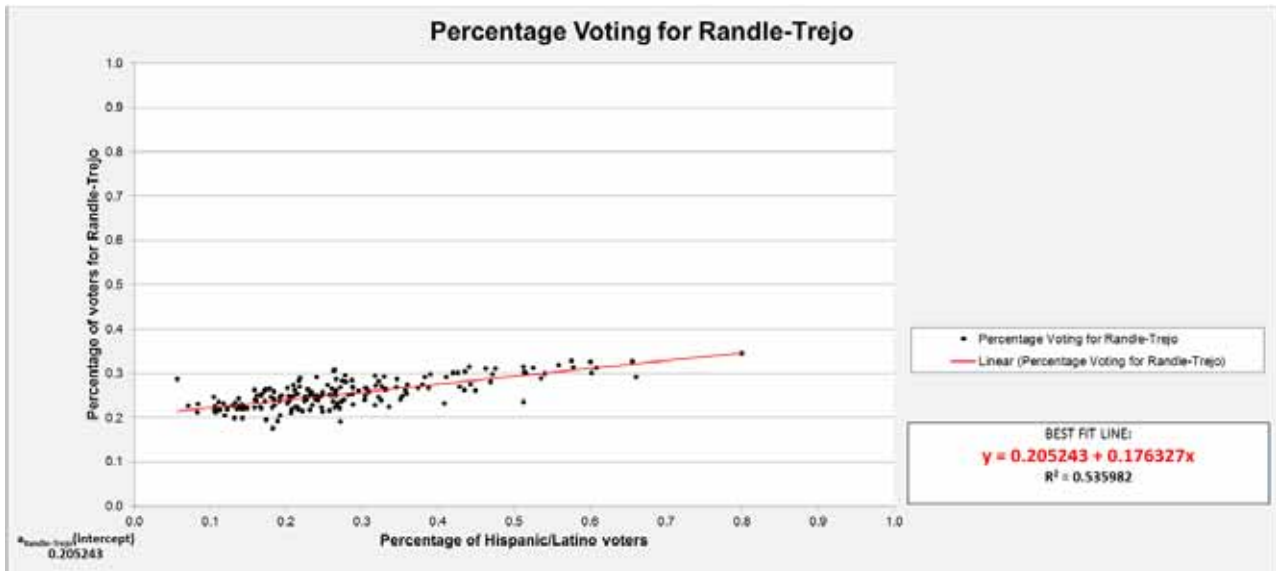


Figure 4c: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Annemarie Randle-Trejo.

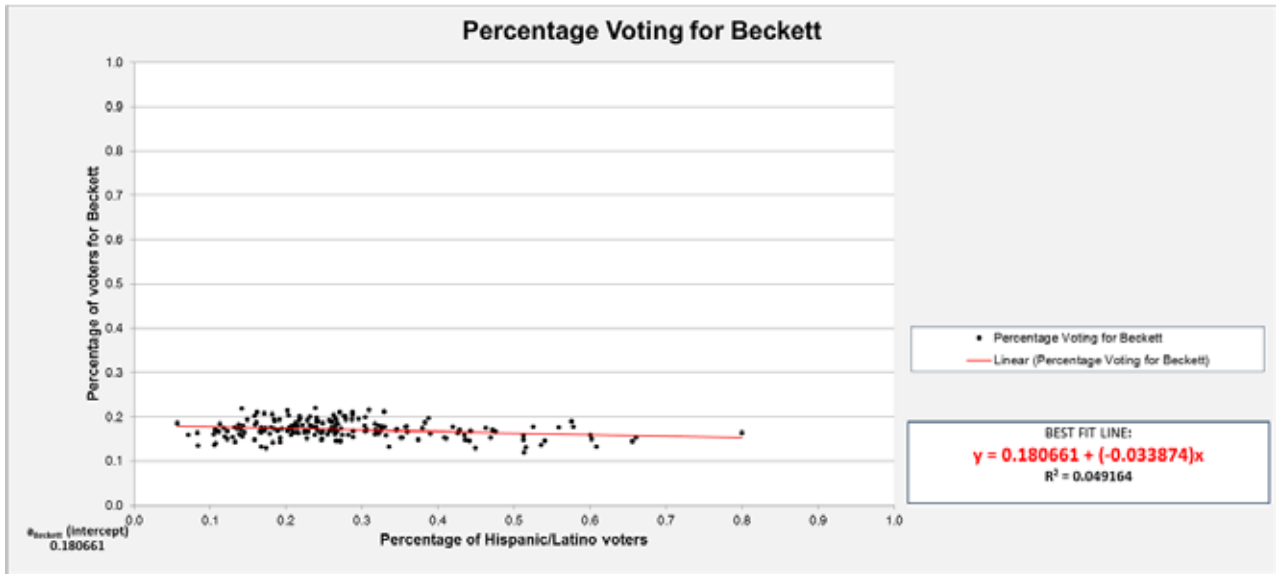


Figure 4d: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Vernon F. Beckett.

In the November 2008 Board of Education election, the highest R^2 value of 0.5360 is high. This value indicates that the percentage of the Hispanic/Latino voters in a precinct explains up to 53.60 percent of the variation in percent votes received by a given candidate. Utilizing the ecological regression analysis method described above, Dolinka Group calculated the estimated percentages of Hispanic/Latino and non-Hispanic/Latino voters voting for each of the four (4) candidates. Table 9 shows the results of this analysis.

Table 9
Racial Polarization in Hispanic/Latino v. Non-Hispanic/Latino Voters
AUHSD Board of Trustees 2008, Vote for 2
Ecological Regression Estimates

Candidate	Percent of Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Hispanic/Latino Voters	Percent of Non-Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Non-Hispanic/Latino Voters	Actual 2008 Voting Outcome
Katherine H. Smith	25.65%	2	32.18%	1	30.46%
Brian O'Neal	21.51%	3	29.23%	2	27.13%
Annemarie Randle-Trejo	38.16%	1	20.52%	3	25.30%
Vernon F. Beckett	14.68%	4	18.07%	4	17.11%

5. February 5, 2008 Primary Election Results
AUHSD Board of Trustees Member, Short Term, Vote for 1

In the 2008 Primary Election for AUHSD Board of Trustees, voters could vote for one (1) candidate to fill the remaining two (2) years of a term. The four (4) candidates running were Jordan Brandman, Vernon F. Beckett, Denis Fitzgerald, and Robert J. Flores. Figures 5a through 5d shown below represent the relationship between a precinct's percentage of Hispanic/Latino voters and the percentages of votes for each of the candidates, respectively.

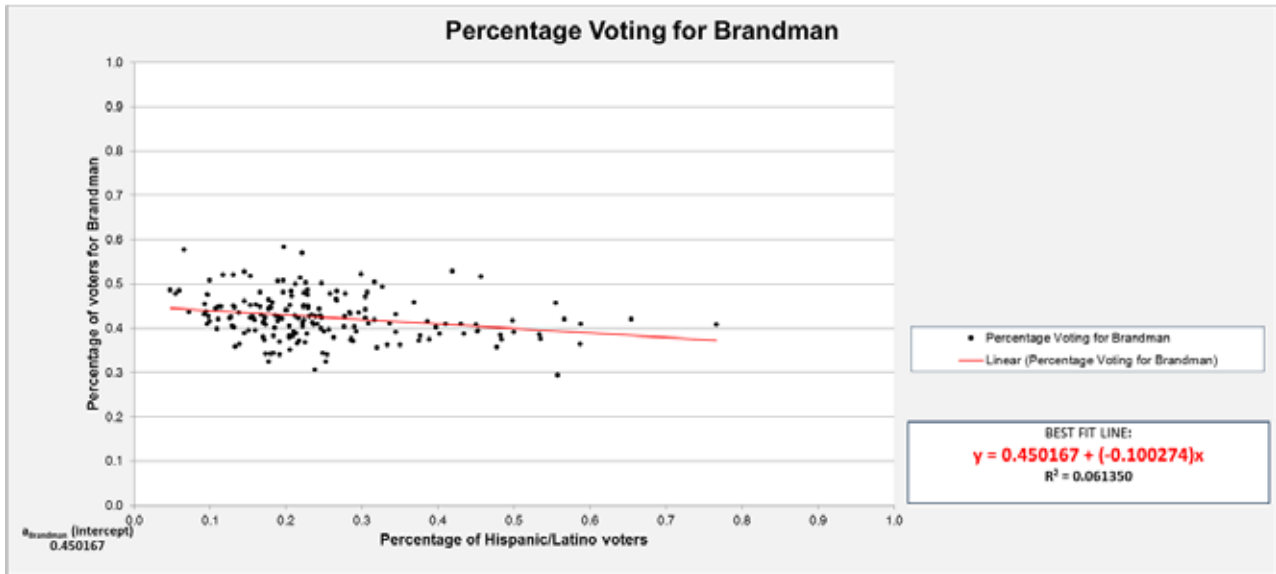


Figure 5a: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Jordan Brandman.

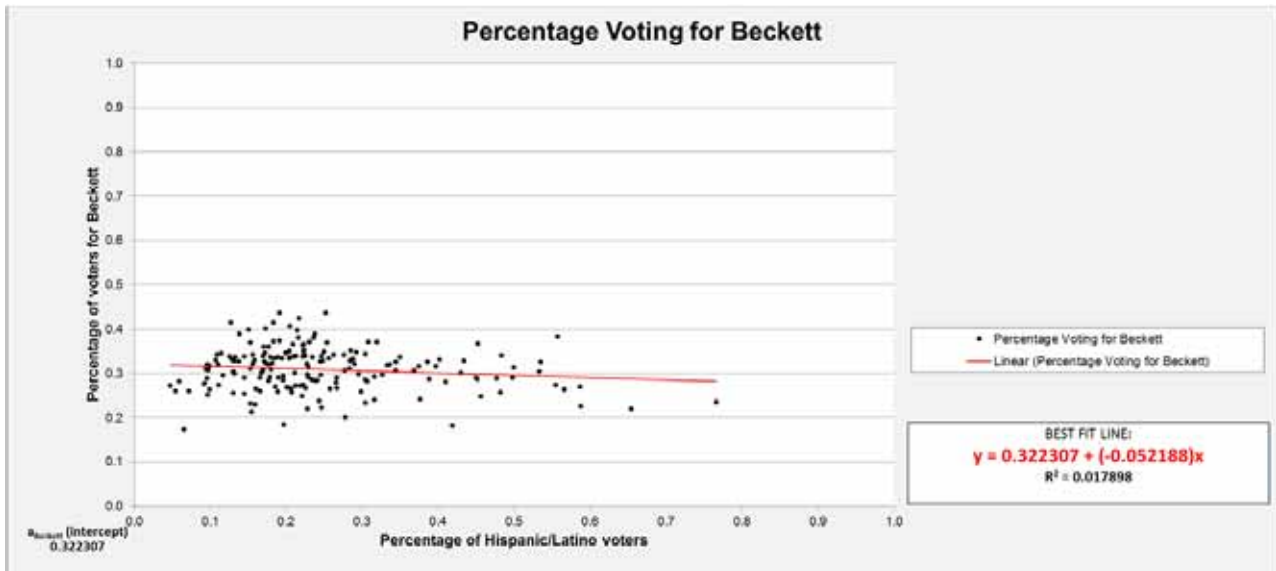


Figure 5b: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Vernon F. Beckett.

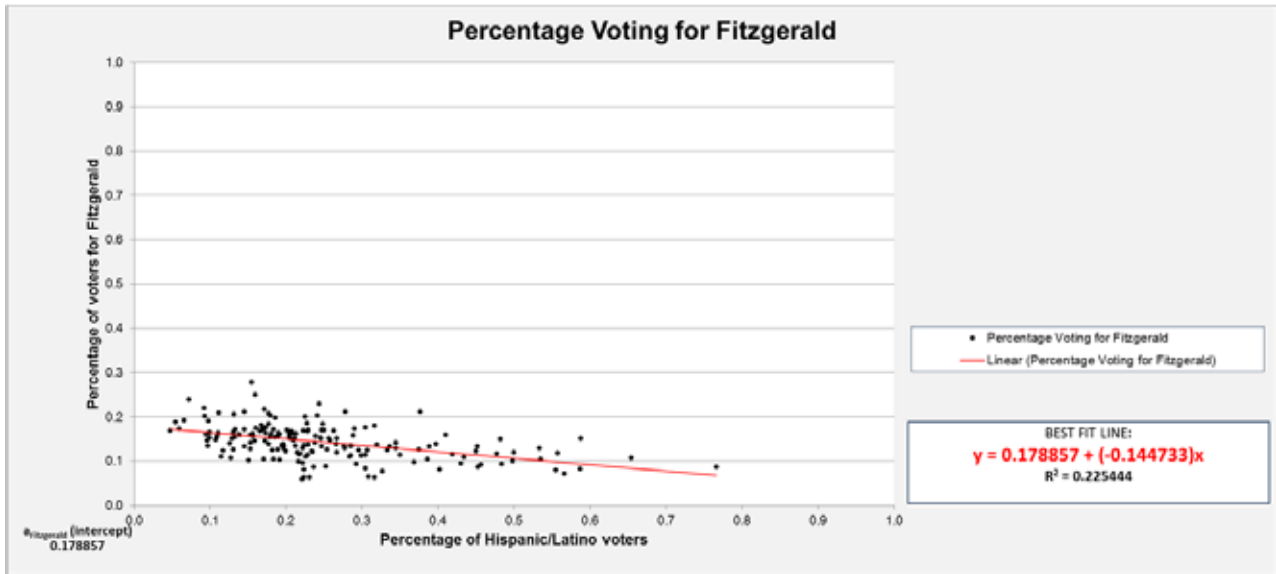


Figure 5c: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Denis Fitzgerald.

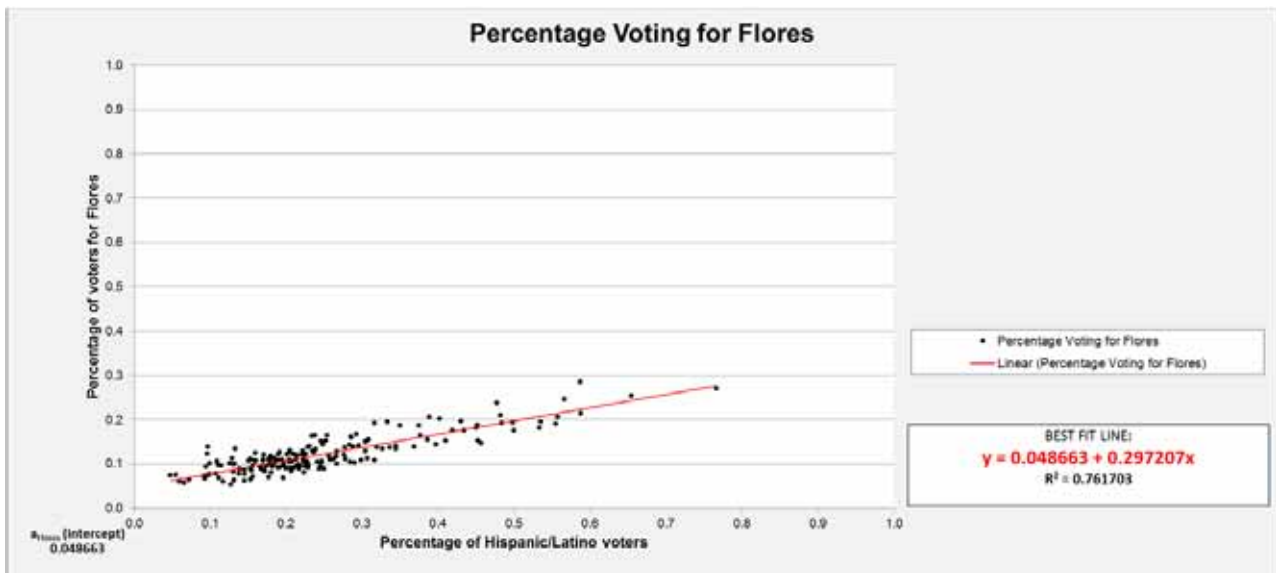


Figure 5d: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Robert J. Flores.

In the February 2008 Board of Education election, the highest R^2 value of 0.7617 is high. This value indicates that the percentage of the Hispanic/Latino voters in a precinct explains up to 76.17 percent of the variation in percent votes received by a given candidate. Utilizing the ecological regression analysis method described above, Dolinka Group calculated the estimated percentages of Hispanic/Latino and non-Hispanic/Latino voters voting for each of the four (4) candidates. Table 10 shows the results of this analysis.

Table 10
Racial Polarization in Hispanic/Latino v. Non-Hispanic/Latino Voters
AUHSD Board of Trustees 2008, Short Term, Vote for 1
Ecological Regression Estimates

Candidate	Percent of Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Hispanic/Latino Voters	Percent of Non-Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Non-Hispanic/Latino Voters	Actual 2008 Voting Outcome
Jordan Brandman	34.99%	1	45.02%	1	42.58%
Vernon F. Beckett	27.01%	3	32.23%	2	30.90%
Denis Fitzgerald	3.41%	4	17.89%	3	14.37%
Robert J. Flores	34.59%	2	4.87%	4	12.14%

6. November 7, 2006 General Election Results
AUHSD Board of Trustees Member, Vote for 3

In the 2006 General Election for AUHSD Board of Trustees, voters could vote for as many as three (3) candidates. The eight (8) candidates running were Thomas "Hoagy" Holguin, Anna L. Piercy, Denise Jane Mansfield-Reinking, Jordan Brandman, Robert "Rob" Stewart, Annemarie Randle-Trejo, Harald G. Martin, and Vernon F. Beckett. Figures 6a through 6h shown below represent the relationship between a precinct's percentage of Hispanic/Latino voters and the percentages of votes for each of the candidates, respectively.

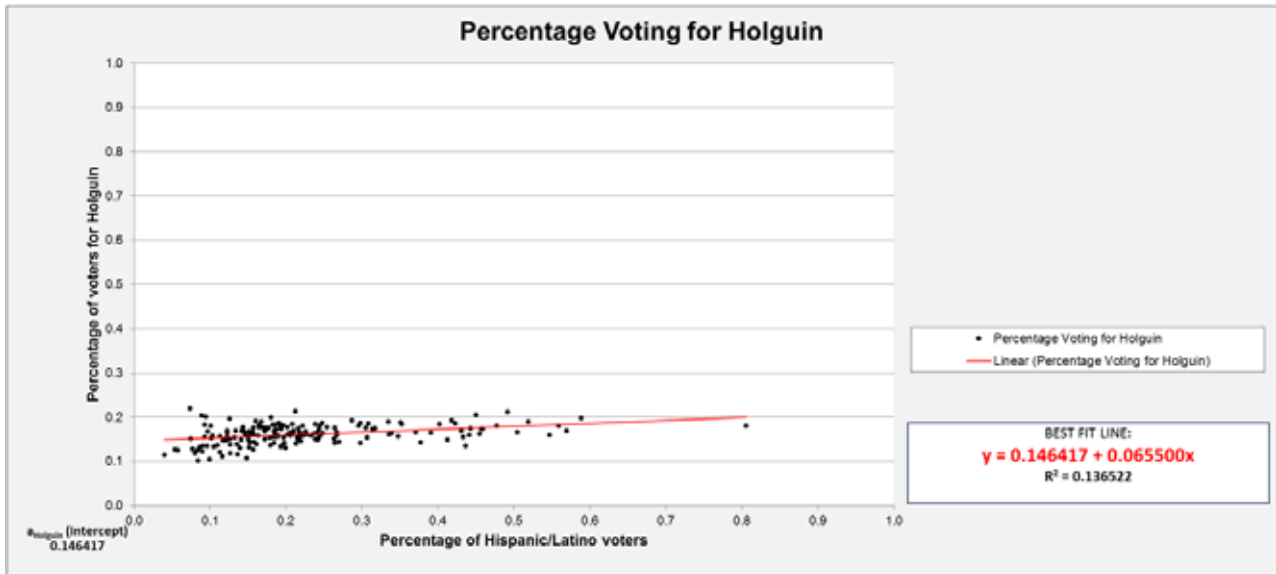


Figure 6a: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Thomas "Hoagy" Holguin.

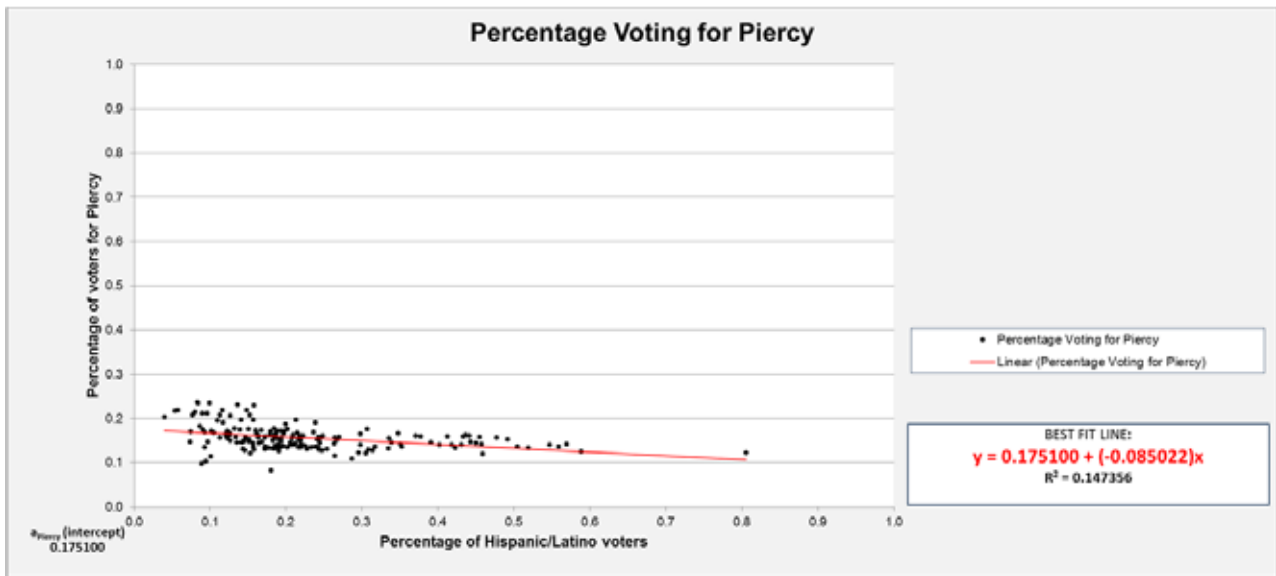


Figure 6b: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Anna L. Piercy.

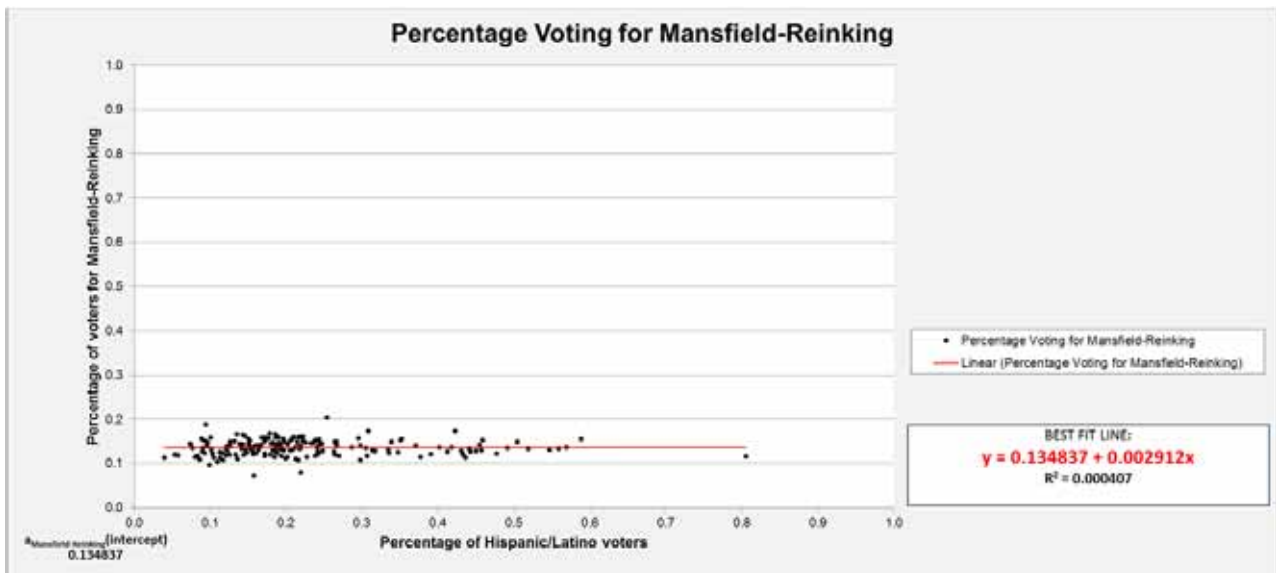


Figure 6c: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Denise Jane Mansfield-Reinking.

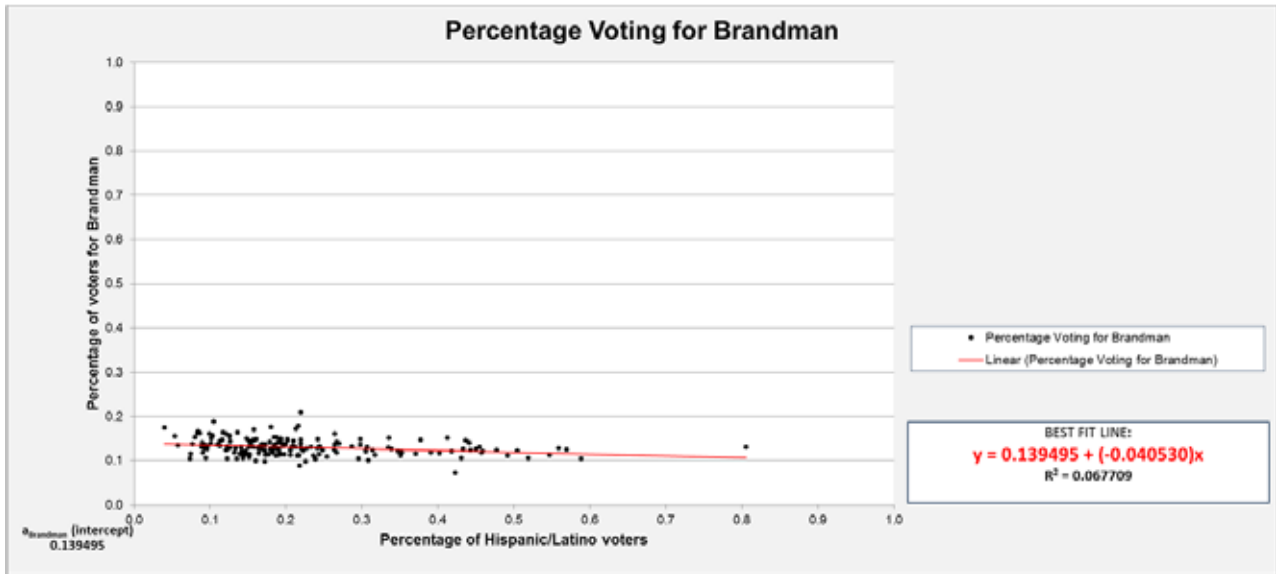


Figure 6d: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Jordan Brandman.

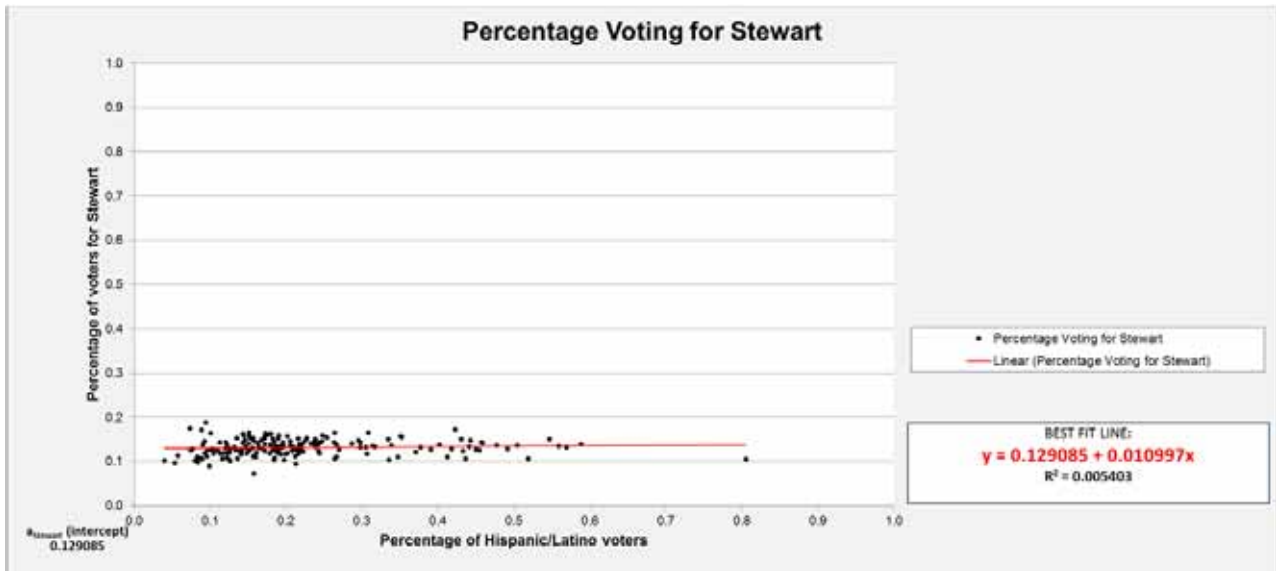


Figure 6e: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Robert "Rob" Stewart.

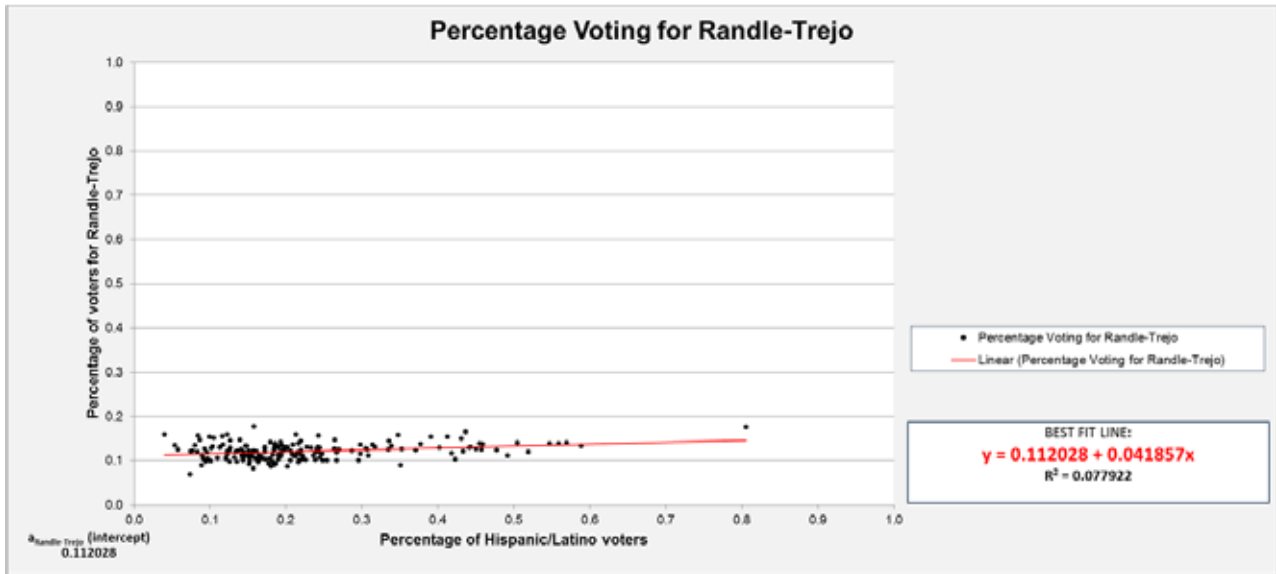


Figure 6f: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Annemarie Randle-Trejo.

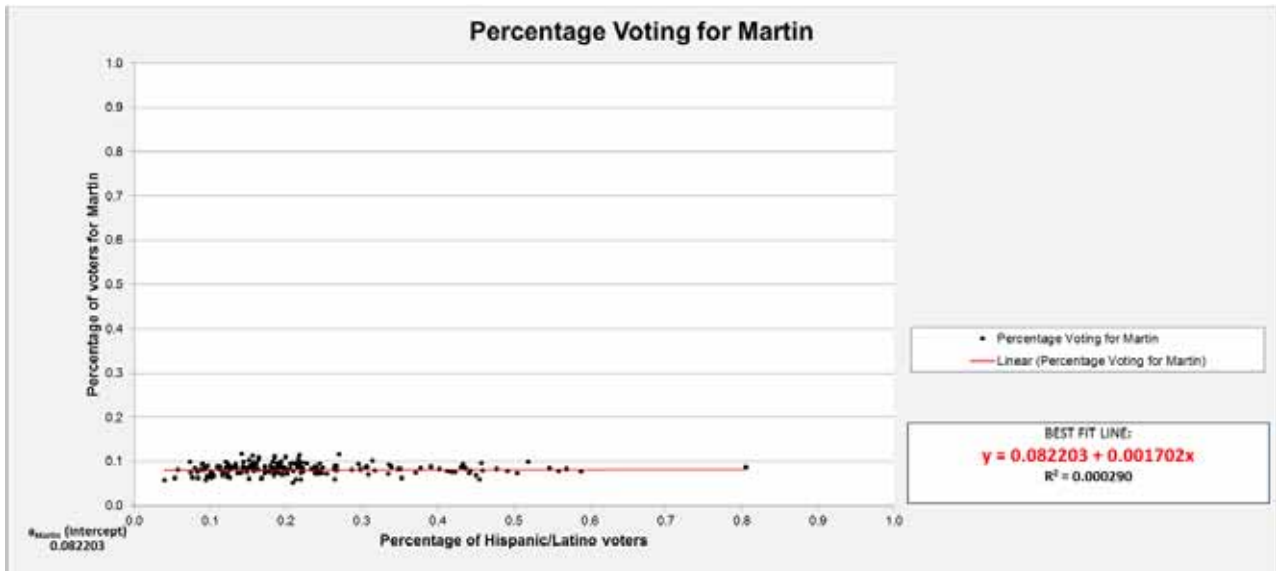


Figure 6g: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Harald G. Martin.

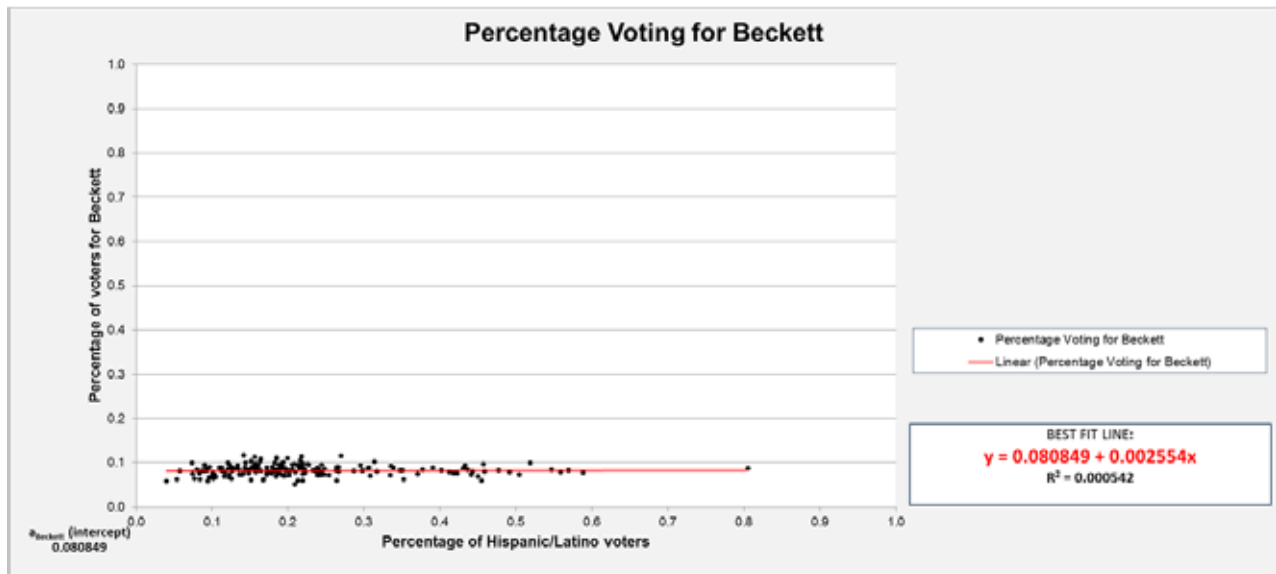


Figure 6h: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Vernon F. Beckett.

In the November 2006 Board of Education election, the highest R^2 value of 0.1474 is low. This value indicates that the percentage of the Hispanic/Latino voters in a precinct explains up to 14.74 percent of the variation in percent votes received by a given candidate. Utilizing the ecological regression analysis method described above, Dolinka Group calculated the estimated percentages of Hispanic/Latino and non-Hispanic/Latino voters voting for each of the eight (8) candidates. Table 11 shows the results of this analysis.

Table 11
Racial Polarization in Hispanic/Latino v. Non-Hispanic/Latino Voters
AUHS Board of Trustees 2006, Vote for 3
Ecological Regression Estimates

Candidate	Percent of Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Hispanic/Latino Voters	Percent of Non-Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Non-Hispanic/Latino Voters	Actual 2006 Voting Outcome
Thomas "Hoagy" Holguin	21.19%	1	14.64%	2	15.93%
Anna L. Piercy	9.01%	6	17.51%	1	15.81%
Denise Jane Mansfield-Reinking	13.77%	4	13.48%	4	13.47%
Jordan Brandman	9.90%	5	13.95%	3	13.16%
Robert "Rob" Stewart	14.01%	3	12.91%	5	13.06%
Annemarie Randle-Trejo	15.39%	2	11.20%	6	12.17%
Harald G. Martin	8.39%	7	8.22%	7	8.29%
Vernon F. Beckett	8.34%	8	8.08%	8	8.12%

**7. November 2, 2004 General Election Results
AUHSD Board of Trustees Member, Vote for 2**

In the 2004 General Election for AUHSD Board of Trustees, voters could vote for as many as two (2) candidates. The six (6) candidates running were Brian O'Neal, Katherine H. Smith, E.M. "Speed" Castillo, Margaret M. Trousdale, Dennis T. Doi, and Anthony Marmaduke Clark. Figures 7a through 7f shown below represent the relationship between a precinct's percentage of Hispanic/Latino voters and the percentages of votes for each of the candidates, respectively.

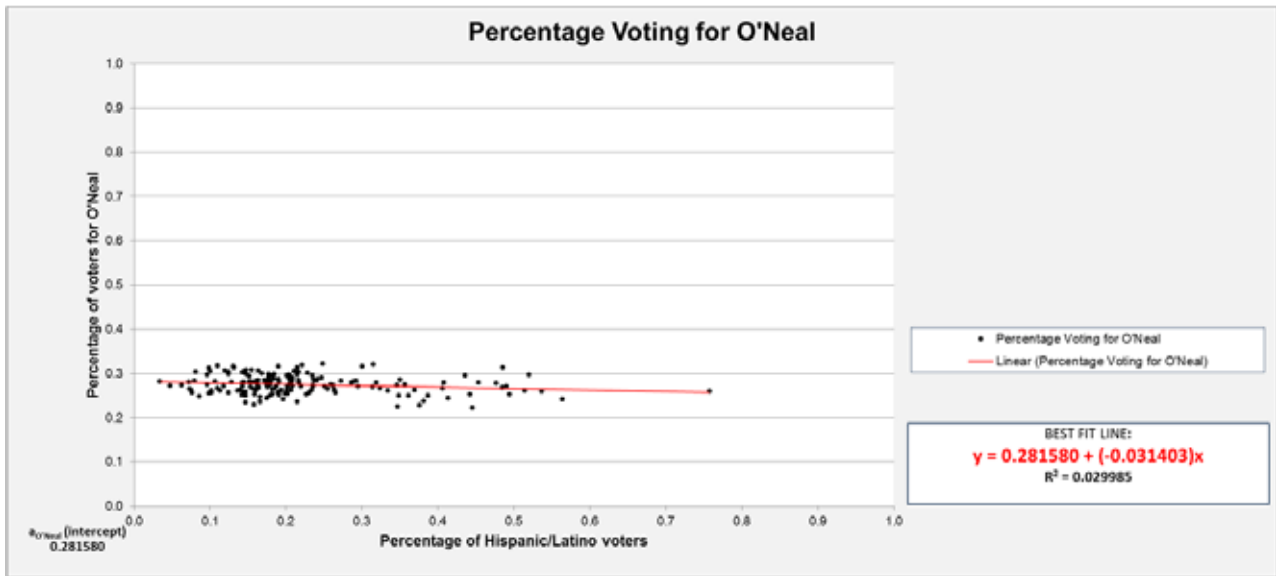


Figure 7a: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Brian O'Neal.

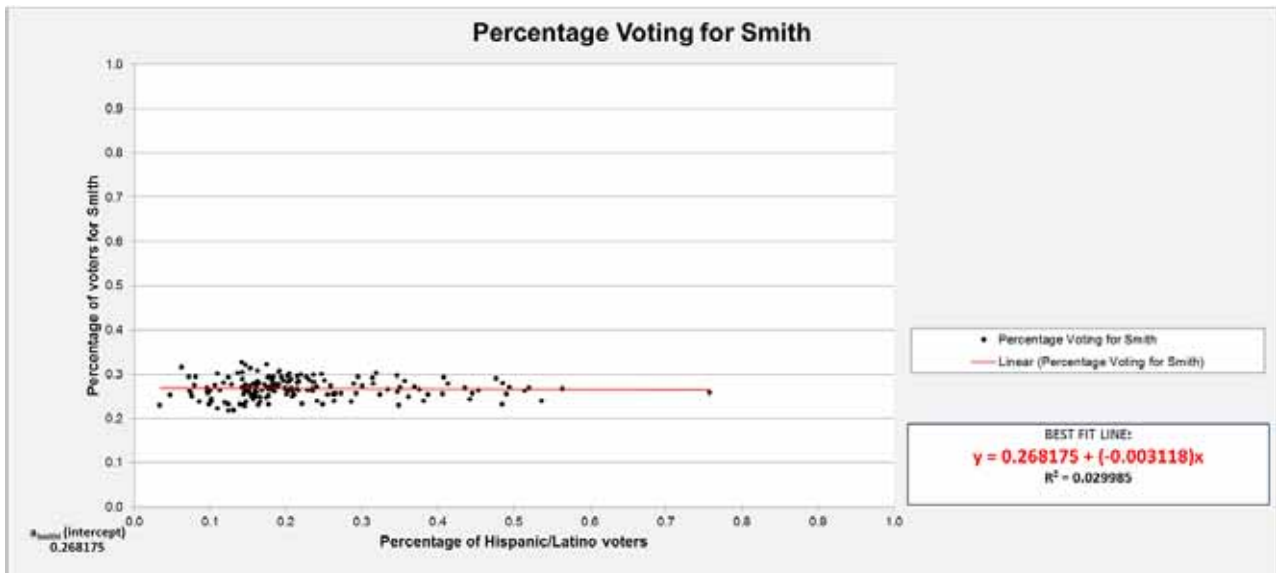


Figure 7b: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Katherine H. Smith.

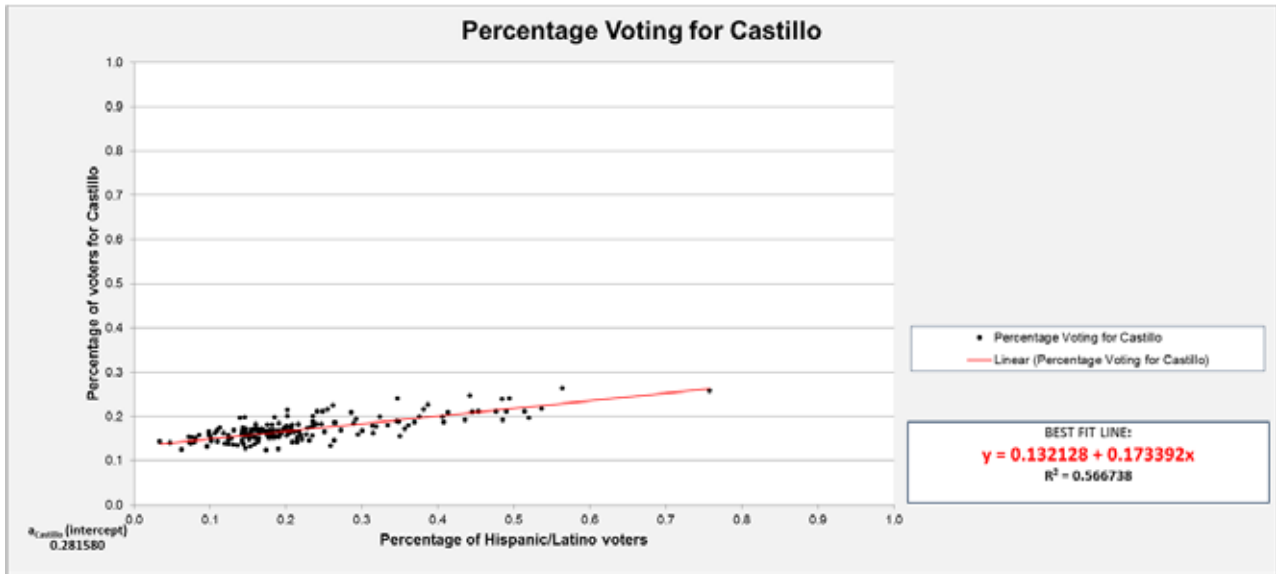


Figure 7c: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for E.M. "Speed" Castillo.

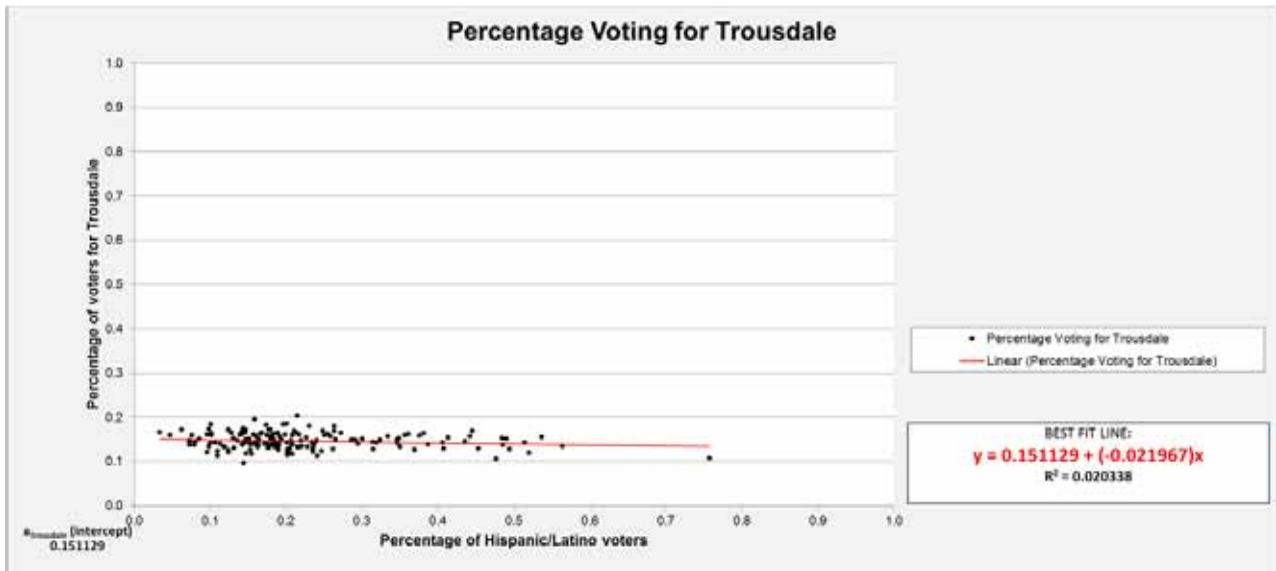


Figure 7d: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Margaret Trousdale.

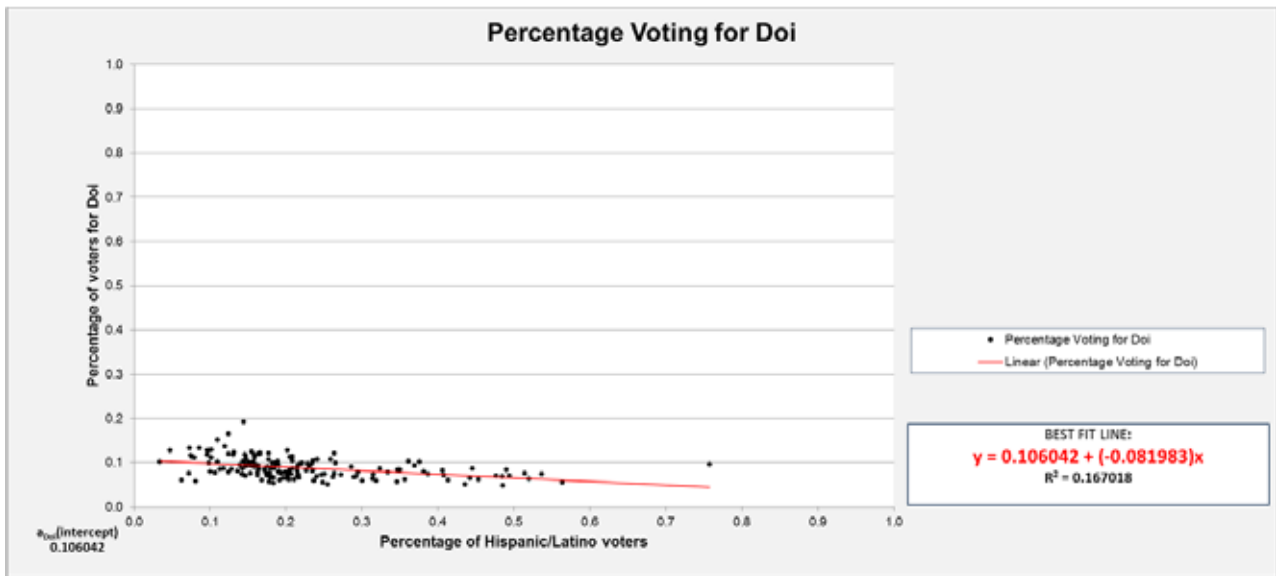


Figure 7e: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Dennis T. Doi.

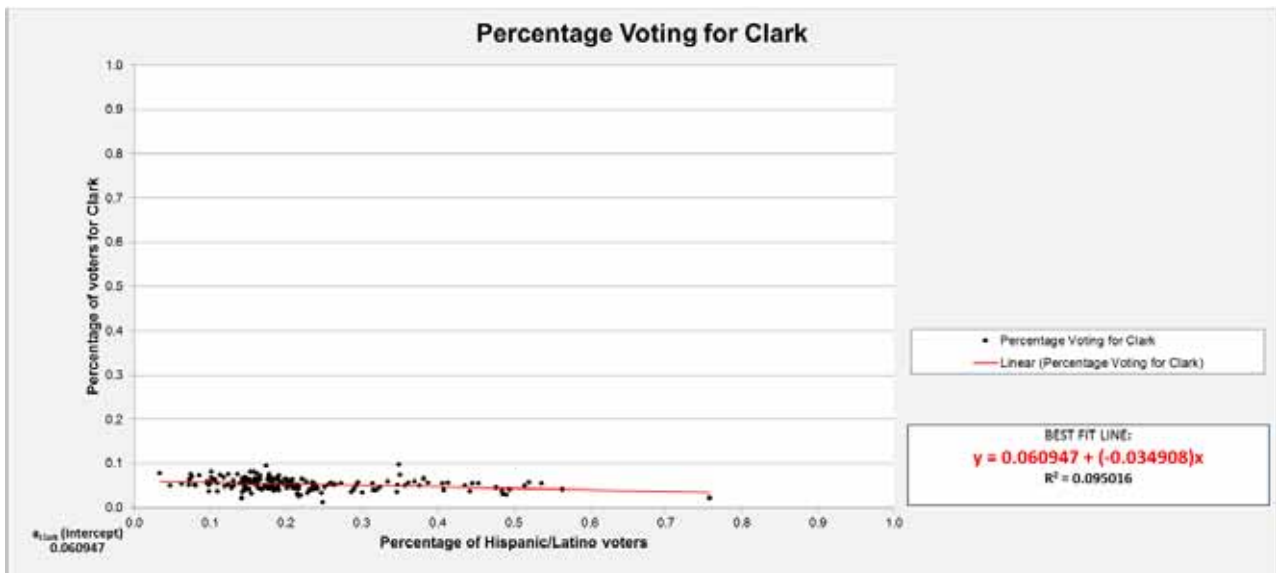


Figure 7f: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Anthony Marmaduke Clark.

In the November 2004 Board of Education election, the highest R^2 value of 0.5667 is high. This value indicates that the percentage of the Hispanic/Latino voters in a precinct explains up to 56.67 percent of the variation in percent votes received by a given candidate. Utilizing the ecological regression analysis method described above, Dolinka Group calculated the estimated percentages of Hispanic/Latino and non-Hispanic/Latino voters voting for each of the six (6) candidates. Table 12 shows the results of this analysis.

Table 12
Racial Polarization in Hispanic/Latino v. Non-Hispanic/Latino Voters
AUHSD Board of Trustees 2004, Vote for 2
Ecological Regression Estimates

Candidate	Percent of Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Hispanic/Latino Voters	Percent of Non-Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Non-Hispanic/Latino Voters	Actual 2004 Voting Outcome
Brian O'Neal	25.02%	3	28.16%	1	27.46%
Katherine H. Smith	26.51%	2	26.82%	2	26.66%
E.M. "Speed" Castillo	30.55%	1	13.21%	4	16.93%
Margaret M. Trousdale	12.92%	4	15.11%	3	14.56%
Dennis T. Doi	2.41%	6	10.60%	5	8.99%
Anthony Marmaduke Clark	2.60%	5	6.09%	6	5.40%

8. November 5, 2002 General Election Results
AUHSD Board of Trustees Member, Vote for 3

In the 2002 General Election for AUHSD Board of Trustees, voters could vote for as many as three (3) candidates. The 12 candidates running were Thomas "Hoagy" Holguin, Denise Jane Mansfield-Reinking, Robert "Rob" Stewart, Frank G. Cozza, Jr., Harald G. Martin, David G. Vill, Dennis T. Doi, Christine V. Villegas, Judy Velasquez Ashbaugh, Anthony Marmaduke Clark, Amin David, and Vernon F. Beckett. Figures 9a through 9l shown below represent the relationship between a precinct's percentage of Hispanic/Latino voters and the percentages of votes for each of the candidates, respectively.

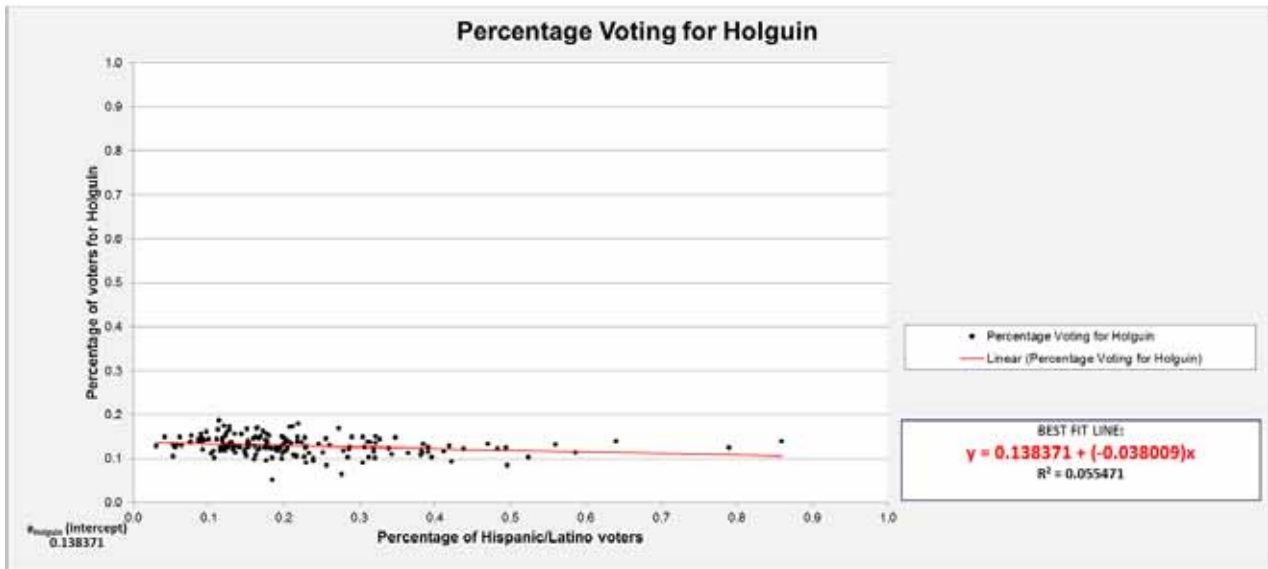


Figure 8a: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Thomas "Hoagy" Holguin.

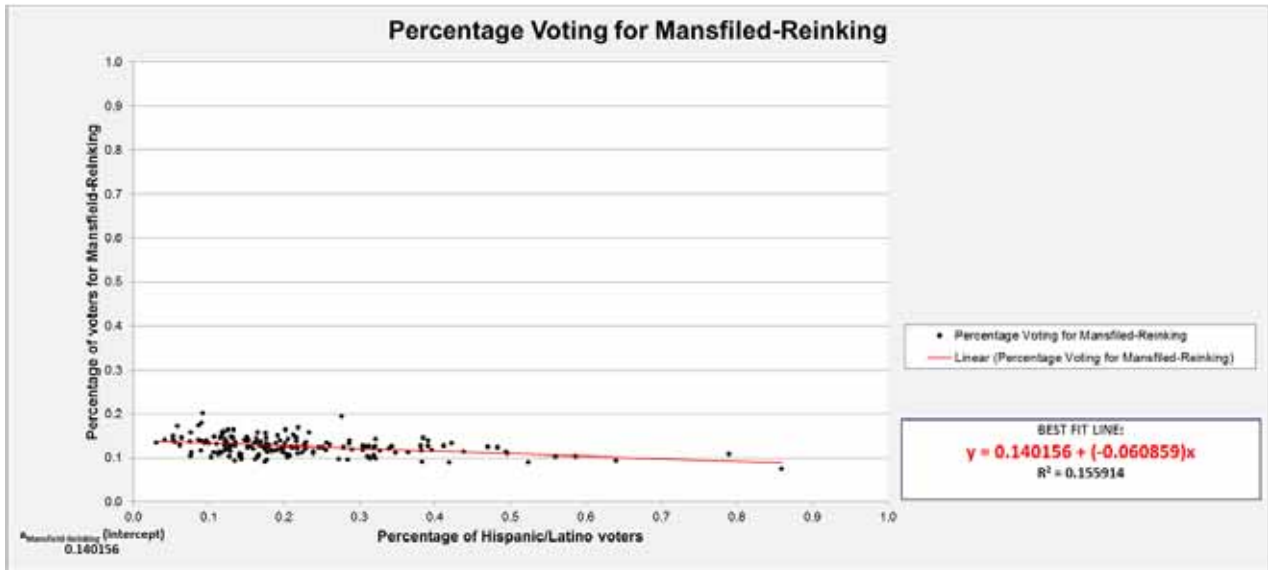


Figure 8b: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Denise Jane Mansfield-Reinking.

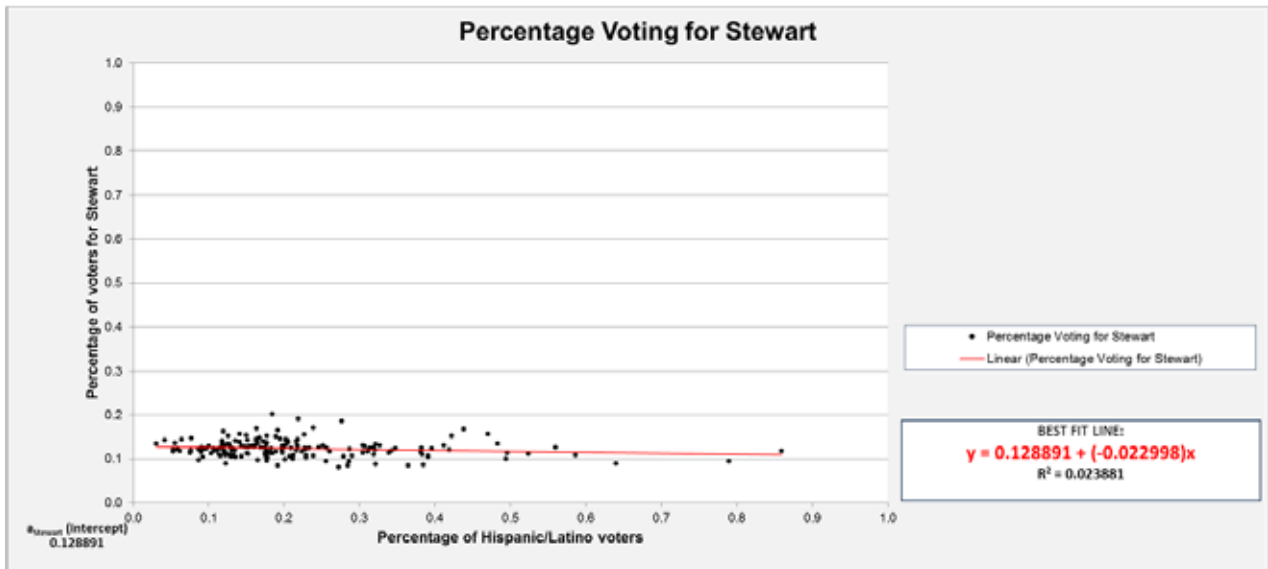


Figure 8c: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Robert "Rob" Stewart.

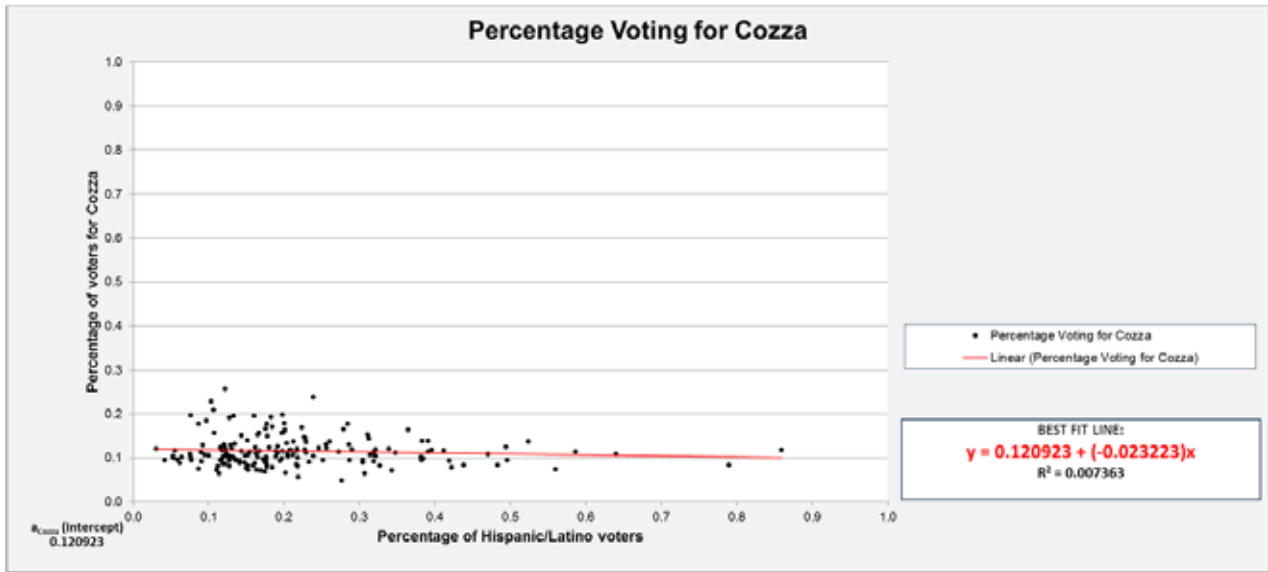


Figure 8d: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Frank G. Cozza, Jr.

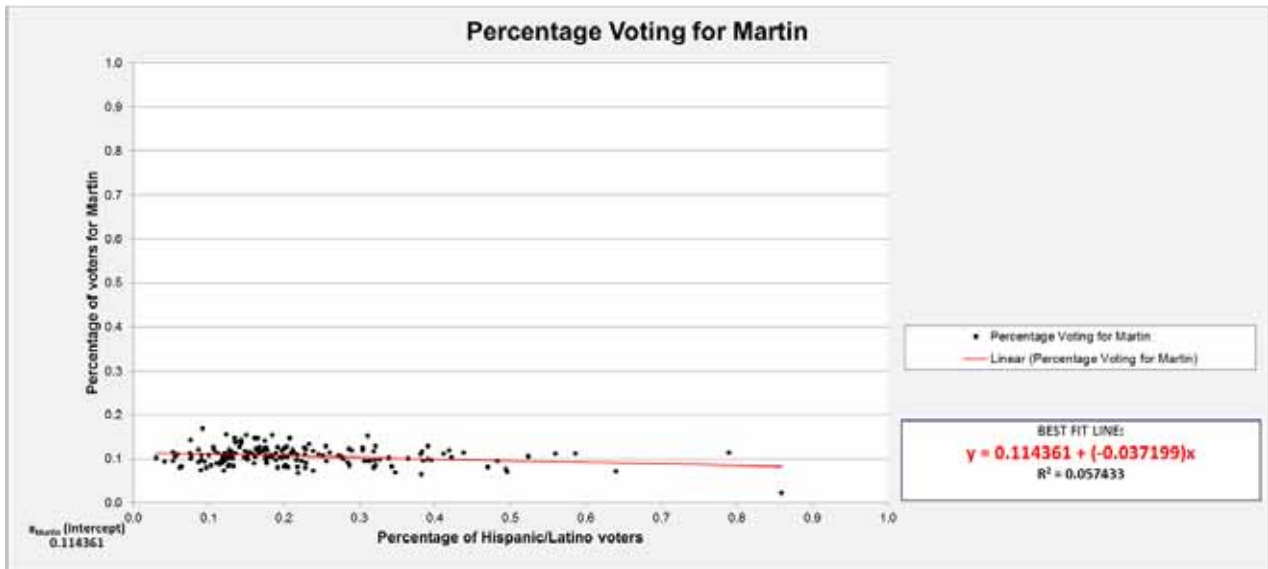


Figure 8e: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Harald G. Martin.

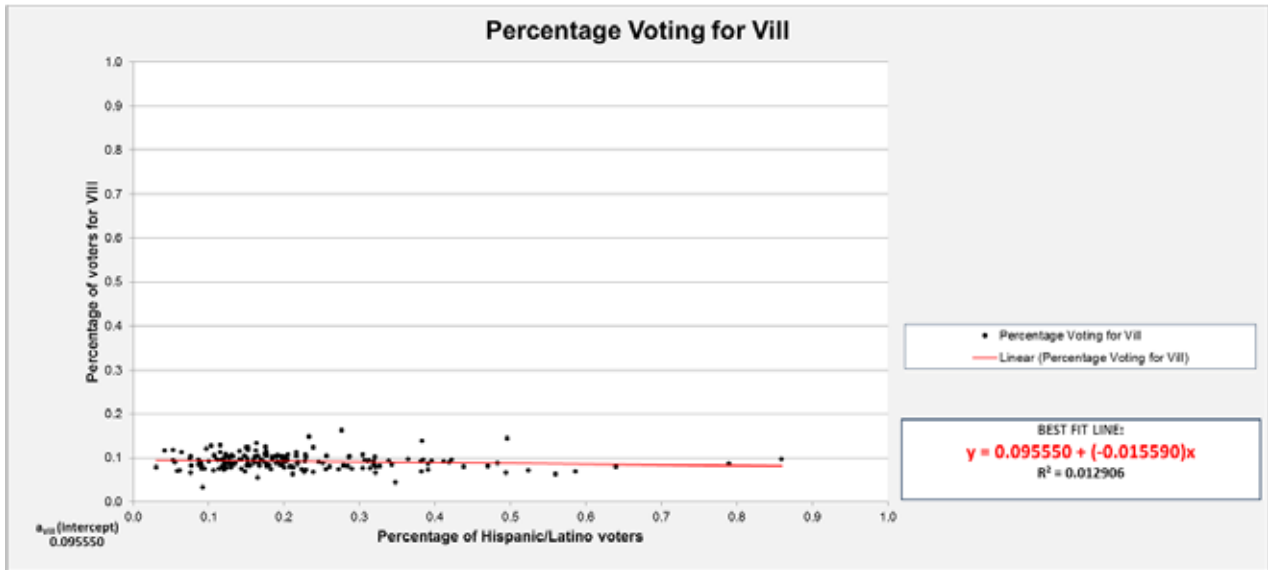


Figure 8f: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for David G. Vill.

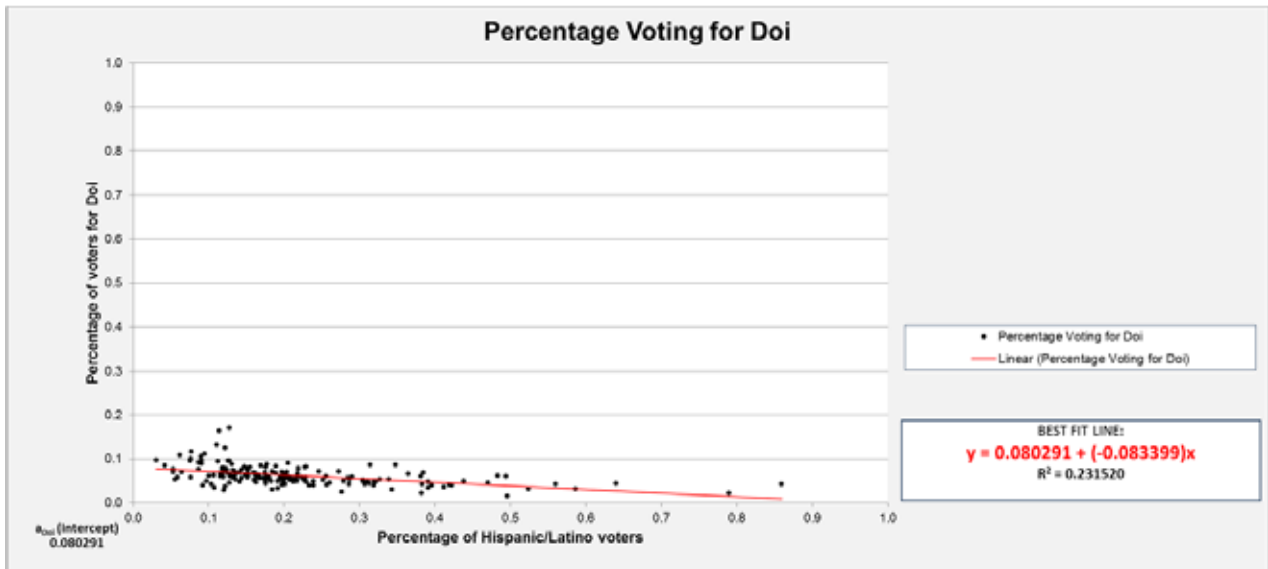


Figure 8g: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Dennis T. Doi.

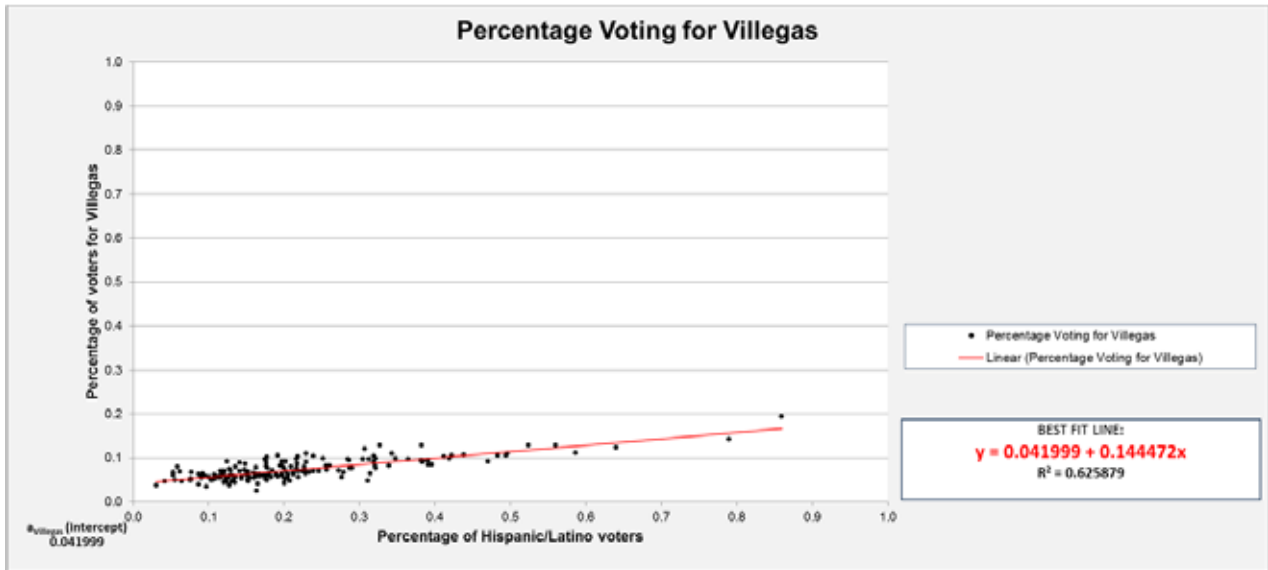


Figure 8h: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Christine V. Villegas.

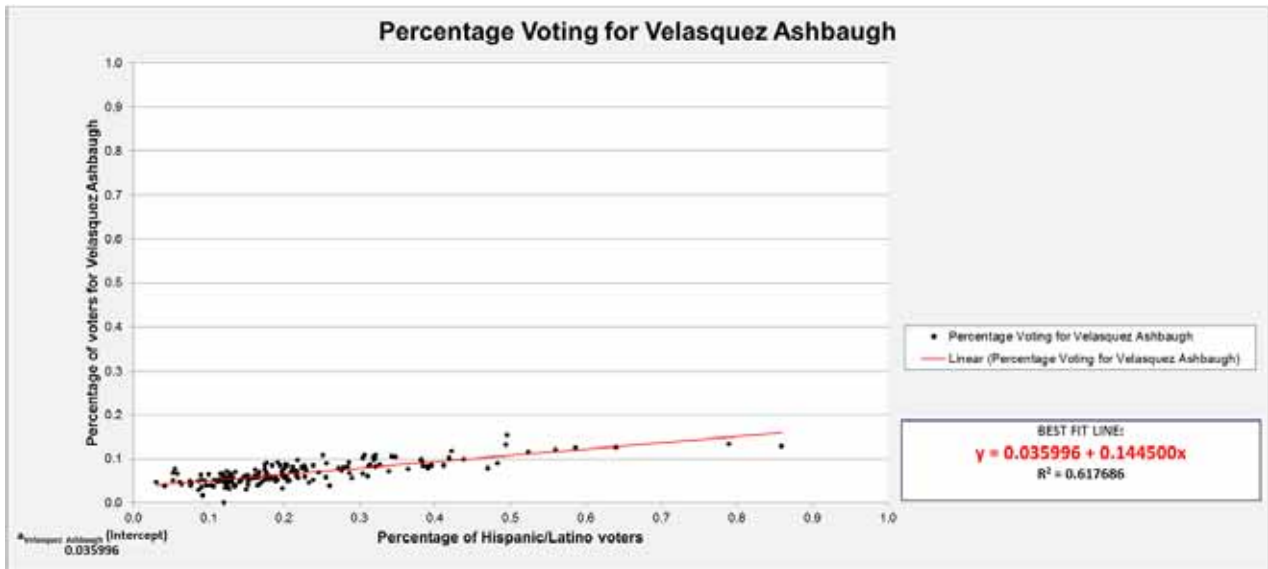


Figure 8i: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Judy Velasquez Ashbaugh.

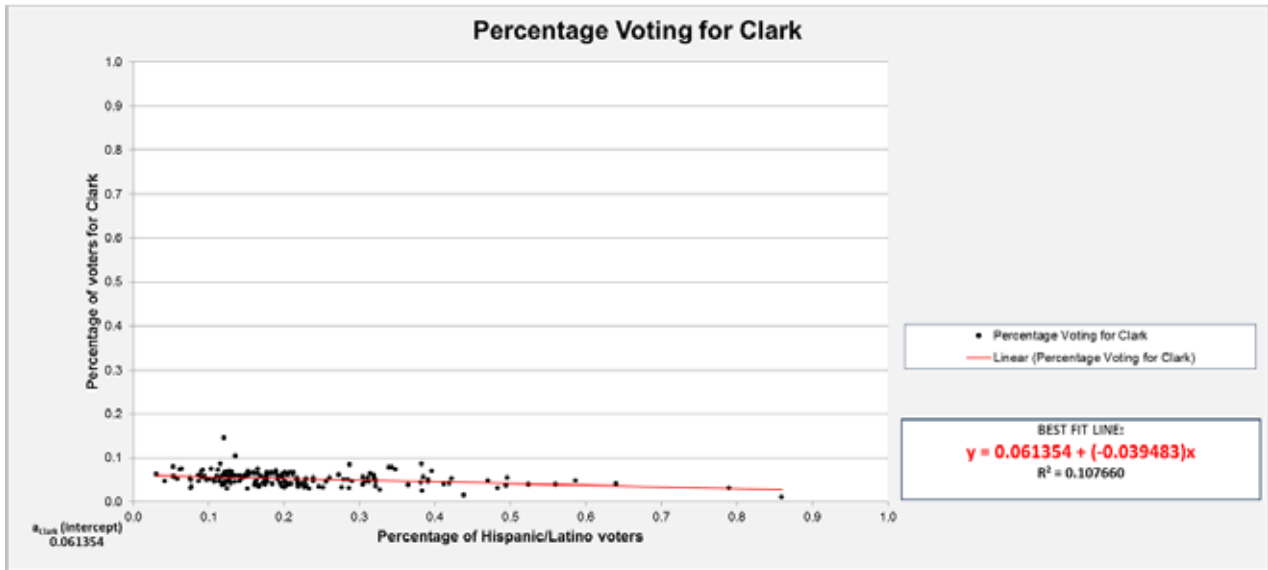


Figure 8j: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Anthony Marmaduke Clark.

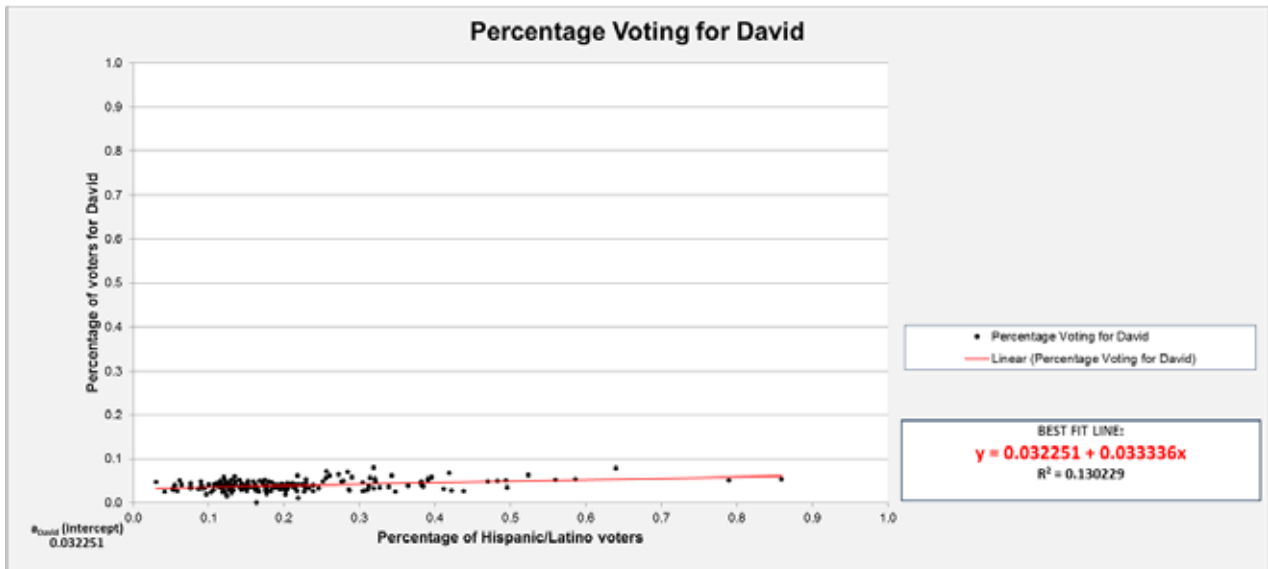


Figure 8k: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Amin David.

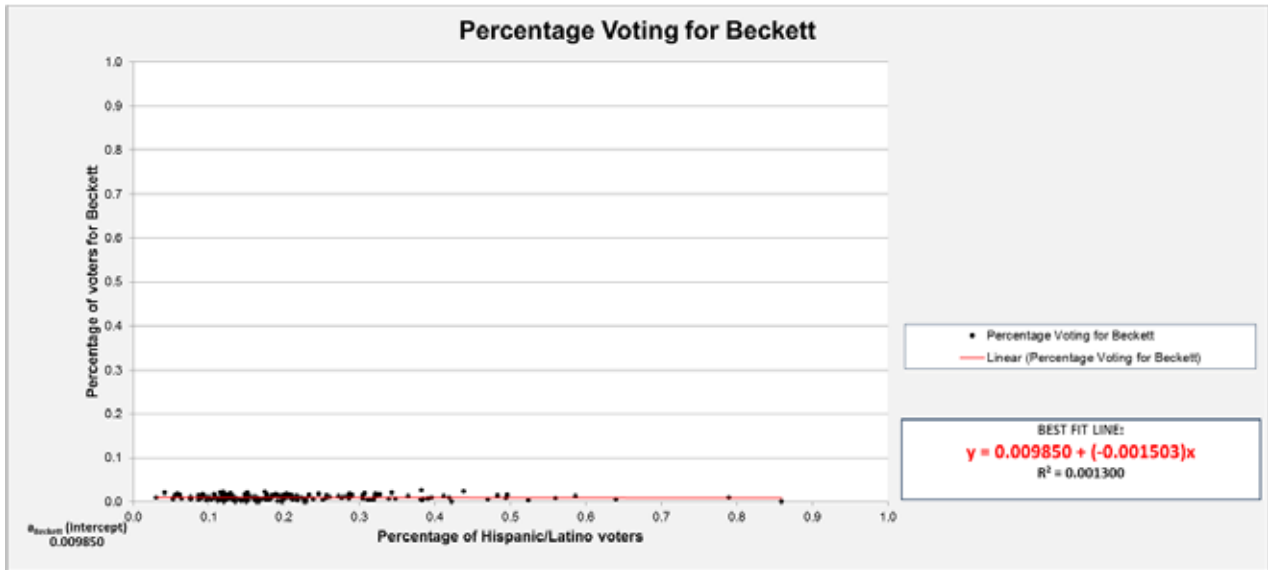


Figure 8l: Scatter plot and fitted regression line representing the relationship between a precinct's racial composition and the voting outcome for Vernon F. Beckett.

In the November 2002 Board of Education election, the highest R^2 value of 0.6259 is high. This value indicates that the percentage of the Hispanic/Latino voters in a precinct explains up to 62.59 percent of the variation in percent votes received by a given candidate. Utilizing the ecological regression analysis method described above, Dolinka Group calculated the estimated percentages of Hispanic/Latino and non-Hispanic/Latino voters voting for each of the 12 candidates. Table 13 shows the results of this analysis.

Table 13
Racial Polarization in Hispanic/Latino v. Non-Hispanic/Latino Voters
AUHSD Board of Trustees 2002, Vote for 3
Ecological Regression Estimates

Candidate	Percent of Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Hispanic/Latino Voters	Percent of Non-Hispanic/Latino Registered Voters Voting for Candidate	Rank Among Non-Hispanic/Latino Voters	Actual 2002 Voting Outcome
Thomas "Hoagy" Holguin	10.04%	4	13.84%	2	13.33%
Denise Jane Mansfield-Reinking	7.93%	7	14.02%	1	12.69%
Robert "Rob" Stewart	10.59%	3	12.89%	3	12.30%
Frank G. Cozza, Jr.	9.77%	5	12.09%	4	11.60%
Harald G. Martin	7.72%	8	11.44%	5	10.86%
David G. Vill	8.00%	6	9.55%	6	9.29%
Dennis T. Doi	-0.31%	12	8.03%	7	6.89%
Christine V. Villegas	18.65%	1	4.20%	9	6.65%
Judy Velasquez Ashbaugh	18.05%	2	3.60%	10	6.25%
Anthony Marmaduke Clark	2.19%	10	6.14%	8	5.25%
Amin David	6.56%	9	3.23%	11	3.91%
Vernon F. Beckett	0.83%	11	0.99%	12	0.96%

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Exhibit A

Map 1 – Geographic Profile

Exhibit B

Map 2 – Density of Hispanic/Latino Total Population by Census Block

Exhibit C

**Map 3 – Density of Hispanic/Latino CVAP Estimate by Census Block
(2005-2009)**

Exhibit D

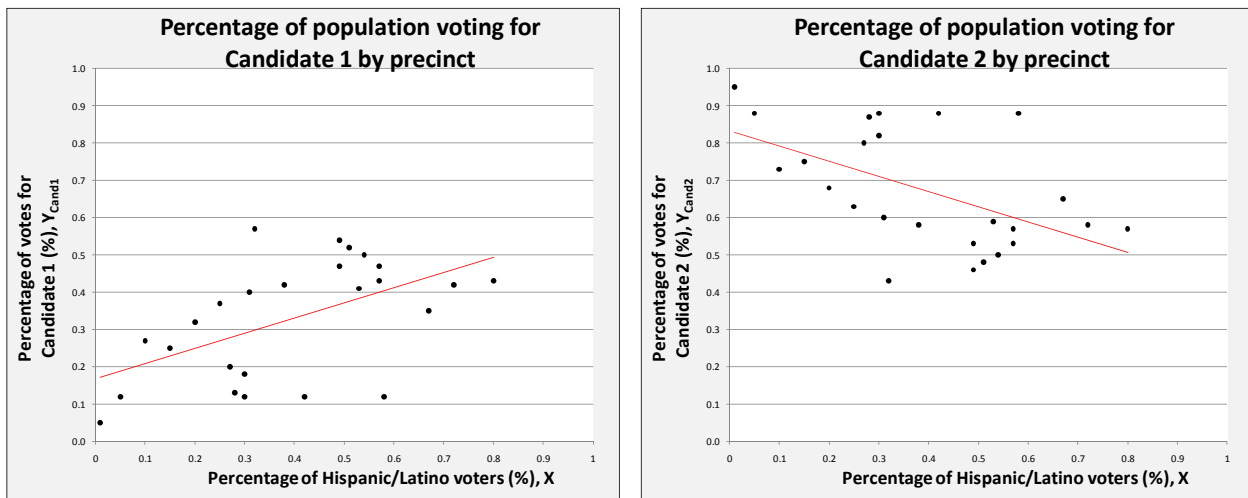
**Map 4 – Density of Hispanic/Latino CVAP Estimate by Census Block
(2007-2011)**

Exhibit E

Ecological Regression Explanation and Methodology

The use of ecological regression is the standard method utilized to identify the presence of racially polarized voting in election results. This statistical method estimates voting behavior among different groups in the absence of specific data about how individuals voted in particular elections by looking at the relationship between two known data points: the precinct level election results and the composition of voters within each precinct. Ecological regression is used to analyze the relationship between those two variables and determine if a particular candidate is the favored candidate among a particular group of people and whether the election results indicate bloc voting by voters.

Simple linear regression is applied to determine the relationship between the known data: i) the percentage of Hispanic/Latino voters within each precinct, X , and ii) the percentage of total votes received by each candidate within each precinct, Y . The sample graphs below in Figures 1a and 1b show the voting data as well as straight lines to reasonably represent the relationship between the two (2) inputs. For illustrative purposes, the following sample graphs and equations show an analysis of racially polarized voting between Hispanic/Latino and non-Hispanic/Latino voters.



Figures 1a and 1b: Scatter plots showing the data points and fitted regression lines for the relationship between the two (2) inputs. The scatter plot shown in Figure 1a shows that precincts with higher percentages of Hispanic/Latino voters tended to vote more in favor of Candidate 1; the scatter plot shown in Figure 1b shows that precincts with lower percentages of Hispanic/Latino voters tended to vote more in favor of Candidate 2.

Mathematically, the estimated regression would be represented as:

Linear Regression	
<p>Equation 1a:</p> <p>% population voting for the Hispanic/Latino candidate</p> $Y_H = a_H + b_H X$	<p>where:</p> <p><u>Available Information</u></p> <p>Y_H is the % of votes for the Hispanic/Latino candidate</p> <p>Y_{NH} is the % of votes for the non-Hispanic/Latino candidate</p> <p>X is the % of Hispanic/Latino voters</p> <p><u>Parameter Estimates</u></p> <p>a_H estimates the % non-Hispanic/Latino voting for the Hispanic/Latino candidate</p> <p>b_H estimates the difference between the % Hispanic/Latino and non-Hispanic/Latino voting for the Hispanic/Latino candidate</p> <p>a_{NH} estimates the % non-Hispanic/Latino voting for the non-Hispanic/Latino candidate</p> <p>b_{NH} estimates the difference between the % Hispanic/Latino and non-Hispanic/Latino voting for the non-Hispanic/Latino candidate</p>
<p>Equation 1b:</p> <p>% population voting for the non-Hispanic/Latino candidate</p> $Y_{NH} = a_{NH} + b_{NH} X$	<p><u>Parameter Estimates</u></p> <p>a_H estimates the % non-Hispanic/Latino voting for the Hispanic/Latino candidate</p> <p>b_H estimates the difference between the % Hispanic/Latino and non-Hispanic/Latino voting for the Hispanic/Latino candidate</p> <p>a_{NH} estimates the % non-Hispanic/Latino voting for the non-Hispanic/Latino candidate</p> <p>b_{NH} estimates the difference between the % Hispanic/Latino and non-Hispanic/Latino voting for the non-Hispanic/Latino candidate</p>

Equations 1a and 1b: Linear regression equations estimating the relationship between a precinct's percentage of Hispanic/Latino voters, X , and the percentage of votes received by the Hispanic/Latino or non-Hispanic/Latino candidates, respectively Y_H or Y_{NH} .

As Equations 1a and 1b would reduce to $Y_H = a_H$ and $Y_{NH} = a_{NH}$, if X , the percentage of Hispanic/Latino voters, had a value of zero, the constant term a estimates the percentage of votes for the candidate of interest for a precinct that is 0% Hispanic/Latino. Therefore, a estimates the percentage of non-Hispanic/Latino voters voting for the candidate of interest. The parameter estimate, b , estimates the difference between the percentage of Hispanic/Latino and non-Hispanic/Latino voters voting for the candidate of interest. Thus, the percentage of Hispanic/Latino voters voting for that candidate would be equal to $a + b$.

Parameter estimate b indicates the slope of the fitted regression line, and can be used to interpret the relative voting preferences of the Hispanic/Latino and non-Hispanic/Latino voters. A positive slope (as shown in Figure 1a) indicates that the percentage of Hispanic/Latino voters voting for the candidate of interest exceeds the percentage of non-Hispanic/Latino voters voting for that candidate, and a negative slope (as shown in Figure 1b) indicates that the percentage of Hispanic/Latino voters voting for the candidate is less than the percentage of non-Hispanic/Latino voters voting for that candidate. A zero slope, which would be drawn as a horizontal line, indicates that the percentages of Hispanic/Latino and non-Hispanic/Latino voters voting for the candidate are equal, which suggests that there is no difference in voting behaviors based on race.

The parameter estimates given through the output of the linear regression analysis can be used to estimate the percentage of Hispanic/Latino and non-Hispanic/Latino voters supporting the candidate of interest using the following algebraic equations:

Bloc Voting Estimates	
Equation 2a: % Hispanic/Latino voters for the Hispanic/Latino candidate $\frac{(a_H + b_H)}{(a_H + b_H) + (a_{NH} + b_{NH})}$	Equation 2b: % non-Hispanic/Latino voters for the Hispanic/Latino candidate $\frac{a_H}{(a_H + a_{NH})}$
Equation 2c: % Hispanic/Latino voters for the non-Hispanic/Latino candidate $\frac{(a_{NH} + b_{NH})}{(a_H + b_H) + (a_{NH} + b_{NH})}$	Equation 2d: % non-Hispanic/Latino voters for the non-Hispanic/Latino candidate $\frac{a_{NH}}{(a_H + a_{NH})}$

Equations 2a-d: Bloc voting estimates for the percentage of Hispanic/Latino and non-Hispanic/Latino voters supporting each candidate are algebraically derived from the regression's parameter estimates.

In linear regression analyses, there exists a coefficient of determination or "R²" value, which is a measure of association between an independent variable and a dependent variable. (The associated R² values are listed in the scatter plots presented throughout this report.) Technically speaking, R² is the fraction of the variation in the dependent variable (e.g. percentage of total votes received by the candidates within each precinct) that is accounted for – or "explained by" – the independent variable (e.g. the percentage of Hispanic/Latino voters within each precinct). An R² of 0.0 would explain 0 percent of the variation in the dependent variable; an R² of 1.0 would explain 100 percent of the variation in the dependent variable. R² does not report the model's significance or confidence level. Instead, it gives information regarding the model's "goodness of fit", or how well the regression line approximates the real data points. If R² is low it indicates that there may be other independent variables influencing the dependent variable included in the linear regression model, however, it does not say that the independent variable considered does not have a significant effect on the dependent variable. In general, an R² greater than 0.25 would be indicative of a "substantial relationship" between the two variables and an R² greater than 0.50 would indicate a "very strong relationship".