

Exhibit M

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON**

Rogelio Montes and Mateo Arteaga

Plaintiffs,

v.

City of Yakima, et. al.

Defendants.

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CV- 12-3108-TOR

REPORT OF RICHARD L. ENGSTROM, Ph.D.

I declare the following:

1. My name is Richard L. Engstrom and I am a resident of Chapel Hill, North Carolina. I am currently a Visiting Research Fellow at the Center for the Study of Race, Ethnicity, and Gender in the Social Sciences at Duke University, a position I have held since 2008. From August of 2006 through 2007 I was employed as a consultant at the Center for Civil Rights at the School of Law, University of North Carolina at Chapel Hill. I am a former Research Professor of Political Science and Endowed Professor of Africana Studies at the University of New Orleans, where I was employed from August 1971 to May 2006. I have served two terms as the Chairperson of the Representation and Electoral Systems Section of the American Political Science Association (1993-1995, 1995-1997) and served as a member of the Executive Council for that section from 1993 to 2007. A copy of my curriculum vitae is attached as Appendix A to this report.

2. I have done extensive research into the relationship between election systems and the ability of minority voters to participate fully in the political process and to elect

representatives of their choice. The results of my research on this topic have been published in the *American Political Science Review*, *Journal of Politics*, *Western Political Quarterly*, *Legislative Studies Quarterly*, *Social Science Quarterly*, *Journal of Law and Politics*, *Electoral Studies*, *Representation*, and other journals and books. Three articles authored or co-authored by me were cited with approval in Thornburg v. Gingles, 478 U.S. 30, at 46 n.11, 49 n.15, 53 n.20, 55, and 71 (1986), the Supreme Court decision interpreting amended section 2 of the Voting Rights Act. I am the co-author, with Mark A. Rush, of *Fair and Effective Representation? Debating Electoral Reform and Minority Rights* (Lanham, MD: Rowman and Littlefield Publishers, Inc. 2001).

3. I have also testified as an expert witness in numerous cases in federal and state courts across the United States. Since 2008 I have testified at trial and/or been deposed in the following cases: *Gonzalez v. State of Arizona* (D. Ariz. 2008), *United States of America v. Village of Port Chester* (S.D.N.Y. 2008), *Benavidez v. City of Irving*, (N.D. Tex. 2008), *Benavidez v. Irving Independent School District* (N.D. Tex. 2009), *United States of America v. Euclid City School District Board of Education* (N.D. Ohio 2009), *Texas Latino Redistricting Task Force v. Perry* (W.D. Tex. 2011), *Committee for a Fair and Balanced Map v. Illinois State Board of Elections* (N.D. IL 2011), *Egolf v. Duran* (1st Judicial District Court, County of Santa Fe, State of New Mexico, 2011), *State of Texas v. United States of America* (D D.C. 2012), and *Fabela v. City of Farmers Branch, TX* (ND Tex. 2012). I have also testified by deposition as a fact witness in *Backus v. State of South Carolina* (D S.C. 2012).

4. Attorneys for plaintiffs in this case have asked me to analyze the extent to which the candidate preferences of Latino and other voters in Yakima, Washington, have

differed in the recent elections for members of the city council in which the voters have been presented with a choice between or among Latino and non-Latino candidates. These elections include three primaries and two general elections held in 2009 and 2011, which entail the last three attempts by Latino candidates to win a seat on the council.¹

5. They also have asked that I analyze the extent to which the votes cast by Latino and other voters differed in two other recent elections. One of these is the vote on City of Yakima Proposition 1 in the primary election of 2011. This proposition, if successful, would have required a change in the city council election system from at-large to district based elections. The other is the election for Position 8 on the Washington Supreme Court, which was also contested by a Latino and a non-Latino candidate. This is the latest nonpartisan exogenous election presenting Yakima voters with a choice between or among Latino and non-Latino candidates.

6. I am being compensated at a rate of \$300 an hour for my work on this Report.

THE YAKIMA CITY COUNCIL ELECTION SYSTEM

7. The Yakima City Council consists of seven members, all of whom are elected to four-year terms in nonpartisan at-large elections. The system is not, however, a “pure at-large” system in which all candidates would compete together, at one time, for all of the council seats. Voters in pure at-large elections are allowed to cast as many votes as there are seats, but only one of their votes may be cast for any particular candidate. The seats are awarded to a number of candidates equal to the number of seats based on a plurality rule, i.e., the top N vote recipients win the N seats.

¹ The Supreme Court in Thornburg v. Gingles relied on a data base that examined the last three elections involving a choice between or among African American and non-African American candidates in the multi-member districts at issue. See 478 U.S. 30, 80 (1986) (Appendix A to opinion

8. Council members in Yakima are elected under a different type of at-large system. It is known as a place or post system with, in effect, a majority vote rule. Every seat or place on the council is elected separately. Candidates for the council file for one of the particular places and compete only with the other candidates that file for that same place. If there are more than two candidates for a particular place, all of them compete in a Top-Two primary election in which each voter may cast only one vote. The top two finishers in this primary then contest the at-large general election, in which each voter again may cast only one vote. If only two candidates file for one of the places, they compete in an at-large general election. While write-in votes are recorded in the general elections, only the top-two candidates, or the only two candidates, have their names on the general election ballot, resulting in this arrangement in effect requiring a candidate to receive a majority of the votes citywide to gain election to the council.²

9. Four of the places on the city council, identified as Districts 1, 2, 3, and 4, have a geographical residency district applied to them. These residency districts are mutually exclusive geographical areas that cover the entire city. All of the candidates for such a seat must reside in the geographical district for that place, and in a primary election only voters residing in the district may vote. In the subsequent general election, however, all voters in the city may vote. The other three seats on the council are identified as Positions 5, 6, and 7. Any person residing in the city, if otherwise qualified, may be a candidate for one of these seats. Both primary and general elections for these seats are held at-large, with every voter in the city allowed to cast a vote.

of Brennan, J.) The last election, prior to 2009, in which voters in Yakima were presented with a choice between or among Latino and non-Latino candidates for the city council was in 1999.

² In none of the elections analyzed for this Report did the number of write-in votes result in a candidate winning a council seat by a plurality of the votes rather than a majority of them.

10. As a result of this place system used in Yakima's at-large elections, any candidate, in order to win a seat on the council, whether or not a residency district is assigned to it, must in effect win a majority of the votes cast in a city-wide general election. This system is widely recognized as enhancing the potential dilutive effect on minority voters of an at-large system.³ In a pure at-large system every voter has a number of votes equal to the number of seats being filled, and can cast one vote apiece for as many candidates as there are seats. Under this arrangement, members of a minority group may employ a "single shot" voting strategy to increase the opportunity for their candidate of choice to finish among the top N candidates and win a seat. Single shot voting entails group members casting one vote, if they wish, for the candidate favored by the group, and not casting any of their remaining votes for any other candidate. By withholding their remaining votes from the candidates competing with their preferred choice, their candidate of choice has a better opportunity to finish among the top N candidates and win one of the N seats. The place system in Yakima reduces the number of candidates that can win to one in every place, thereby precluding this strategy.

11. In addition, the fact that no more than two candidates may have their name on a general election ballot results, as discussed above, in the at-large system having, in effect, a majority vote requirement to win a seat on the council. This also impedes the opportunity for minority voters to elect a candidate of their choice when voting in a jurisdiction is racially polarized, as it is in Yakima city council elections, as documented below.

³ See, e.g., *Fabela v. City of Farmers Branch, TX* (2012 U.S. Dist. LEXIS 108086, at 59-60, N.D. TX 2012, August 2, 2012), and also Richard L. Engstrom and Michael D. McDonald, "'Enhancing' Factors in At-Large Plurality and Majority Systems: A Reconsideration," *Electoral Studies* 12 (December 1993), 385-401.

DATA AND METHODS

12. The data used in the analyses of the candidate preferences of Latino and non-Latino voters are the number of votes cast for each of the candidates, or cast for Yes or No on Proposition 1, in each of the precincts in these elections, and the total number of people, and the total number with Spanish surnames, who cast ballots in the respective elections in each of the precincts. The data identifying the votes for the candidates are taken from the Yakima County Elections Department website. The data that identify by name those who cast ballots in these elections have been provided by the Yakima County Elections Department.

13. William Cooper identified, by precinct, the number of persons casting ballots and the number of such people with Spanish surnames, and provided that information to me. Mr. Cooper will explain how the matching was performed in the report he will provide in this case. In the analyses below those with Spanish surnames are considered Latino voters, and those without Spanish surnames are considered non-Latino voters. This method of identifying the relative presence of Latinos among those voting in each of the precincts in the elections, expressed as a percentage of those casting ballots, is much preferred over relying on Spanish surnames among registered voters, on the census counts of Latino self-identifiers among the voting age population, or on the citizen voting age population, because it provides a more accurate record of the relative group composition of the voters in each precinct.⁴

14. The estimates of the extent to which the candidate preferences of the Latino

⁴ The percentages of the returned ballots on which votes were cast in the particular elections analyzed are as follows: 97.6 percent for Position 5 and 97.5 percent for Position 7 in the 2009 primary, 96.8 percent for Position 5 and 95.2 for Position 7 in the 2009 general election, 80.8 percent for residency

voters differed from those of the non-Latino voters in the elections analyzed have been derived through Gary King's Ecological Inference (EI) procedure, accessible through R software. This version not only provides a specific, or point, estimate of a group's support for a particular candidate, but also confidence intervals for that estimate. This interval identifies the range of estimates within which we can be 95 percent confident, statistically, that the true value of a group's support for a candidate falls. The point estimate is the best estimate, in that it is the value most likely to be the true value, and estimates within the range of a confidence interval are less likely to be the true value the further they are from the point estimate.⁵

RESULTS

15. The analyses of the elections show that the candidate preferences of the Latino and non-Latino voters were divided in all of these candidate elections involving a choice between or among Latino and non-Latino candidates, and in the vote on Proposition 1 as well. The EI estimates reveal that the Latino voters preferred the Latino candidate in each of these elections, and preferred passage of the proposition, and that the non-Latino voters preferred a non-Latino candidate in each instance, and were opposed to the proposition. The lack of non-Latino support for the Latino candidates functioned in

District 2 and 99.1 percent for Proposition 1 in the 2011 primary, and 76.8 percent for Supreme Court in the 2012 primary.

⁵ EI is now widely recognized as a superior estimation procedure for this purpose than ecological regression or homogeneous precinct analyses, which had been relied upon for this purpose by the United States Supreme Court in 1986 in Thornburg v. Gingles (478 U.S. 30, at 52-53). EI was developed subsequent to that case for the explicit purpose of improving these estimates. According to D. Stephen Voss, EI "is unparalleled when applied to the actual sort of data needed for analyzing important social issues such as racial voting patterns." "Using Ecological Inference for Contextual Research," in Gary King, Ori Rosen, and Martin Tanner (eds.), *Ecological Inference: New Methodological Strategies* (Cambridge University Press, 2004), at 93. EI is the subject of Gary King's book, A Solution to the Ecological Inference Problem: Reconstructing Individual Behavior from Aggregate Data (Princeton University Press, 1997).

every instance as a veto over the election of the Latino candidates in Yakima (although Mr. Gonzales was elected in the statewide vote to the Supreme Court seat, he lost the vote in Yakima) and non-Latino voters likewise vetoed the proposition.

16. The specific results of the analyses of these elections are reported in the Table at the end of this Report. Reported in this table are the estimates derived through the EI analyses of the levels of support for the Latino candidates among Latino voters and among non-Latino voters in each candidate election, and the estimated level of support by both groups for Proposition 1. Identified in the left column of the Table are the offices at issue in the candidate elections, the surname of the Latino candidates in those elections, and whether the vote was held during a primary or general election. For the proposition, the Yes vote replaces a candidate name. The second and third columns contain the point estimates and confidence interval for the Latino and non-Latino votes respectively. The best estimates of the voting choices of each group, the point estimates, are reported in the text below.

At-Large Position 5, 2009

17. Three candidates competed for the Position 5 seat on the council in the 2009 election. These were Sonia Rodriguez, a Latina who was serving in that position on the council by appointment, and Sharon Madson and Dave Ettl, both non-Latinos. This election began with a Top-Two primary because there were more than two candidates. Mr. Ettl and Ms. Rodriguez finished first and second and advanced to the general election, having received 47.5 percent and 38.2 percent of the votes respectively.

18. The EI analysis reveals that Ms. Rodriguez was the candidate of choice of the Latino voters in this primary, receiving an estimated 52.9 percent of their votes. She was not the choice of the non-Latino voters, however, receiving only 37.3 percent of their votes.⁶

19. The vote in the general election continued to show group differences in support for Ms. Rodriguez. This was a head-to-head contest with Mr. Ettl, and Ms. Rodriguez's vote among the Latino voters is estimated to have been 92.8 percent, compared to 42.6 percent among non-Latino voters. Despite her strong Latino support, she did not retain her seat, receiving 47.8 percent of the total vote.

At-Large Position 7, 2009

20. A second Latino, Benjamin A. Soria, sought one of two other positions on the council up for election in 2009, Position 7. Three non-Latino candidates also competed for this position, Mitchell Smith, Bill Lover, and T.J. Davis. This election also involved a Top-Two primary given that there were four candidates in the race.

21. Mr. Soria, like Ms. Rodriguez, finished second in the primary, with 31.8 percent of the votes. Mr. Lover led the field with 54.4 percent. Mr. Soria was the candidate of choice of the Latino voters, receiving an estimated 59.5 percent of their votes, but he was not the choice of the non-Latino voters, receiving an estimated 31.0 percent of their votes.⁷

22. In the general election Mr. Soria received an estimated 92.7 percent of the Latino vote, only 0.1 percentage points below that estimated for Ms. Rodriguez. His

⁶ The choice of the non-Latino voters in this primary was Mr. Ettl, who received an estimated 49.4 percent of their votes. The confidence interval for this estimate is 46.3 to 51.5.

⁷ The choice of the non-Latino voters in this primary was Mr. Lover, who received an estimated 56.5 percent of their votes. The confidence interval for this estimate is 54.7 to 58.3.

support from non-Latino voters, however, is estimated to have been only 30.5 percent. This left him with 35.0 percent of the total vote and he therefore also lost.

23. In summary, Latino candidates contested two of the three at-large positions on the city council in 2009, and despite both receiving a Latino vote estimated to exceed 90 percent in the decisive election, the general election, both were defeated.

At-Large District 2, 2011

24. In the next council election, that in 2011, the four seats on the council for which primaries are conducted in residency districts were subject to election. Only one of these districts, however, required a primary. This was District 2, in which three candidates competed. One was a Latino, Rogelio Montes, and the other two, Rich Marcley and Sara Bristol, were non-Latinos. This three-candidate field necessitated a Top-Two primary, in which all candidates had to reside in the district and only voters residing in the district could participate.

25. The EI analysis of this primary reveals that Mr. Montes was the choice of the Latinos voters in it, receiving an estimated 53.5 percent of their votes. He was not the choice of the non-Latino voters, however, receiving an estimated 13.4 percent of their votes. Mr. Montes therefore was defeated at this stage in the election, receiving 16.8 percent of the total vote.

Proposition 1, 2011

26. Proposition 1, a proposal to amend the city charter of Yakima to change the council election system to seven single-member districts, was also on the 2011 primary ballot.⁸ Latino voters strongly supported this proposition, with an estimated 98.2 percent

⁸ The description of Proposition 1 on the ballot stated:

of them voting for it. Non-Latino voters, however, did not support it, as only an estimated 38.4 percent of them voted for it. The proposition was therefore defeated by a vote of 58.5 to 41.5 percent.

Supreme Court Position 8, 2012

27. In the 2012 statewide primary election in Washington a seat on the state Supreme Court, Position 8, was up for election. This was a nonpartisan election that drew two candidates, one a Latino, Steve Gonzalez, who was serving in this seat by appointment, and the other, Bruce O. Danielson, a non-Latino. This is the most recent nonpartisan exogenous election in which all of the voters in Yakima were presented with a choice between or among Latino and non-Latino candidates on the ballot.⁹ Neither candidate was a resident of Yakima, nor even of an area close to Yakima.

28. The vote within the entire City of Yakima in this election has been analyzed to assess whether Latinos and non-Latinos in Yakima were again divided in their support for a Latino candidate in a nonpartisan election, as city council elections are conducted. The EI analysis reveals that it was. The estimated support for Mr. Gonzalez among Latino voters in Yakima is 63.2 percent, while his support among the non-Latino voters is

Adoption of amendment to the Charter of Yakima to abandon and abolish the current districting for the election of city council members and to create seven districts for election of council members within the City of Yakima, and to make further ancillary and corrective measures thereto.

The proposition would also establish a temporary redistricting commission, limit council members to ten consecutive years on the council, and specify that in the election of 2011 council members elected from even-numbered districts would be elected to two-year terms and thereafter to four-year terms. See www.yakimacounty.us/vote/PRIMARY%20web.pdf.

⁹ I am not aware of another exogenous election of this nature occurring within at least the past 10 years.

36.9 percent. Although Mr. Gonzalez retained the seat in the statewide vote, he was beaten by Mr. Danielson in Yakima. He won only 39.0 percent of the vote in the city.

29. The confidence intervals reported in the Table are narrower for the estimates of the non-Latino voter behavior than that of Latinos. This is to be expected given the differences in the relative presence of Latinos and non-Latinos across the precincts in Yakima. The percentage of all of the ballots returned that were returned by Latino voters in Yakima ranged from 2.9 to 10.4 in these elections, and the highest percentage of Latinos among those returning ballots in any of the precincts has ranged from 18.6 to 41.9 across the elections.

30. In contrast, in all but one of these elections over 65 percent of the precincts in Yakima have been “homogeneous” non-Latino precincts, defined as precincts in which 90 percent or more of the ballots returned were sent in by non-Latino voters. The exception was the primary election in residency District 2 in the 2011 primary, in which three of the seven precincts satisfied this criterion. Homogeneous non-Latino precincts accounted for from 79.6 percent to 81.6 percent of the votes in all of the citywide elections analyzed. (The figure for the District 2 primary was 48.2.) The application of the EI procedure relies on precinct-level data, and given the greater percentages of non-Latinos in the precincts, these data provide a more reliable, or “efficient,” estimate for non-Latino voters than the Latino voters, which is reflected in the confidence intervals.

31. The point estimates indicate that non-Latinos did not provide the Latino candidates in any of these elections, or favor Proposition 1, with a majority of their votes. Indeed, the *highest* point on any confidence interval for the non-Latino support for any Latino candidate, or Proposition 1, is below 50 percent. In contrast, the point estimate for

the Latino vote exceeds a simple majority for every Latino candidate, and for Proposition 1. And in the general election for city council in 2009 for Positions 5 and 7, Latinos are estimated to have cast 92.8 percent and 92.7 percent of their votes for the Latino candidates, while their vote on Proposition 1 in 2011 is estimated to have been 98.0 percent in favor. In these three decisive elections the *lowest* point on the confidence intervals are well above a majority, 72.2 percent, 74.1 percent, and 94.9 percent respectively.

CONCLUSION

32. The results of the analyses of voting in the city council elections in Yakima indicate that voting in those elections has been polarized between Latinos and non-Latinos. The Latino voters in all of these council elections preferred the Latino candidate. This preference was not shared by the non-Latino voters in any of these elections, who thereby vetoed the electoral choices of Latino voters. The vote on Proposition 1 was also polarized, as was that in the Supreme Court contest. Even when Latino voters cast over 90 percent of their votes for a Latino candidate, as in the decisive elections for Position 5 and Position 7 on the city council in 2009, and in support of Proposition 1 in 2011, their preferences are submerged and cancelled out by the non-Latino vote in the city.

33. Based on the analyses reported above, I conclude that Latinos have constituted a cohesive voting group in Yakima, and that the non-Latino majority has routinely voted sufficiently as a bloc to defeat those choices.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge. Executed on February 1, 2013 in Durham, NC.



Richard L. Engstrom

TABLE
Estimated Divisions in Vote

Point Estimate
(Confidence Interval)

Election

Percent of
Latino Voters

Percent of
Non-Latino Voters

At-Large Place 5, 2009

Rodriguez

Primary (v. 2 candidates)	52.9 (15.1 – 82.5)	37.3 (34.0 – 41.3)
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General	92.8 (72.2 – 99.2)	42.6 (38.0 – 46.9)
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At-Large Place 7, 2009

Soria

Primary (v. 3 candidates)	59.5 (16.5 – 83.8)	31.0 (27.8 – 35.1)
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General	92.7 (74.1 – 98.4)	30.5 (27.6 – 32.8)
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At-Large Dist. 2, 2011

Montes

Primary (v. 2 candidates)	53.5 (16.8 – 82.8)	13.4 (10.5 – 16.7)
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Yakima Proposition 1

Yes

Primary	98.2 (95.9 – 99.2)	38.4 (36.4 – 40.3)
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Sup Ct. Position 8, 2012

Gonzalez

Primary	63.2 (42.9 – 79.0)	36.9 (33.8 – 40.0)
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Exhibit N

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

Rogelio Montes and Mateo Arteaga

Plaintiffs,

v.

City of Yakima, et. al.

Defendants.

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CV- 12-3108-TOR

SUPPLEMENTAL REPORT
OF RICHARD L. ENGSTROM, Ph.D.

I declare the following:

1. My name is Richard L. Engstrom and I have submitted an initial Report and a Reply Report previously in this case.¹
2. Attorneys for the Plaintiffs in this matter have requested that I perform a racially polarized voting analyses of the August 2013 primary election for seats on the Yakima City Council in this Supplemental Report. This primary presented voters across Yakima with a choice between a Latino candidate and non-Latino candidates for two At-Large City Council positions, Position 5 and Position 7. The Latino candidate in both of these elections was defeated in the primary and did not advance to the November general election. The results of these analyses are provided in this Supplemental Report.
3. The attorneys have also requested that I comment on the election for Position

¹ On p. 2 of my initial Report I listed the cases in which I had testified as an expert witness either in deposition or at trial since 2008. Since that Report I have testified by deposition in *Romo v. Dezner* (Cir. Ct. for the 2nd Jud. Dist. in and for Leon County, FL, 2013).

1 on the Board of Directors for the Yakima School District No. 7, held last month. This election also presented voters with a choice of a Latino candidate and non-Latino candidate. School board elections have been referenced by the Defendants' experts, Peter Morrison and John Alford, in their Reports in this case. I replied to their discussions of these elections in my Reply Report (at 10-11), and add to that reply below.

CITY COUNCIL PRIMARIES, 2013

4. The analyses of the city council primaries have been conducted in the same manner as those for the elections examined in my initial Report (see pp. 6-7 of that Report).² The Latino candidate contesting Position 5 was Isidro (Sid) Reynaga, and the Latino candidate contesting Position 7 was Enrique Jevons. Both competed with two non-Latino candidates for the respective seats. The results of the analyses of these elections are reported in Table S1 attached to this report. Identified in the left column of the Table are the specific At-Large Positions at issue in the election, and the surname of the Latino candidates in these elections. The second and third columns contain the point estimates and values of the 95-percent confidence intervals for the Latino and non-Latino votes respectively. The best estimates of the voting choices of each group, the point estimates, are reported in the text below.

Position 5 At-large

5. Three candidates competed for the Position 5 seat on the council in the 2013 election. These were Mr. Reynaga, Charles Noel, and Dave Ettl. Mr. Reynaga was the

² The percentages of the returned ballots on which votes were cast in the particular elections analyzed are 96.4 percent in the Position 5 contest and 97.2 percent in the Position 7 contest.

choice of the Latino voters, receiving an estimated 67.4 percent of their votes.³ The estimate of his non-Latino support however was only 15.3, and he finished last among the Position 5 candidates listed on the ballot, receiving only 19.4 percent of the total votes cast for that position. The candidate preferred by Latino voters therefore was eliminated from the competition for Position 5 at the primary stage of the election.

Position 7 At-Large

6. Three candidates also competed for the Position 7 seat on the council in the 2013 election. These were Mr. Jevons along with non-Latino candidates Bill Lover and Carol Folsom-Hill. Mr. Jevons finished second among Latino voters in this primary, receiving an estimated 39.2 percent of their votes. Like Mr. Reynaga, he received only a small percentage of the non-Latino vote, an estimated 11.4 percent. He finished last among the Position 7 candidates listed on the ballot, receiving only 13.3 percent of the total votes. The leading vote recipient among the Latino voters was Ms. Folsom-Hill, who is estimated to have received 49.7 percent of their votes; the confidence interval around this estimate ranges from 32.0 percent to 65.4 percent. Her vote among the non-Latino voters is estimated to be 34.2 percent; the confidence interval around this estimate ranges from 32.0 percent to 36.5 percent.⁴

7. In my initial Report I concluded, based on the racially polarized voting found in the elections I analyzed, and the results of those elections, that the Latino voters' preferences for Latino candidates were being submerged and cancelled out in Yakima by

³ The analysis does not include the 75 write-in votes cast in this election, none of which were cast for any of the candidates listed on the ballot. The largest number of write-in votes, 24, were cast for "No Name"; the most received by any individual identified by a name were two.

⁴ As with the Position 5 contest, this analysis does not include the write-in votes. There were 55 such votes cast for the Position 7 seat, none of which were cast for any of the candidates listed on the

the more numerous non-Latino vote. The results of the election analyses reported in this supplement reinforce that conclusion.

SCHOOL BOARD ELECTIONS

8. In my Reply Report I noted that the last contested election between a Latino candidate and a non-Latino candidate for the Board of Directors of the Yakima School District No. 7 in which the Latino candidate won occurred in 2003. That candidate was Vickie Ybarra, who had been appointed to the seat she won prior to the election. I also noted that in both of the subsequent School Board elections in which a Latino candidate ran against a non-Latino candidate, the Latino candidates were defeated. Specifically, these elections occurred in 2005, when Jorge Torres Saenz was defeated, and in 2009, when Raymond Navarro was defeated. Both lost by wide margins; Mr. Saenz received 26.6 percent of the votes and Mr. Navarro, who like Ms. Ybarra had been appointed to the seat prior to the election, received 27.9 percent (Reply Report, at 11).

9. The next, and most recent, election presenting voters in the school district with a choice between a Latino and non-Latino candidate occurred in November of this year. The Latina was Graciela Villanueva, who also had been appointed to the seat, Position 1, prior to the election. Her opponent was Jeni Rice, who announced in September that she dropped out of the race, ceased campaigning for the position, and stopped submitting disclosure forms required of candidates by the state, but whose name remained on the ballot.⁵ Ms. Rice won 61.2 percent of the total votes while Ms.

ballot. Again, the largest number of write-in votes, 23, were cast for "No Name"; the most received by any individual identified by a name were again two.

⁵ Rafael Guerrero, "Candidate Who Says She Dropped Out of Race Wins School Board Seat," *Yakima Herald Republic*, November 6, 2013; Rafael Guerrero, "School Board Candidate Who Won Withdrew from Race Says She Plans to Serve," *Yakima Herald Republic*, November 7, 2013;

Villanueva garnered 38.0 percent. This became the third straight election, beginning in 2005, in which the Latino candidate was defeated by the non-Latino candidate for the Board.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge. Executed on December 17, 2013 in Durham, NC.

A handwritten signature in black ink, appearing to read 'Richard L. Engstrom', written over a horizontal line.

Richard L. Engstrom

Editorial, "Through Actions, Jeni Rice Shows She's Unfit to Hold School Board Post," *Yakima Herald Republic*, November 26, 2013.

TABLE S1
Estimated Divisions in Vote
City Council Primary 2013

Point Estimate
(Confidence Interval)

Election

Percent of
Latino Voters

Percent of
Non-Latino Voters

Position 5 At-Large

Reynaga

Primary
(v. 2 candidates)

67.4
(45.9 – 81.4)

15.3
(13.5 – 17.5)

Position 7 At-Large

Jevons

Primary
(v. 2 candidates)

39.2
(25.9 – 49.9)

11.4
(9.8 – 13.1)

Exhibit O

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

ROGELIO MONTES and MATEO
ARTEAGA,

Plaintiffs,

vs.

CITY OF YAKIMA, *et al*,

Defendants

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NO: 12-CV-3108-TOR

SUPPLEMENTAL REPORT OF JOHN ALFORD, Ph.D.

I have been retained as an expert by the City of Yakima, Washington. The details of my background and compensation are included in my original report in this case. An updated version of my CV is attached as Appendix A at the end of this report.

Yakima School Board 2013 General Election

Professor Engstrom's supplemental report discusses the 2013 Yakima School Board election. Table 1 below includes the Ecological Inference estimates for the 2013 Position 1 election for the Yakima School Board. Villanueva is estimated to have received about 70 percent support among Hispanic voters and about 35 percent support among non-Hispanic voters. The results are most similar to those included in my original report for the 2012 Supreme Court Position 8 contest, i.e., real, if modest, Hispanic cohesion accompanied by very substantial non-Hispanic crossover. The pattern of voter support for Villanueva is also scattered, with the Hispanic proportion of the actual voters being well below 10 percent in three of the four precincts that Villanueva carried.

TABLE 1

Position 1 School Board General	Percent of Voters* with Spanish Surnames Supporting Candidate	Percent of Voters* with Non- Spanish Surnames Supporting Candidate
Villanueva	70.1 (60.8 – 78.8)	35.2 (33.7 – 36.7)
Rice	30.0 (21.2 – 39.2)	64.8 (63.3 – 66.3)

Numbers in parentheses are 95% confidence intervals. *Voters are all voters casting a vote for one of the two candidates.

Yakima City Council August 2013 Primary

Ecological Inference (EI) results for the 2013 primary contests for Position 5 and Position 7 are presented in the table included in Professor Engstrom's supplemental report. These Ecological Inference estimates from his report are supplemented here with independent EI estimations for the same election contests and reported below in Table 2.

TABLE 2

Position 5 At-Large Primary	Percent of Voters* with Spanish Surnames Supporting Candidate	Percent of Voters* with Non- Spanish Surnames Supporting Candidate
Reynaga	53.3 (38.6 – 62.3)	16.9 (15.7 – 18.5)
Noel	34.0 (22.4 – 43.9)	20.7 (19.5 – 22.1)
Ettl	12.7 (5.4 – 20.5)	62.4 (61.1 – 63.6)

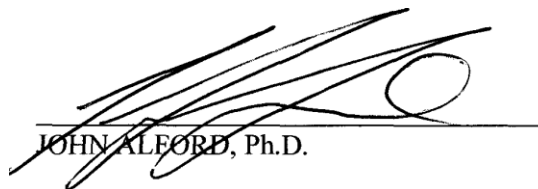
Numbers in parentheses are 95% confidence intervals. *Voters are all voters casting a vote for one of the three candidates.

Position 7 At-Large Primary	Percent of Voters* with Spanish Surnames Supporting Candidate	Percent of Voters* with Non- Spanish Surnames Supporting Candidate
Jevons	45.4 (33.3 – 58.7)	10.9 (9.7 – 12.0)
Lover	28.3 (22.2 – 37.4)	52.9 (51.7 – 54.0)
Folsom-Hill	26.4 (16.7 – 37.1)	36.2 (35.0 – 37.6)

Numbers in parentheses are 95% confidence intervals. *Voters are all voters casting a vote for one of the three candidates.

As is clear from Table 2 above, the results from this EI analysis are substantively very similar to those reported by Dr. Engstrom. Moreover, in both Position 5 and Position 7 the results clearly indicate a lack of cohesion among voters with Hispanic surnames. In both contests the estimates indicate that the Hispanic vote is essentially split 50/50 between the Hispanic candidate and the non-Hispanic candidates. This continues the pattern of weak to non-existent minority cohesion that was evident in the initial reports in the case that covered earlier elections. Specifically, in the previous analysis the estimated Hispanic vote for the Hispanic candidate in the primaries was 52% for Rodriguez in the 2009 Place 5 Primary, 59% for Soria in the 2009 Place 7 Primary, and 53% for Montes in the 2011 District 2 Primary.

In addition to the absence of cohesion, the Hispanic vote also continues to exhibit the same lack of numerosity and geographic concentration that was apparent in the earlier elections. Only 7 percent of the voters in the 2013 primary were Hispanic. Again as in the previous elections, there is not a single precinct in the City where a majority of the voters are Hispanic. One precinct in 2013 approaches 40% Hispanic, but in every other precinct three-quarters or more of the voters were non-Hispanic. Reynaga and Jevons both fail to reach a majority of the vote in even a single precinct. In the three-way contest for Position 5, Reynaga's share of the vote exceeds 33 percent in only two precincts (46 percent in one and 36 percent in the other). Jevons' share of the vote in the three-way contest for Position 7 doesn't reach 33 percent in even one precinct, and in fact reaches only 25 percent in one precinct. The Gingles three-prong test is meant to establish that a group of voters is sufficiently numerous, geographically compact, and united in preference such that absent being submerged in an at-large electorate they would prevail in electing their candidates of choice. Here the election evidence indicates that, in my opinion, Hispanic voters in Yakima are so politically divided, so few in number, and so geographically dispersed their lack of election success cannot be simply attributed to the at large system of elections.



JOHN ALEFORD, Ph.D.

January 17, 2014

Exhibit P

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON**

**ROGELIO MONTES and MATEO
ARTEAGA,**

Plaintiffs,

vs.

CITY OF YAKIMA, *et al*,

Defendants

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NO: 12-CV-3108-TOR

REPORT OF JOHN ALFORD, Ph.D.

I have been retained as an expert by the city of Yakima, Washington. My rate of compensation is \$400 per hour. I am a tenured associate professor of political science at Rice University. At Rice, I have taught courses on redistricting, elections, political representation, voting behavior, and statistical methods at both the undergraduate and graduate level. Over the last twenty-five years, I have worked with numerous local governments on districting plans and on Voting Rights Act issues. I have previously provided expert reports and/or testified as an expert witness in voting rights and statistical issues in a variety of court cases, working for the U.S. Attorney in Houston, the Texas Attorney General, members of the U.S. Congress, and various cities and school districts. In the 2001 round of redistricting, I was retained as an expert to provide advice to the Texas Attorney General in his role as Chair of the Legislative Redistricting Board. I subsequently served as the expert for the State of Texas in the state and federal litigation involving the 2001 redistricting for U.S. Congress, the Texas Senate, the Texas House of

Representatives, and the Texas Board of Education, and my testimony was cited by the Court as helpful in their drawing of the US House district map for the 2002 elections. When that court-drawn map was replaced in 2003 with a legislative map (the so called Delay plan), I testified for a group of US House members that were successful in overturning parts of the new map. I am currently an expert for the State of Texas in the consolidated cases challenging the 2011 statewide redistricting. I have worked as an expert in redistricting and voting rights cases in New Mexico, Mississippi, Wisconsin, Florida, and Alabama. The details of my academic background, including all publications in the last ten years and work as an expert, including all cases in which I have testified by deposition or at trial in the last four years, are covered in the attached vita (Appendix B).

I have been retained as an expert to provide an analysis of the *Gingles* test (focusing primarily on prongs two and three) and the totality of circumstances as they apply to elections in the city of Yakima. In preparing this report I have relied on the expert reports and various data files relevant to the preparation of their reports provided in this case by Dr. Richard Engstrom and Mr. William Cooper, data and materials available on the website of the Yakima County Elections Department, and precinct level computations of the proportion of voters with Spanish surnames calculated by Dr. Peter Morrison and by William Cooper.

***Gingles* Two and Three**

Ecological Inference (EI) results for seven elections from 2009 to 2012 are presented in the table included with Professor Engstrom's report. The Ecological

Inference estimates from his report are reprinted here in Table 1 below. In addition, Dr. Engstrom's EI results are supplemented with an independent replication of the same EI estimations using the same data provided by the plaintiffs. Two other techniques commonly used in VRA lawsuits to assess voter cohesion and polarization – homogeneous precinct analysis and ecological regression (ER) – are also provided for comparison.

A. Homogeneous Precinct Analysis

Homogeneous precinct analysis, also referred to as extreme precinct analysis, is the simplest technique used to assess voting patterns. Precincts are selected that all share very high levels of minority voters (typically 90% or above) and the voting results for the minority candidate in the election are compared to precincts selected on the basis of very low minority percentages (typically 10% or less). This allows a comparison the patterns of support for a minority candidate between a set of homogeneously minority voting precincts and a set of homogeneously non-minority voting precincts.

In this case we can use this technique to assess non-Hispanic voting behavior, as in more than half of all the voting precincts less than 10% of the voters casting ballots have Spanish surnames. Unfortunately, we cannot do the same for Hispanic voters. In no precinct in any of the elections covered here do 90% or more of the voters have Spanish surnames. In fact not a single precinct even reaches 50% Spanish surname voters (and only one precinct exceeds 30%). This is unusual and problematic. It is problematic because it reduces our ability to accurately assess the cohesion of Hispanic voters. It is also unusual given that the plaintiffs' claim to be able to draw two districts that will be Hispanic majority districts. In both versions of District 1 in Mr. Cooper's

report precincts 101 and 104 are mostly contained within District 1, and together account for the majority of the geography of the district. In these precincts the percentage of Spanish surname voters in the 2009 Rodriguez general election contest was 20.1% and 15.3% respectively. Similarly, in both versions of District 2 in Mr. Cooper's report precincts 120 and 126 are mostly contained within District 2, and together account for the majority of the geography of district. In these precincts the percentage of Spanish surname voters in the 2009 Rodriguez general election contest was 26.4% and 30.3% respectively.

Mr. Cooper reports that the 2010 Census for Yakima indicates that Hispanics comprise 41.3% of the population of Yakima, and that this Hispanic population is concentrated primarily in eastern Yakima, where Mr. Cooper locates his two demonstration districts. The fact that not a single precinct in Yakima turns out a Hispanic majority of voters in an actual election seems very unlikely, given the numerousness and concentration that the overall population levels and geographic concentration would suggest. The explanation for this disconnect can be found in two sources. The Hispanic population is younger and much less likely to be citizens in comparison to the non-Hispanic population. This alone reduces the Hispanic concentration from over 40 percent of the total population to only 21.6% of the adult citizen population. The Hispanic proportion of registered voters, at 18.5%, is close to what we would expect given the eligible population percent. It is principally the low levels of Hispanic turnout that reduce the share of actual voters to levels typically below 7%.

B. Ecological Regression Analysis

Ecological regression analysis is the other technique commonly used in VRA lawsuits to assess voter cohesion and polarization. In a nutshell, regression is a mathematical technique for estimating the single best fitting straight line that could be drawn to describe the relationship between two variables in a scatter plot. Ecological regression is distinct from simple regression in the fact that it relies on a data set made up of precinct level aggregations of voters and election results, rather than a data set of individual voter characteristics and vote choices.

Applied to voting rights cases, the logic of regression analysis is to determine to what degree, if any, the vote for a candidate increases in a linear fashion as the concentration of voters of a given ethnicity in the precincts increases. The estimated coefficients for the intercept and for the slope form the estimated equation of the actual regression line, with the intercept defining the point at which the line crosses the vertical axis, and the slope indicating rise over run. More intuitively, the intercept tells us the predicted value of the dependent variable when the independent variable is equal to zero, or in this case the predicted share of the vote for the Hispanic candidate when the percent of actual voters that with Spanish surnames in a precinct is zero. Similarly, the slope tells us the predicted change in the dependent variable for a one unit change in the independent variable, or in this case the predicted change in the vote for the Hispanic candidate for a one percentage point change in the percent of the actual voters that have Spanish surnames in the precinct. By using the slope and the intercept we can compute an estimate for the vote for the Hispanic candidate when the percent of the voters in a precinct with Spanish surnames equals 100. This estimate is then an estimate of Hispanic

(or at least Spanish surname) voting cohesion for the candidate. Similar procedures can be used to access non-Spanish surname (our proxy for non-Hispanic) voting cohesion.

In addition to the estimates of Hispanic and non-Hispanic voting generated from the regression estimates for the slope and intercept, there is also a measure of the overall 'goodness of fit' for the regression line called the ' R^2 ' that is typically reported. The R^2 ranges from 0 to 1.0, and is generally used as a "goodness-of-fit" measure to describe how tightly the actual data points are clustered around the regression line. The can be interpreted as the proportion of variation in the dependent variable that is explained or accounted for by the independent variable. In this case, the proportion of the variation in the percentage of the votes cast for the Hispanic candidate that can be explained by variation in the percentage of voters in a precinct that have Spanish surnames. For example, an R^2 close to zero would indicate that the ethnicity of voters was not linearly related to variation support for the Hispanic candidate. Similarly, an R^2 closer to 1.0 would indicate that the ethnicity of voters was very closely related (linearly) to variation support for the Hispanic candidate. An R^2 of .50 would indicate that about half of the variation support for the Hispanic candidate could be accounted for by variations in the ethnicity of voters, and the remaining half could be attributed to other factors impacting vote choice.

C. Ecological Inference Analysis

Dr. Engstrom relies on the most recent methodology for the analysis of ecological data - Gary King's Ecological Inference (EI) procedure. This approach utilizes a combination of a method of bounds analysis, combined with a more traditional statistical method, to improve on standard ecological regression. While the details are

mathematically complex, the differences mostly center on utilizing bounds information contained in individual precinct results that would not be exploited in ecological regression, and by not imposing a linear constraint on the pattern across precincts.

D. Election Analysis Results

As is clear from Table 1 below, the results from each of the three analytical methods are substantively very similar. For the seven election contests the average estimate of non-Hispanic support for the Hispanic candidate (or ‘yes’ vote on Proposition 1 in 2011) is 34.8% based on the homogeneous precinct method, 33.3% based on the EI method (32.9 Engstrom EI), and 32.5% based on the ER method. Turning to Hispanic cohesion we have only the estimates from the EI and ER analysis (due to the lack of homogenously Hispanic precincts). Again, the results from each of these analytical methods are substantively very similar. For the seven election contests the average estimate of Hispanic support for the Hispanic candidate (or ‘yes’ vote on Proposition 1 in 2011) is 70.9% based on the EI method (73.3 Engstrom EI), and 75.0% based on the ER method.

The fact that the replication of the EI analysis reported here does not exactly match the estimates reported by Dr. Engstrom may seem unusual, but this is actually what we would expect. EI utilizes a repeated series of simulations to converge on a resulting estimate, and as such will produce modestly different results each time it is run, even on exactly the same data set. In this case, running EI repeatedly for the 2009 Rodriguez primary contest, and using a limit of 100 simulations (as does Dr. Engstrom), produced estimates of Hispanic vote for Rodriguez that vary from 49.1 percent to 54.5 percent (these results, along with the EI output that is summarized in Table 1 below, are

included in the attached Appendix A). To reduce this inherent instability of the estimates, the replications reported here for EI are based on 1000 simulations, an increase that should produce an approximate doubling in the stability of the estimates.

In general terms the results in Table 1 suggest a mixed pattern. The range of values for the R^2 indicate that the influence of the ethnicity of voters on their vote choice is both highly variable (ranging from only 4% to 54%) and typically not very strong (the average for the seven elections is 27% and only in the two 2011 primary contests (one in a district that includes only 7 of the 33 precincts in Yakima and the other involving a proposition and not an actual minority candidate) does the R^2 inch above 50%. In the five city wide contests that included a Hispanic candidate the average R^2 is only 16.4%. Substantively, this means only 16.4% of variance in support for the Hispanic candidate across precincts can be accounted for by corresponding variation in the percentage of votes with Spanish surnames in those precincts.

The same mixed pattern is evident for Hispanic cohesion. Two of the Hispanic candidates (Rodriguez and Soria in the 2009 general election) have the cohesive support of Hispanic voters, but in the other contests, including the primary contests for both Rodriguez and Soria in 2009, Hispanic voter cohesion is very weak (a 50%/50% split is the lowest possible value for cohesion in this analysis – indicating that a Spanish surnamed voters is equally likely to support the Hispanic candidate or not). This lack of consistent cohesive political support is also evident in the low levels of turnout among Hispanic registered voters even in contests that feature Hispanic candidates. While Hispanics make up more 41 percent of the population of Yakima, they make up only 22 percent of the adult citizens, a proportion very close to the 18 percent of the registered

votes in Yakima that have Spanish surnames, and yet they are typically less than 7 percent of the actual voters in the elections analyzed here. In an election like the 2009 in which Rodriguez is a candidate for place 5, this low level of Hispanic turnout was critical. Based on the EI estimates of cohesion, Rodriguez would have won the election if Hispanic voters made up 16 percent of the actual voters, a level comparable to their share of the registered voters.

The estimates for non-Hispanic voting behavior are much more consistent across elections. In all five of the citywide elections with Hispanic candidates, non-Hispanic crossover voting for Hispanic candidates is substantial – ranging from the low thirty percent to the low 40 percent range. The average estimated Anglo crossover for these five elections is 38.1 percent based on the homogeneous precinct method and 36.1 percent based on the EI method (35.7 percent Engstrom EI).

Table 1: Estimates for Elections Included in Prof. Engstrom's Report

	Percent Voting for the Hispanic Candidate		R ²
	Spanish Surname Voters	Non-Spanish Surname Voters	
Place 5 2009 Primary (Rodriguez)			
Homogeneous Precinct Analysis	NA	38.1	.04
EI	52.4	37.7	
Weighted ER	57.0	37.0	
Engstrom's EI	52.9	37.3	
Place 5 2009 General (Rodriguez)			
Homogeneous Precinct Analysis	NA	47.3	.16
EI	86.7	43.4	
Weighted ER	82.0	45.5	
Engstrom's EI	92.8	42.6	
Place 7 2009 Primary (Soria)			
Homogeneous Precinct Analysis	NA	31.7	.20
EI	59.0	31.1	
Weighted ER	64.3	29.7	
Engstrom's EI	59.5	31.0	
Place 7 2009 General (Soria)			
Homogeneous Precinct Analysis	NA	34.3	.37
EI	85.4	31.2	
Weighted ER	84.5	31.6	
Engstrom's EI	92.7	30.5	
District 2 2011 Primary (Montes)			
Homogeneous Precinct Analysis	NA	13.6	.54
EI	52.8	13.5	
Weighted ER	72.1	10.7	
Engstrom's EI	53.5	13.4	
Proposition 1 2011 Primary			
Homogeneous Precinct Analysis	NA	39.3	.53
EI	92.7	39.1	
Weighted ER	100.0	36.2	
Engstrom's EI	98.2	38.4	
Sup. Ct. Pos. 8 2012 Primary (Gonzalez)			
Homogeneous Precinct Analysis	NA	39.1	.05
EI	67.4	37.2	
Weighted ER	65.4	36.9	
Engstrom's EI	63.2	36.9	

While the analysis reported above provides useful detail, a similar overall picture can be derived by simply looking at the scatterplots provided below in Figures 1 through 7 for each of the elections. A visual inspection of the scatterplots tells the same story as the statistical analysis reported above in Table 1. The plot for Rodriguez in the 2009 primary (Figure 1), for example, clearly shows that support at the polls for Rodriguez is not simply a function of strongly polarized voting patterns. Instead of clustering tightly around a 45 degree line sloping up from the origin at (0,0) (0% Spanish surname voters, and 0% vote for Rodriguez) to the upper right corner at (100,100) (100% Spanish surname voters, and 100% vote for Rodriguez), which would indicate a strong relationship between the two variables, the actual precinct data points are shifted up (indicating substantial support for Rodriguez in precincts with few Hispanics) and scattered almost randomly (indicating that this level of support is only weakly connected to the percent of Spanish surname voters in the precinct).

The only scatterplot that comes anywhere close to a classic pattern of polarization is Figure 6 for the 2011 District 2 primary. The results are limited, as there are only 7 precincts in the primary, but the points are all closer to a 45 degree line and more tightly clustered than they are for any of the other candidates. This tighter clustering is reflected in the relatively high R^2 of .54, and the position of the points nearer a 45 degree line is reflected in the relatively low 10.7 intercept. These low levels of non-Hispanic voter support for the Hispanic candidate in precincts with few Hispanic voters is hardly typical. In fact, it is not evident in any other contest. Montes gets less than 20 percent of the vote in five of the seven precincts in the 2011 election. In all of the other contests combined

there is only one precinct (with only eleven voters in the 2009 general election) where less than 20 percent of the vote goes to the Hispanic candidate.

Figure 1: 2009 Place 5 - Primary Election

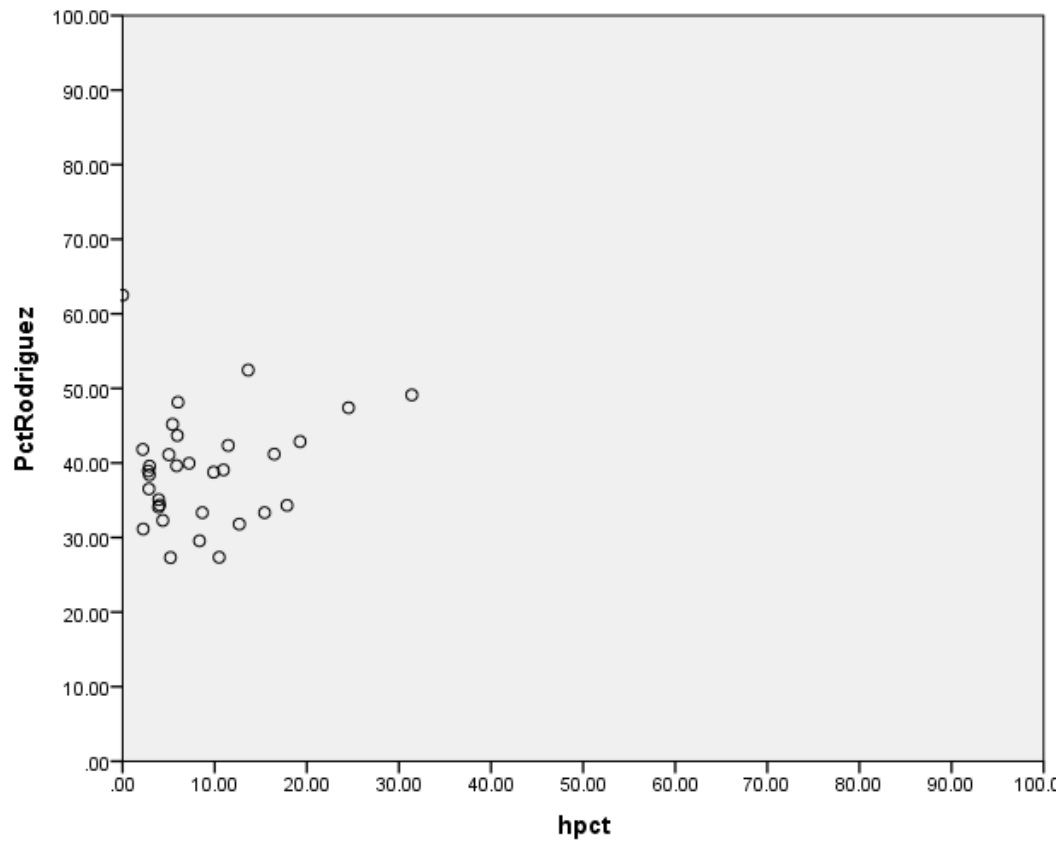


Figure 2: 2009 Place 5 - General Election

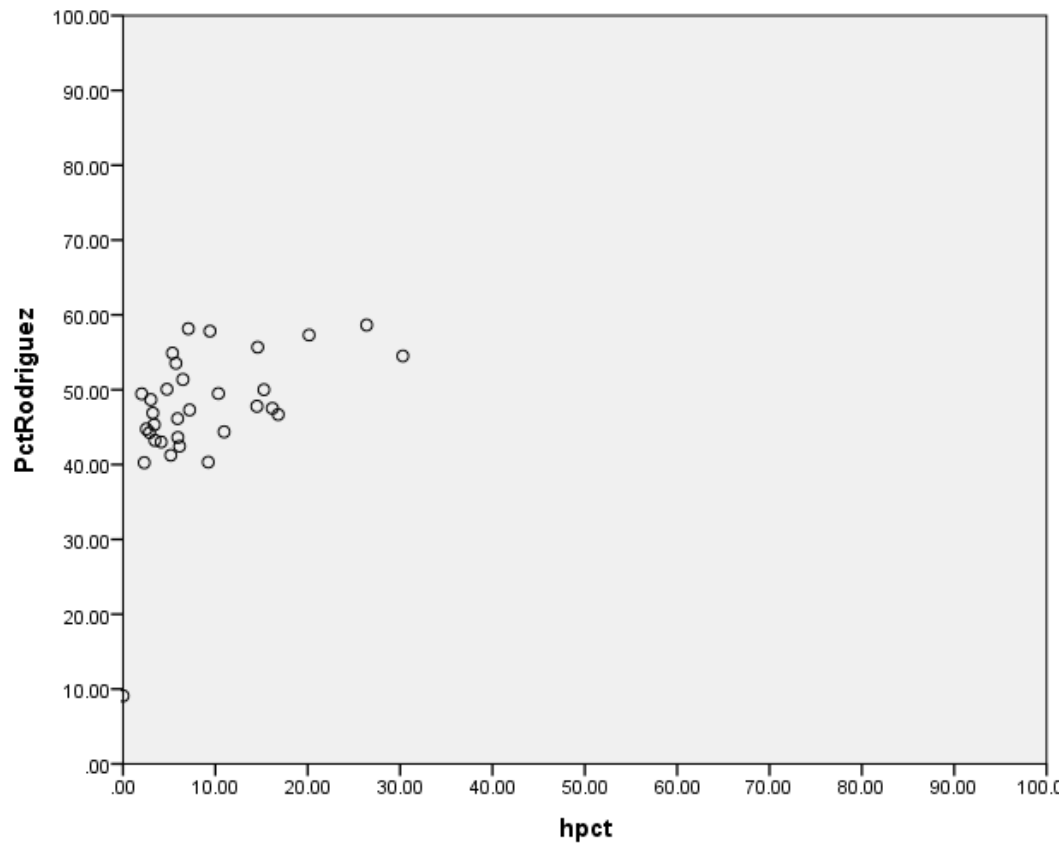


Figure 3: 2009 Place 7 - Primary Election

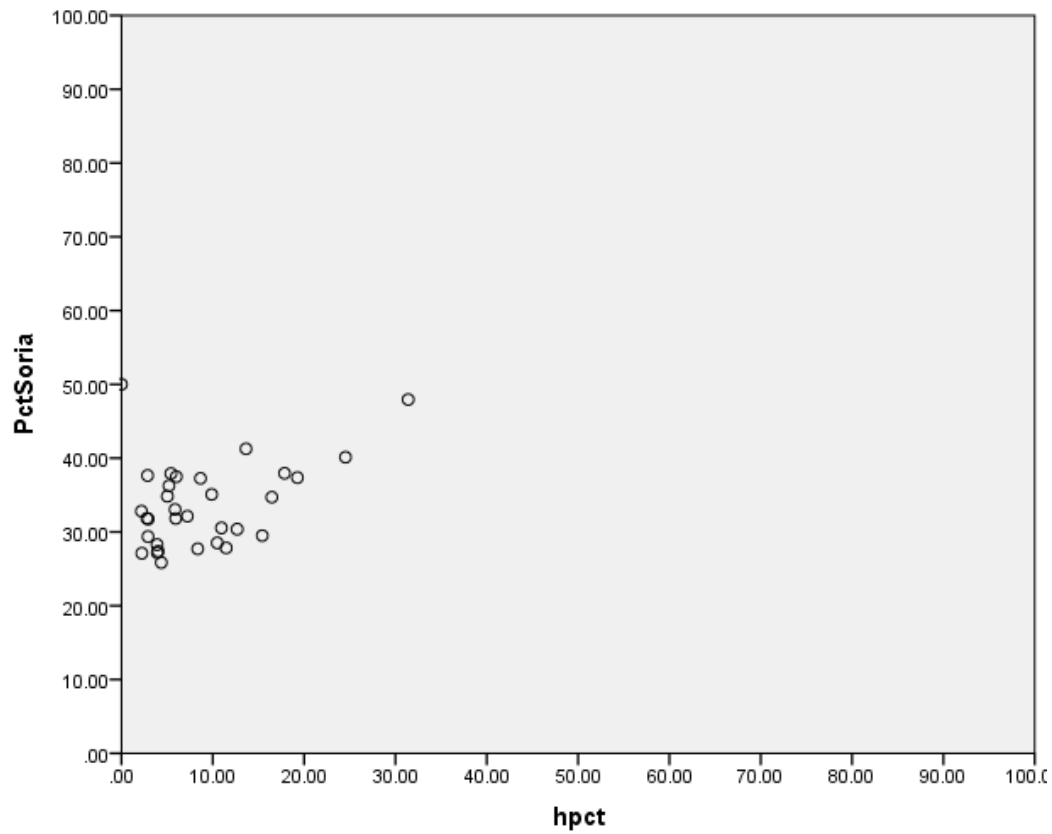


Figure 4: 2009 Place 7 - General Election

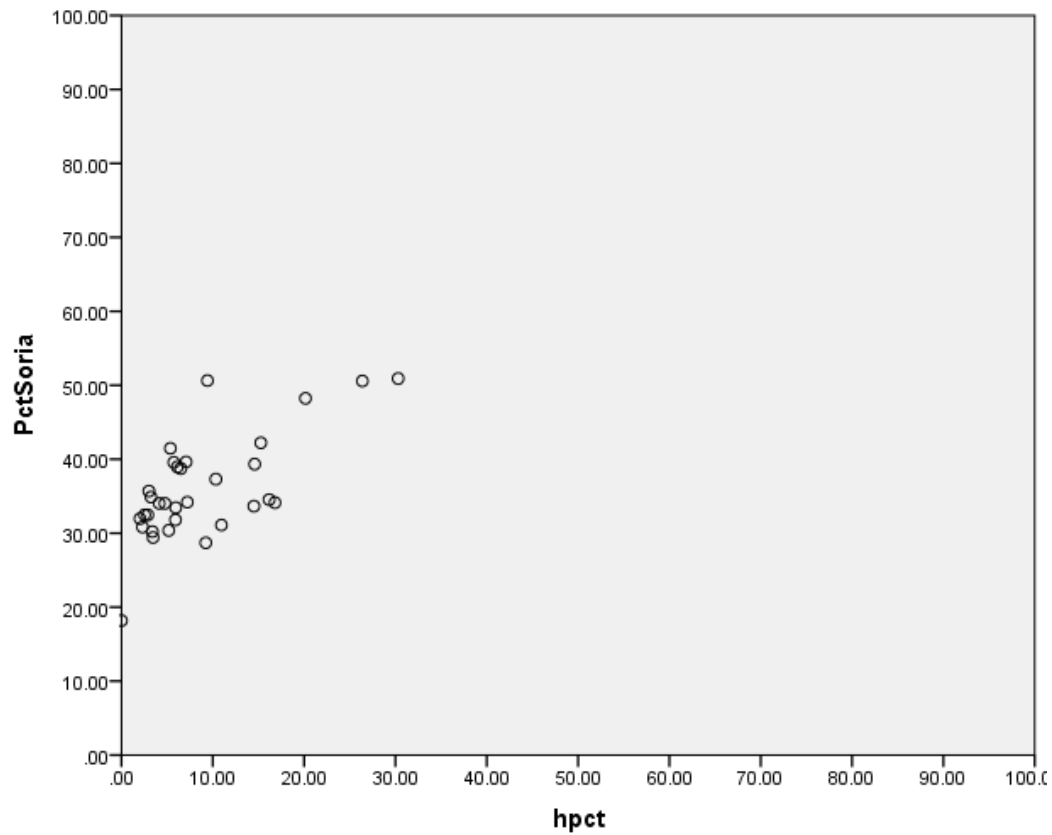


Figure 5: 2011 District 2 - Primary Election

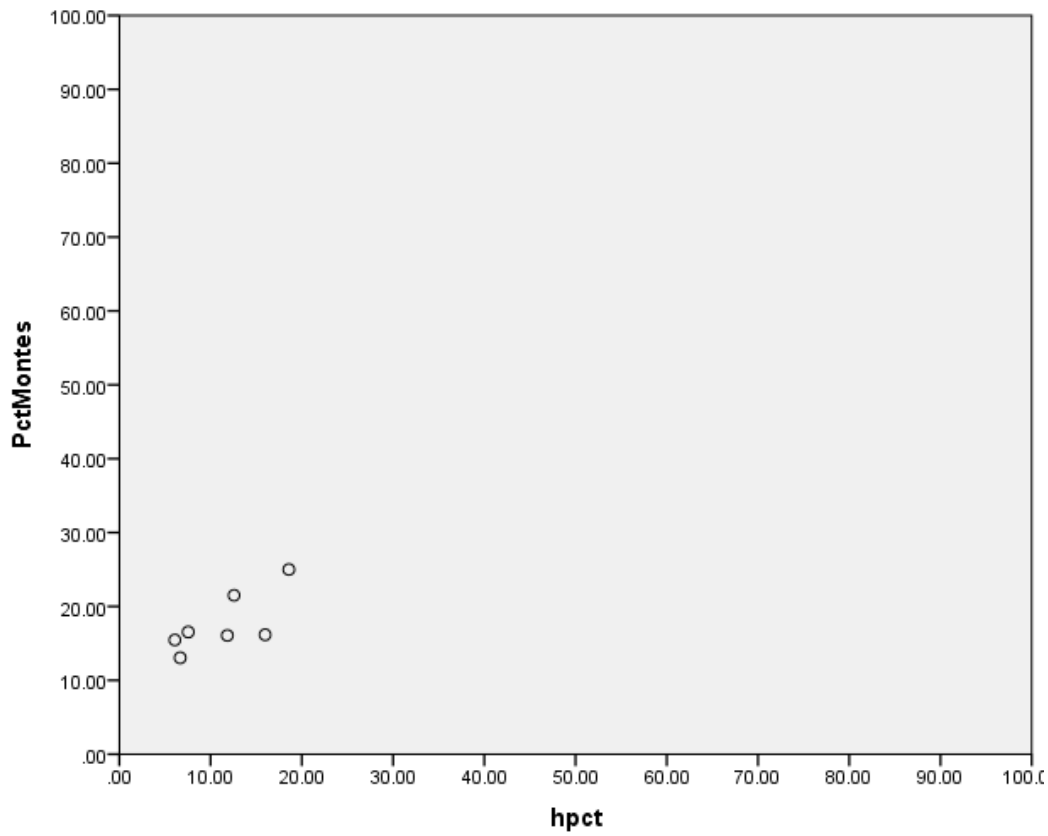


Figure 6: 2011 Proposition 1 - Primary Election

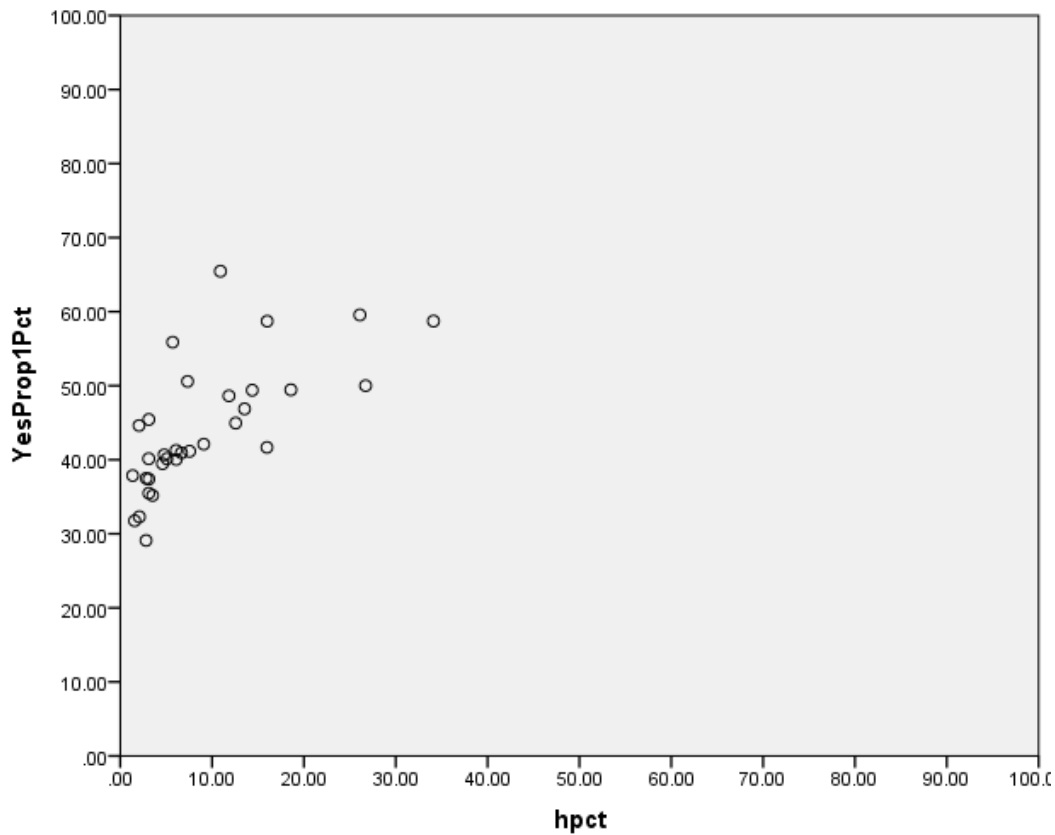
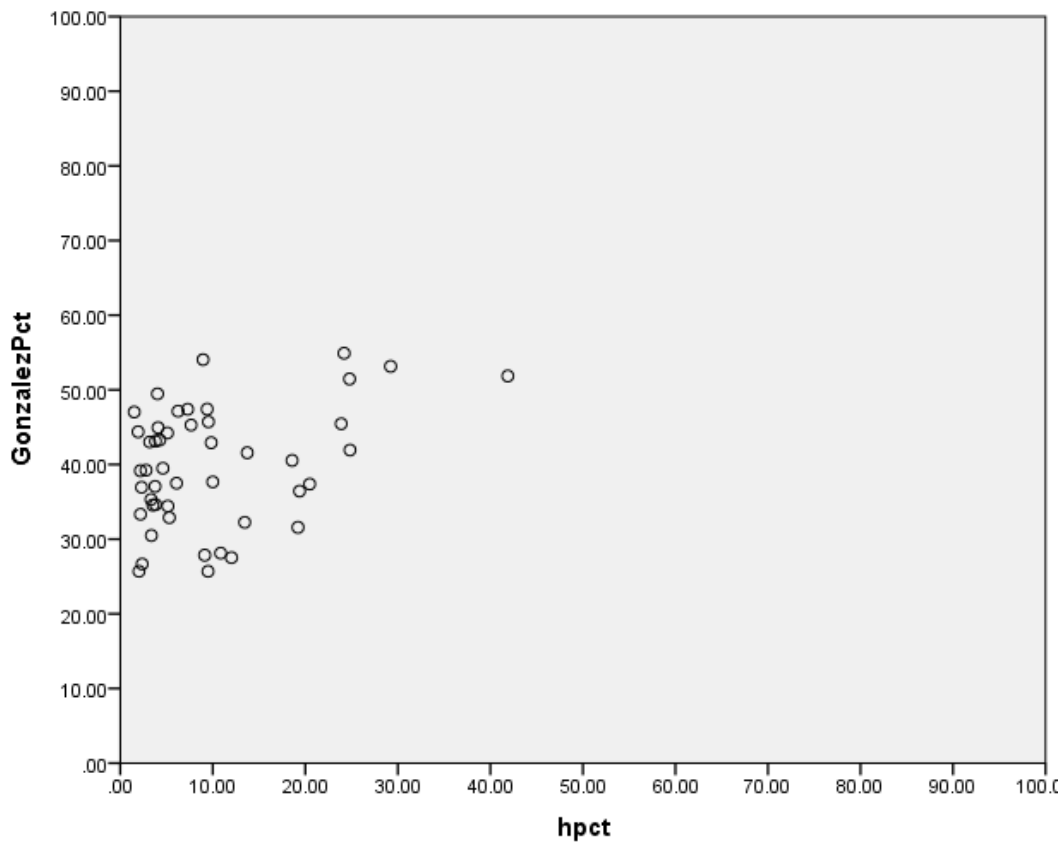
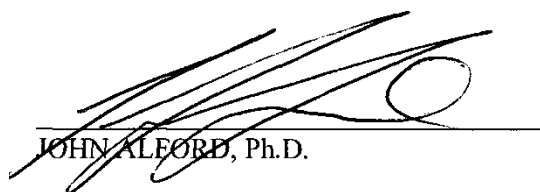


Figure 7: 2012 Supreme Ct. Position 8 - Primary Election



The elections for the Yakima school board are also instructive, as they are also non-partisan elections and cover a very similar geography. During most of the last decade there has been at least one Hispanic board member. Several of these Hispanic board members have run unopposed (a situation that would not be expected if the Anglo electorate was a politically cohesive force working to block Hispanic representation), but there are three contested elections with Hispanic candidates. In one of those contested elections the Hispanic candidate, Ybarra, wins the election. In another the Hispanic candidate, Saenz, loses without much apparent support from either Hispanics or non-Hispanic. In the third contest the results appear to be more similar to the Soria 2009 general election reported above. Like the City Council contests, the school board contests do not demonstrate consistent polarized voting in Yakima.

Taken as a whole, the election analysis does not show evidence of a consistent pattern of polarized voting. Hispanic voters are not consistently cohesive, as evident in both the highly variable levels of cohesion among Hispanics and the low level of participation among registered Hispanic voters (typically less than seven percent of those casting a ballot). Anglo crossover in support of Hispanic candidates, in the low 30 to low 40 percent range, is substantial, much less variable, and is not consistent with polarized Anglo bloc voting.



JOHN ALEFORD, Ph.D.

March 22, 2013

APPENDIX A

EI Results

2009 Primary Place 5

Model: ei.RxC

Number of simulations: 1000

Expected Values: $E(Y|X)$

	Observation PctRodrig_09_pri_place5	
	hpct	NOThpct
mean	0.5240036	0.37707919
sd	0.1663248	0.02219829
2.5%	0.1470338	0.33803792
97.5%	0.7805618	0.42565859

	Observation PctNOTRodrig_09_pri_place5	
	hpct	NOThpct
mean	0.4759964	0.62292081
sd	0.1663248	0.02219829
2.5%	0.2194382	0.57434141
97.5%	0.8529662	0.66196208

2009 General Place 5

Model: ei.RxC

Number of simulations: 1000

Expected Values: $E(Y|X)$

	Observation PctRodrig_09_gen_place5	
	hpct	NOThpct
mean	0.86679195	0.43436120
sd	0.07513016	0.02135715
2.5%	0.69109033	0.39115946
97.5%	0.95896689	0.47289524

	Observation PctNOTRodrig_09_gen_place5	
	hpct	NOThpct
mean	0.13320805	0.56563880
sd	0.07513016	0.02135715
2.5%	0.04103311	0.52710476
97.5%	0.30890967	0.60884054

2009 Primary Place 7

Model: ei.RxC

Number of simulations: 1000

Expected Values: $E(Y|X)$

	Observation PctSoria_09_pri_place7	
	hpct	NOThpct
mean	0.5902589	0.31116486
sd	0.1406681	0.01827066
2.5%	0.2545193	0.27931310
97.5%	0.7943070	0.34982717

	Observation PctNOTSoria_09_pri_place7	
	hpct	NOThpct
mean	0.4097411	0.68883514
sd	0.1406681	0.01827066
2.5%	0.2056930	0.65017283
97.5%	0.7454807	0.72068690

2009 General Place 5

Model: ei.RxC

Number of simulations: 1000

Expected Values: $E(Y|X)$

	Observation PctSoria_09_gen_place7	
	hpct	NOThpct
mean	0.8539305	0.31203000
sd	0.0681423	0.01127536
2.5%	0.6538474	0.29052525
97.5%	0.9334410	0.33355244

	Observation PctNOTSoria_09_gen_place7	
	hpct	NOThpct
mean	0.14606950	0.68797000
sd	0.06814230	0.01127536
2.5%	0.06655903	0.66644756
97.5%	0.34615259	0.70947475

2011 Primary Dist 2

Model: ei.RxC

Number of simulations: 1000

Expected Values: $E(Y|X)$

	Observation	PctMotes_11_pri_dist2	hpct	NOThpct
mean	0.5278522	0.13495207		
sd	0.1098932	0.01332221		
2.5%	0.3344753	0.11299975		
97.5%	0.7068483	0.16376025		

	Observation	PctNOTMotes_11_pri_dist2	hpct	NOThpct
mean	0.4721478	0.86504793		
sd	0.1098932	0.01332221		
2.5%	0.2931517	0.83623975		
97.5%	0.6655247	0.88700025		

2011 Prop 1

Model: ei.RxC

Number of simulations: 1000

Expected Values: $E(Y|X)$

	Observation	PctYes_11_pri_prop1	hpct	NOThpct
mean	0.92714479	0.39103728		
sd	0.02646523	0.01312309		
2.5%	0.85979957	0.36779511		
97.5%	0.95835264	0.41797268		

	Observation	PctNOTYes_11_pri_prop1	hpct	NOThpct
mean	0.07285521	0.60896272		
sd	0.02646523	0.01312309		
2.5%	0.04164736	0.58202732		
97.5%	0.14020043	0.63220489		

2012 Supreme Court, Pos 8

Model: ei.RxC

Number of simulations: 1000

Expected Values: $E(Y|X)$

	Observation	PctGonzales_12_supct	phsign	posign
mean	0.6737825	0.37176505		
sd	0.0945540	0.01501406		
2.5%	0.4558982	0.34359729		
97.5%	0.8235203	0.40183722		

	Observation	PctNOTGonzales_12_supct	phsign	posign
mean	0.3262175	0.62823495		
sd	0.0945540	0.01501406		
2.5%	0.1764797	0.59816278		
97.5%	0.5441018	0.65640271		

2009 Primary Place 5

Several Runs with only 100 Simulations

Model: ei.RxC

Number of simulations: 100

Expected Values: $E(Y|X)$

	Observation	PctRodrig_09_pri_place5	hpct	NOThpct
mean	0.5088137	0.37670573		
sd	0.1706963	0.02359066		
2.5%	0.1472984	0.33223036		
97.5%	0.7797170	0.42332895		

	Observation	PctNOTRodrig_09_pri_place5	hpct	NOThpct
mean	0.4911863	0.62329427		
sd	0.1706963	0.02359066		
2.5%	0.2202830	0.57667105		
97.5%	0.8527016	0.66776964		

Model: ei.RxC

Number of simulations: 100

Expected Values: $E(Y|X)$

	Observation	PctRodrig_09_pri_place5	hpct	NOThpct
--	-------------	-------------------------	------	---------

```

mean  0.4912955 0.38031222
sd     0.1656753 0.02500265
2.5%   0.1566484 0.33876726
97.5%  0.7690554 0.43334294

```

```

Observation PctNOTRodrig_09_pri_place5

```

```

      hpct      NOThpct
mean  0.5087045 0.61968778
sd     0.1656753 0.02500265
2.5%   0.2309446 0.56665706
97.5%  0.8433516 0.66123274

```

Model: ei.RxC
 Number of simulations: 100

Expected Values: $E(Y|X)$

```

Observation PctRodrig_09_pri_place5
              hpct    NOThpct
mean  0.5439055 0.3758689
sd     0.1634286 0.0222147
2.5%   0.1863998 0.3385723
97.5%  0.7916758 0.4149811

Observation PctNOTRodrig_09_pri_place5
              hpct    NOThpct
mean  0.4560945 0.6241311
sd     0.1634286 0.0222147
2.5%   0.2083242 0.5850189
97.5%  0.8136002 0.6614277
> s.out <- sim(z.out, num = 100)

```

Model: ei.RxC
 Number of simulations: 100

Expected Values: $E(Y|X)$

```

Observation PctRodrig_09_pri_place5
              hpct    NOThpct
mean  0.5024080 0.38119015
sd     0.1842371 0.02494356
2.5%   0.1076505 0.33896961
97.5%  0.7904215 0.43379787

Observation PctNOTRodrig_09_pri_place5
              hpct    NOThpct
mean  0.4975920 0.61880985
sd     0.1842371 0.02494356
2.5%   0.2095785 0.56620213
97.5%  0.8923495 0.66103039

```

Model: ei.RxC
 Number of simulations: 100

Expected Values: $E(Y|X)$

```

  Observation PctRodrig_09_pri_place5
            hpct    NOThpct
mean  0.5094792 0.37806379
sd     0.1664341 0.02331578
2.5%   0.1697166 0.33739649
97.5%  0.7633860 0.41624003

  Observation PctNOTRodrig_09_pri_place5
            hpct    NOThpct
mean  0.4905208 0.62193621
sd     0.1664341 0.02331578
2.5%   0.2366140 0.58375997
97.5%  0.8302834 0.66260351
> s.out <- sim(z.out, num = 100)

```

Model: ei.RxC
 Number of simulations: 100

Expected Values: $E(Y|X)$

```

  Observation PctRodrig_09_pri_place5
            hpct    NOThpct
mean  0.5151990 0.3765646
sd     0.1775123 0.0233914
2.5%   0.1548885 0.3356893
97.5%  0.7698420 0.4189269

  Observation PctNOTRodrig_09_pri_place5
            hpct    NOThpct
mean  0.4848010 0.6234354
sd     0.1775123 0.0233914
2.5%   0.2301580 0.5810731
97.5%  0.8451115 0.6643107

```

Model: ei.RxC
 Number of simulations: 100

Expected Values: $E(Y|X)$

	Observation PctRodrig_09_pri_place5	
	hpct	NOThpct
mean	0.5454507	0.37413241
sd	0.1822671	0.02534705
2.5%	0.1476312	0.33123929
97.5%	0.8053883	0.43084593

	Observation PctNOTRodrig_09_pri_place5	
	hpct	NOThpct
mean	0.4545493	0.62586759
sd	0.1822671	0.02534705
2.5%	0.1946117	0.56915407
97.5%	0.8523688	0.66876071

Model: ei.RxC
 Number of simulations: 100

Expected Values: $E(Y|X)$

	Observation PctRodrig_09_pri_place5	
	hpct	NOThpct
mean	0.5204967	0.37919596
sd	0.1695293	0.02088545
2.5%	0.1604392	0.34176427
97.5%	0.7804931	0.42828045

	Observation PctNOTRodrig_09_pri_place5	
	hpct	NOThpct
mean	0.4795033	0.62080404
sd	0.1695293	0.02088545
2.5%	0.2195069	0.57171955
97.5%	0.8395608	0.65823573

Model: ei.RxC
Number of simulations: 100

Expected Values: $E(Y|X)$

```
Observation PctRodrig_09_pri_place5
              hpct    NOThpct
mean  0.5205903 0.3765396
sd     0.1684277 0.0237497
2.5%   0.1498936 0.3361919
97.5%  0.7834246 0.4289930

Observation PctNOTRodrig_09_pri_place5
              hpct    NOThpct
mean  0.4794097 0.6234604
sd     0.1684277 0.0237497
2.5%   0.2165754 0.5710070
97.5%  0.8501064 0.6638081
>
```


Exhibit Q

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

Rogelio Montes and Mateo Arteaga

Plaintiffs,

v.

City of Yakima, et. al.

Defendants.

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CV- 12-3108-TOR

REPLY REPORT OF RICHARD L. ENGSTROM, Ph.D.

I declare the following:

1. My name is Richard L. Engstrom and I am a resident of Chapel Hill, NC. I have previously submitted a Report in this matter, dated February 1, 2013. I have been asked by the attorneys for the Plaintiffs to respond to the Reports of Defendants' experts in this matter, Peter Morrison and John Alford.

2. My previous Report addressed two things. The first was racially polarized voting (hereinafter RPV), specifically: (1) the extent to which, if any, voting in Yakima City Council elections has been racially polarized in recent elections presenting voters with a choice between or among Latino and non-Latino candidates; (2) the extent to which, if any, voting on Proposition 1 in 2011, a proposition that would have changed the manner in which city council members are elected, was racially polarized; and (3) the extent to which, if any, voting in the city was racially polarized in the latest nonpartisan exogenous election in the city, the election to Position 8 on the state Supreme Court in 2012, in which a Latino candidate and a non-Latino candidate competed.

3. The other topic was the presence in Yakima city council elections of features of at-large elections that enhance the ability of non-Latino voters to dilute Latino votes, to wit, the division of at-large elections into single person elections for particular seats on the council, with runoff elections between the top two vote recipients if no candidate wins a majority in the first election, which in effect imposes a majority vote requirement for election to that body.

4. Drs. Morrison and Alford respond only to my RPV analysis, and offer no response to my discussion of the “enhancing factors” in the at-large election system employed to elect city council members.

5. I have been asked to respond, in turn, to their comments on RPV analyses generally and specifically to mine, and to other matters they address in their Reports as well.

RACIALLY POLARIZED VOTING

6. The most important thing that Dr. Alford states about my RPV analysis is that his estimates and my estimates of Latino voter cohesion and non-Latino crossover voting are “substantively very similar” (Alford Report, at 7).¹

7. Dr. Morrison’s discussion of RPV in Yakima contributes little, if anything,

¹ My estimates, as noted in my previous Report, are derived through the use of Gary King’s Ecological Inference methodology (hereinafter EI). I state in n. 5 on page 7 of that Report that “EI is now widely recognized as a superior estimation procedure for this purpose [RPV analysis] than ecological regression or homogeneous precinct analysis,” which were relied upon by the Supreme Court 27 years ago in *Thornburg v. Gingles* (478 U.S. 30, at 52-53). Indeed, Dr. Alford states in his Report for this case that EI has been designed “to improve on standard ecological regression” (at 6). Among the five expert analyses of RPV in the Texas statewide redistricting litigation, *Perez v. Perry*, Dr. Alford identified mine as the one based on “the best combination of modern statistical techniques and quality data” (Expert Report of Dr. John Alford in *Perez v. Perry* at 11). The statistical technique was EI and the data were turnout data matched to Spanish surnames, the same technique and type of data I employ in this case.

to the inquiry about RPV in this case. He examines one election, the 2009 general election for Position 5 on the city council, a runoff between Mr. Dave Ettl and Ms. Sonia Rodriguez. While he notes that there are several methodologies for assessing RPV -- and identifies Gary King's EI procedure in particular (Morrison Report, at 18 n.16) -- he chooses to rely solely on one of them in examining this election, homogeneous precinct analysis.

8. Dr. Morrison would have us believe that “a ‘Latino-favored’ candidate cannot be identified unambiguously” in this election (Morrison Report, at 20). This is because there is an absence of homogeneous Latino precincts in Yakima, which he defines as a precinct in which at least 90 percent of the voters is Latino (*ibid.*, at 18). In his own words, “With no homogeneously *Latino* precincts, all one can conclude is that each candidate was favored by *some* non-Latino voters – leaving unanswered the question of which candidate (if either) was the one whom Latino voters favored” (*id.*, at 20, emphases by Morrison).

9. As noted above, Dr. Morrison is aware of accepted methodologies for assessing RPV that do not require any homogeneous precincts, in particular King's EI procedure. There is no requirement, in social science or law, that there must be one or more homogeneously Latino precincts present in a jurisdiction to estimate Latino candidate preferences.²

10. Dr. Alford does not seem to have difficulty identifying the Latino

² See *Fabela v. Farmers Branch*, 2012 U.S. Dist LEXIS 108086, 11 n. 25, and *Perez v. Pasadena Independent School District*, 958 F. Supp. 1196, 1222 (S.D. Tx. 1997), *aff'd*, 165 F. 3d 368 (5th Cir. 1999).

preferred candidate in that election; it is Ms. Rodriguez (Alford Report, Table 1, at 10). He provides his estimates of her Latino support in this two-person contest in Table 1 of his Report. His ecological regression (ER) estimate of the percentage of the Latino vote that was in her favor is 82.0. His estimate based on EI is 86.7. He also reports my EI estimate in his Table, which is 92.8.

11. Dr. Alford also derives a 95 percent confidence interval around his EI estimate. He has taken the position previously that if the lower bound of such an interval for a candidate's support among a group exceeds 50 percent, then that candidate is the candidate of choice for the group in that election. In *Benavides v. City of Irving*, he testified concerning just such a confidence interval around his regression estimate for a Latino candidate for mayor in that city (no EI estimates were reported). He stated:

The 95 percent confidence interval for the estimate of Hispanic support for Reza ranges from a low of 74.3 percent support to a high of 100 percent support. *This range does not include levels of support at or below 50 percent, and so, for this mayoral contest, we can reject the hypothesis that Hispanic voters are giving less than majority support to the Hispanic candidate.*³

The highest percentage of Latinos among those receiving ballots in any of the precincts in that election was 33.3, which is far from being homogeneous.⁴

12. The 95 percent confidence interval around Dr. Alford's EI point estimate for Ms. Rodriguez can be found in Appendix A to his Report (at 18). It ranges from 69.1 percent to 95.9 percent. The bottom of that interval is well above a majority. The 95 percent confidence interval around my EI estimate for Ms. Rodriguez's support among

³ Expert Report of John R. Alford, Ph.D., *Benavides v. The City of Irving, Texas*, NO.3-07-CV-1850-P, at 12, dated August 7, 2008 (emphasis supplied).

⁴ Report of Richard L. Engstrom, *Benavides v. City of Irving, TX*, Civil Action No. 3:07 CV 1850-P, July 5, 2008, at 5.

Latinos is provided in the Table in my first Report (at 15). It ranges from 72.2 to 99.2.

As is the case with Alford's, the lowest point on my confidence interval is also well above a majority.

13. Nothing in Dr. Morrison's Report convinces me that there is any ambiguity about which candidate was favored by Latinos in this election. It was Ms. Rodriguez by a large margin.

14. Despite noting that the estimates he and I have submitted are "substantively very similar," Dr. Alford identifies three differences between his analysis and mine: the number of simulations in the EI analyses, the reporting of values for the R-square statistic produced through regression analyses, and the presentation of scatterplots. None of these differences necessitate any revisions in my conclusions.

15. Dr. Alford instructed the EI software to conduct 1,000 simulations, while I relied upon the default option in the software, which is 100 simulations. EI has been available for over a decade and has been used extensively to derive RPV estimates for quite a few years. I have never heard anyone, in writing or even orally, assert that 100 simulations are inadequate. Whether 100 or 1,000 simulations are employed in reaching EI estimates in this case is a distinction that makes very little substantive difference.

16. Dr. Alford also reports, in Appendix A, the results of nine separate EI analyses he performed on the 2009 primary election for Place 5 on the city council, which preceded the general election discussed above. All nine are based on 100 simulations. He reports that the point estimates of Ms. Rodriguez's support among Latino voters across these analyses "vary from 49.1 to 54.4 percent" (at 7). Only one of the nine estimates, however, places her vote below a majority, that being the 49.1 percent at the

bottom of his range. The other eight produced estimates of her percentage of Latino support in this primary as 50.2, 50.9, 50.9, 51.5, 52.0, 52.1, 54.4, and 54.5 (see Alford Report, Appendix A, at 21 – 26). Dr. Alford’s only point estimate of her Latino support, based on 1,000 simulations, is 52.4, while my EI estimate is 52.9. Ten of the 11 estimates identify Ms. Rodriguez as receiving a majority of the Latino vote in the primary.

17. Dr. Alford notes in his Report that ecological regression is a statistical procedure for estimating RPV that is based on a *linear assumption*. As he explains, “In a nutshell, regression is a mathematical technique for estimating the single best fitting *straight line* that could be drawn to describe the relationship between two variables in a scatter plot” (at 5, emphasis added). He also explains that “[a]ppplied in voting rights cases, the logic of regression analysis is to determine to what degree, if any, the vote for a candidate increases in a *linear* fashion as the concentration of voters of a given ethnicity in the precincts increases” (*ibid.*, emphasis added). To state it differently, the assumption central to all of his regression analyses is that all Latino voters have the identical tendency to support a Latino candidate regardless of what precinct they vote in or where that precinct might be located. In other words, Latino voters who live in precincts with relatively high concentrations of Latino voters, and those who live in precincts with few other Latino voters, are assumed to support Latino candidates at the same rate. Likewise Latino voters who are wealthy and live in precincts with high concentrations of wealthy people are assumed to vote identically to those who are poor and live among concentrations of poor voters. The same assumption applies to the non-Latino voters.

18. This assumption on which regression is based is widely criticized. And this type of voting behavior is not a necessary condition for racially polarized voting to occur. Indeed, Dr. Alford specifically states that EI is designed “to improve on standard ecological regression” (Alford Report, at 6), and notes that one way it does so is “by not imposing a linear constraint on the pattern across precincts” (*ibid*, at 7).⁵

19. Despite acknowledging that one of the features of EI that is an improvement over regression is the absence of a linear constraint on the estimates it produces, Dr. Alford proceeds to focus on a statistic that is itself a product of regression and its linear assumption. This is R-square, “a measure of the overall ‘goodness of fit’ for the regression line” (*id*, at 6). It must be understood however that R-square is not a measure of racial differences in candidate preferences. High values for R-square can be found when the candidate preferences of two groups of voters vary minimally; indeed, they can be found when both groups favor the same candidate. Likewise, low values of R-square do not necessarily indicate that there is no RPV. R-square is simply not a measure of RPV and should not be interpreted as such.

20. This is illustrated in Table 1 in the Alford Report (at 10). The value of the R-square in that table is reported in the column furthest to the right. The difference between the estimates of the Latino and non-Latino votes for Ms. Rodriguez in the 2009 general election for Place 5 on the city council is 36.5 percentage points. The difference between the groups’ votes for Mr. Soria, a candidate for Place 7 that same day, is lower,

⁵ See also Gary King, A Solution to the Ecological Inference Problem: Reconstructing Individual Behavior from Aggregate Data (Princeton University Press, 1997), at 20, and D. Stephen Voss, “Using Ecological Inference for Contextual Research,” in Gary King, Ori Rosen, and Martin Tanner (eds.), *Ecological Inference: New Methodological Strategies* (Cambridge University Press, 2004), at 77.

34.6 percentage points. Yet the R-square increases from .16 for the first to .20 for the second.

21. Dr. Alford states that R-square identifies "... the proportion of the variance in the percentage of the votes cast for the Hispanic candidate that can be explained by variation in the percentage of the voters in a precinct that have Spanish surnames" (*id.*, at 6). But this is, again, based on the linearity assumption. As Dr. Alford writes, "an R-square close to zero would indicate that the ethnicity of voters was not *linearly* related to variation [in] support for the Hispanic candidate" (*id.*, emphasis supplied). But, as noted above, RPV is not limited to a linear relationship across precincts between the percentages of voters that are Latinos within them and the percentage of votes received by a Latino candidate.⁶

22. Dr. Alford also provides scatterplots in his Report (at 13-15). Precincts are represented as circles in these plots and are located in the graph based on the percentage of voters in them that was Latino, and the percentage of votes within them that was cast in favor of a Latino candidate or the proposition. He then assesses, visually, how *linear* the relationship appears across precincts. But again, a linear looking scatterplot is not a requirement for RPV. And a linear looking scatterplot, such as the one in Figure 6 (at

⁶ Regression analyses will even provide a value for a R-square for a regression analysis that contains an impossible estimate of candidate preferences. For example, the second highest value of R-square reported in Dr. Alford's Table 1 is for the vote on Proposition 1 in 2011. It is .53, almost identical to the .54 for the District 2 primary in 2011, which Dr. Alford identifies as "relatively high" (*id.*, at 11). The regression estimate of the Latino vote in favor of the proposition is reported in Table 1 to be 100.0. However, based on the back-up documents for his regression analyses, the actual regression estimate is 115.6 percent. Dr. Alford, without explanation, has simply reduced the estimate to 100.0 for the table. And even the highest R-square value, that for the District 2 primary in 2011, is dependent on a regression estimate of 72.2 percent Latino cohesion, roughly 20 percentage points above the EI estimates of Latino cohesion in this election, 52.8 percent in Dr. Alford's analysis and 53.5 percent in mine (Table 1, at 10).

15), can reflect a linear-based estimate of 115.6 percent of a group voting for the same candidate, an empirical impossibility.

23. EI is the superior method of estimating RPV through aggregate-level data, such as information about voter turnout and candidate preferences in precincts. Dr. Alford would apparently have us believe, based on R-square values and scatterplots, that voting in these Yakima elections is somehow not racially polarized. But neither a low value for a R-square, nor a high value, nor the absence of a linear pattern in a scatterplot, is sufficient to indicate that EI estimates documenting RPV cannot be relied upon. Nothing in Dr. Alford's Report convinces me that my conclusions about RPV in Yakima city council elections, and the other elections I analyzed, are in error. Indeed, my EI estimates and his EI estimates, as Dr. Alford writes, are "substantively very similar".

24. While the estimates are very similar, Dr. Alford concludes that a "mixed pattern is evident for Hispanic cohesion" (Alford Report, at 8). But there is one thing about that pattern that is not the least bit mixed -- of the 21 estimates of Latino cohesion he reports in Table 1, every single one estimates the Latino vote for the Latino candidate to be above a majority, as well as the Latino preference for a new election system. Indeed, most of estimates are well above a majority. This applies regardless of whether the office at issue is a city council seat, whether it is a district election or an at-large election, whether the election is for a judgeship, or whether the election is a primary or a general election; regardless of the year when the election was held; and regardless of who the Latino candidate was. Indeed, the nine estimates for the three decisive Yakima council elections show Latino cohesion ranging from 82.0 percent to 100.0 percent.

25. Dr. Alford also concludes that the estimates of non-Latino crossover

voting are “much more consistent” than those for Latino cohesion, and calls those for the five citywide elections “substantial” (*ibid.*, at 9). There is another, much more stark consistency in the crossover estimates, however. It is that among the 28 estimates of non-Latino crossover voting reported in Table 1, not one shows a majority of non-Latinos voting for a Latino candidate, nor for Proposition 1. Not one indicates that non-Latinos and Latinos shared a preference for a Latino candidate. In addition, all of the Latino candidates for the city council were defeated, as was Proposition 1, and even Justice Gonzalez lost the vote in the nonpartisan judicial election within the City of Yakima.

26. There is nothing ambiguous about the conclusion that should be drawn from the cohesion and crossover estimates reported in Table 1 – voting in these elections is racially polarized, and non-Latino voters did not just *usually* veto the candidates Latinos preferred to represent them on the city council, they did it every time.

EXOGENOUS SCHOOL BOARD ELECTIONS

27. Both Dr. Morrison and Dr. Alford reference the nonpartisan elections for the Yakima School District Board of Directors. Dr. Alford, despite not performing a RPV analysis on a single school board election, concludes that “school board contests do not demonstrate consistent polarized voting in Yakima” (Alford Report, at 16). Dr. Morrison also performs no RPV analysis of a school board election, and does not opine on RPV in these elections.⁷

28. Dr. Morrison does provide a table with a brief history of school board

⁷ Likewise, Dr. Morrison reports the results of elections for Position 1 and Position 2 within state House of Representatives District 14 in 2008, but performs no RPV analysis on these elections and does not opine on RPV in them either.

elections since 2001 in his Report (Table 4, at 23). The entry for 2003 notes that Vickie Ybarra, a Latina, was elected to the Board in 2003, which was the last time a Latino candidate won a contested election to the board. She received 55.16 percent of the votes in a contest with a non-Latino. The fact that Ms. Ybarra had been appointed to the board by the Superintendent of the school district before her election is not revealed in either the table or the text of the Report. The table further reveals that in 2007 Jorge Torres Saenz, a Latino candidate, was defeated in a contest with a non-Latino for an open seat on the board. Mr. Saenz, who had not been appointed to the board, was badly defeated, receiving only 26.57 percent of the vote. In 2007 Ms. Ybarra was unopposed for reelection. That same year, Mr. Raymond Navarro, who also had been appointed to the board before the election, again a fact not reported in either the table or the text, was unopposed. In the next election, in 2009, Mr. Navarro ran for reelection and was defeated badly by a non-Latino candidate, receiving only 27.94 percent of the vote. In 2011 another Latino, David Garcia, also won a board seat in an unopposed election. Once again, Mr. Garcia had been appointed to that seat before the election, a fact not noted in the table or the text of the Report.

29. Dr. Morrison's brief history of school board elections reveals two things: no Latino has won a contested school board race since 2003, and (2) all of the Latinos who gained seats on the board over this time period did so initially by appointment rather than election. None of the information about exogenous school board elections provided by Dr. Morrison and Dr. Alford persuades me to alter any of the conclusions I expressed in my initial Report in this case.

CONCLUSION

30. After reading the Reports of Dr. Morrison and Dr. Alford, I conclude, as I did in my initial Report, that Latinos have constituted a cohesive voting group in Yakima, and that the non-Latino majority has voted sufficiently as a bloc to defeat those choices.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge. Executed on April 19, 2013 in Durham, NC.

A handwritten signature in black ink, appearing to read 'Richard L. Engstrom', with a stylized, cursive script.

Richard L. Engstrom

Exhibit R

Declaration of Dr. Robert R. Brischetto

Racial Bloc Voting in Seven Texas Counties in 2012

I. Assignment and Qualifications.

1. My name is Robert R. Brischetto and I am a resident of Lakehills, Texas. I have been asked to evaluate the existence and extent of racially polarized voting in the counties in which state House districts have been adopted by the Texas legislature in 2011 and 2013, now challenged by the Mexican American Legislative Caucus in the case at hand.

The task involves examination of the 2012 elections in the counties where redistricting of state House seats is being challenged in this case to determine whether racial and language minority voters in those areas are voting as a bloc and differently from Anglo voters.¹

2. I am a consultant in social research and evaluation. I have a B.A. in English from St. Mary's University and an M.A. and Ph.D. in Sociology from the University of Texas at Austin. For the first twelve years of my career, I was a university professor, teaching courses in sociology, research methods and statistics. For the next twelve years I conducted and directed research full-time in Hispanic voting and opinions. I was the founding executive director of the Southwest Voter Research Institute in San Antonio with a focus on Latinos in the five southwestern states. In 1995 I began my own research consulting firm, Social Research Services, and continued to conduct research in Mexican-American communities, most recently as an evaluator for the Annie E. Casey

¹ Throughout this report I use "minority voters" to include African American, Latino and other racial or language minorities, such as Asians and American Indians. "Anglo" is a term that I use to refer to non-minority voters.

Foundation's Neighborhood Transformation and Family Development initiative, Making Connections-San Antonio.

3. My work on Latino voting and opinions has led me to conduct research as an expert in vote dilution and redistricting challenges, evaluating voting patterns and factors necessary to prove a Sec. 2 law suit or to draw redistricting plans. The first case was a DOJ objection in 1975 to annexations in San Antonio. I was asked to analyze elections to the San Antonio City Council to ascertain whether voting was polarized along racial and ethnic lines.² I continued to do research as an expert in more than 40 minority vote dilution suits in Texas, California, New Mexico, Arizona, Colorado and South Dakota. I planned and executed phone, in-person and exit surveys of Latinos and other ethnic groups. I have authored 66 publications on voting, educational equity and racial/ethnic groups, edited 20 publications and presented 35 papers at professional meetings on minority equity issues listed in my *Resume*, attached as Appendix A.

4. As executive director of the Southwest Voter Research Institute, I helped the US Census Bureau develop the first Census Information Center for minority non-profits using census data after the 1990 Census. We received, managed and analyzed the same data that the US Census Bureau would send to the Texas State Data Center.

5. The research for this case has provided me an opportunity to become acquainted with the latest methodology and statistical techniques available in the analysis of minority voting patterns.

² For publication of the results of that analysis, see: Robert Brischetto, Charles Cotrell and R. Michael Stevens, "Conflict and Change in the Political Culture of San Antonio in the 1970's," in John A. Booth, et al., eds., *The Politics of San Antonio: Community, Progress and Power*. (Lincoln: The University of Nebraska Press: 1982), Chapter 4.

II. Methods

Operational Definition of Racially Polarized Voting

6. The definition of racially polarized voting adopted in federal case law stems from the case of *Gingles v. Edmisten* 590 F.Supp.345, 367-78 (EDNC 1984) and the Supreme Court’s decision in that case on appeal in *Thornburg v. Gingles*, 106 S.Ct. 2752, 2767-73.

As stated by Justice William Brennan, who delivered the opinion of the Court in *Thornburg*, a key element of the minority plaintiffs’ proof was “to ascertain whether minority group members constitute a politically cohesive unit and to determine whether whites vote sufficiently as a bloc usually to defeat the minority’s preferred candidates.”³ Justice Brennan codified the definition of racially polarized voting as set forth by plaintiffs’ expert Bernard Grofman as “a consistent relationship between race of the voter and the way in which the voter votes, or to put it differently, where black voters and white voters vote differently.”⁴ The High Court accepted the testimony of Grofman in *Gingles* that racial polarization exists where the data “reflected positive relationships and that the correlations did not happen by chance.”⁵

7. Thus, the definition of racially polarized voting has two parts. The first is whether a racial (or language) minority votes differently from the white majority. In other words, if an election were held exclusively within each racial/ethnic group, the outcome would be different for the different groups.

³ *Thornburg v. Gingles*, 478 U.S. 30 at 56, 50(1986). Heard in the lower court *sub nom Gingles v. Edmisten*, 590 F. Supp. 345 (1984), *aff’d in part rev in part sub nom, Thornburg v. Gingles*.

⁴ *Thornburg v. Gingles*, 478 U.S. at 53, note 21.

⁵ 478 U.S. at 53, note 22.

8. The second part of the definition examines the support for a candidate among each racial/ethnic group and asked whether the groups differ in a statistically significant manner. In other words, how confident are we in our conclusion that the racial or ethnic groups are voting differently?

9. The Supreme Court went beyond the determination of whether there was a finding of racially polarized voting to inquire whether the racial polarization was of practical or legal significance. To show legal significance required demonstrating: (1) that “the white majority votes sufficiently as a bloc” to enable it to “usually defeat the minority’s preferred candidate” and (2) a “significant number of minority group members usually vote for the same candidate.”⁶

10. In *Thornburg* “the minority preferred candidate” is defined as the candidate who received either the majority or plurality support from the minority group voters, regardless of the candidate’s race. Justice Brennan, not expressing a majority opinion of the Court, proffered that “under Section 2, it is the status of the candidate as the chosen representative of a particular racial group, not the race of the candidate that is important.” As Grofman notes more recently, “The relevance of the race of a candidate to judgments about polarized voting continues to be debated in the courts and by expert witnesses.”⁷ In my analysis for this case, I look chiefly at contests where minority candidates face non-minority candidates. That is not to say that contests not involving minority candidates would not be probative of the existence of racially polarized voting.

⁶ *Thornburg v. Gingles*, 478 U.S. at 51, 56.

⁷ Grofman, “Expert Witness Testimony and the Evolution of Voting Rights Case Law,” in Bernard Grofman and Chandler Davidson (eds.), *Controversies in Minority Voting: The Voting Rights Act in Perspective* (Washington, D.C.: The Brookings Institution, 1992), 197-229.

11. In his testimony in *Gingles v. Edmisten*, Grofman proposed a definition of *substantively significant* racially polarized voting as “when the candidate or set of candidates chosen by voters of one race differs from the candidate or candidates chosen by voters of the other race.”⁸ But *substantive* significance, by Grofman’s own admission, is a “necessary by not sufficient for the evidence for a pattern of racial bloc voting to rise to the level of *legal* significance.”⁹

12. How much of a difference in voting patterns would constitute *legally significant* voter polarization has been argued in the courts for more than three decades. Many experts looked at the sum of “own race” voting, that is, the percent of minority voters voting for the minority candidate plus the percent of nonminority voters voting for the nonminority candidate. Some argued that a 60-40 split in American politics is considered a landslide and thus 120 percent total of “own race” voting¹⁰ was sufficient to conclude there was strong polarization. Others set the bar at a 160 percent total.¹¹ I am of the opinion that there are different degrees of polarization and that the *pattern* of voting across a number of contests is important to discern in deciding whether there is legally significant racially polarized voting.

Measuring Voting Behavior

⁸ Grofman, “Expert Witness Testimony and the Evolution of Voting Rights Case Law,” 209-210.

⁹ Grofman, “Expert Witness Testimony and the Evolution of Voting Rights Case Law,” 211, n. 32.

¹⁰ The polarization score of 120% “own race voting” is derived from adding the votes of the two different racial groups for the candidate of their own race, for example, 60% support of Black voters for the Black candidate plus 60% support of white voters for the white candidate.

¹¹ Bernard Grofman, “Expert Witness Testimony and the Evolution of Voting Rights Case Law,” 209.

13. For more than four decades, the litigation of voting rights under Section 2 of the Voting Rights Act of 1965--amended in 1975 to include language minorities--has established several of research procedures for measuring racially polarized voting.¹²

We are investigating the voting behavior of different racial and ethnic groups to determine whether and to what extent each of these groups votes as a bloc and vote differently from one another. The question is important when evaluating a redistricting plan since the extent of racial bloc voting will determine whether districts can be drawn that allow minority voters to elect candidates of their choice.

14. Ideally, we would know how people vote by asking individuals to reveal their choices. Exit surveys of voters in person on Election Day provide that information, but these are not always conducted in the areas we are interested in, when we need them and on the scale necessary. Furthermore, there is some research to suggest that voters do not always tell the truth when asked about how they voted in contests involving racially different candidates. Since surveys of voters are not usually available on local political subdivisions in the elections of interest in a voting rights law suit, the question of whether there is racially polarized voting often must be answered with post-hoc election returns by precinct. These basic areal units require ecological inferences about individual behavior.

Homogeneous Precinct Analysis

15. If voting precincts were completely homogeneous in their racial or ethnic composition, we could learn about how Anglos (white non-Hispanics) were voting by

¹² “Racially polarized voting” and “racial bloc voting” have been used simultaneously by the Courts as I do here.

simply adding the results of the all-Anglo precincts and do the same for each of the other racial and ethnic groups. Indeed, this technique works well where there is extensive geographic segregation of the various racial and ethnic groups. In those areas where there are a number of homogeneous precincts of 80-90% or more of an ethnic or racial group, this method has been used in voting rights cases to ascertain racial bloc voting. Only in a couple of the counties (Nueces and Kleberg) that are the focus of this report were there precincts of over 80-90% of a particular racial or language minority group.

Ecological Correlation and Regression

16. Precincts are usually mixed in their racial and ethnic group makeup. This entails measuring the association between the racial and ethnic composition of the precincts and their votes for particular candidates. The degree of association between race (say percent Latino) of voters and percent voting for a Latino candidate is measured by *ecological correlation*. We refer to it as ecological correlation because our basic unit of analysis is an ecological unit, a voting precinct.

17. The correlation coefficient (*Pearson r*) will tell us the degree of association between the racial composition of the precinct (% white) and support for a candidate. The Pearson *r* has a range of 0 (no association at all) to 1.0 (perfect direct correlation) or -1.0 (perfect inverse correlation). If the percent of support for a candidate correlates positively with the percent of voters who are Latino, this would give some indication that the candidate is preferred by the Latino voters.¹³ The correlation coefficient can then be tested for statistical significance to see if it is significantly greater than zero or no correlation at

¹³ This is equivalent to an inverse (negative) correlation between the percent of support for a candidate and the percent of voters who are non-Latino, indicating that non-Latino voters do not prefer this candidate.

all.¹⁴ As Grofman notes, experts in some cases treated correlations of .7 or more as *prima facie* evidence of polarization.

18. How *much* of the variation in voting can be accounted for (or “explained”) by the variation in the racial composition of the precinct is expressed in the square of the correlation coefficient (*r*-squared), referred to as the *coefficient of determination*. Thus, a correlation of .70 would indicate that we have accounted for about half (49%) of the variation in the vote for a candidate by knowing the race of the voters. Note that the word *explained* in the previous sentence is in quotation marks. This is because we don’t really know for sure that the association is a cause-effect relationship. The correlation does not give us insight into the motivation of voters or the reason why they voted along racial or ethnic lines.

19. But, as Grofman notes, the Supreme Court in *Thornburg* required the experts to go beyond just showing correlations. The Court wanted the experts to estimate the levels of support for candidates among minority and nonminority voters.¹⁵ This can be accomplished through the use of ecological regression.¹⁶

20. We can describe an association between the support for a candidate and the racial/ethnic composition of a precinct by an equation. The linear regression equation is the same equation that we learn in high school geometry for a straight line:

$$Y = a + bX + e$$

Where,

¹⁴The Court in *Thornburg* accepted the conclusion by the plaintiff’s expert in *Gingles* that positive correlations in the data “did not happen by chance” 478 U.S. at 53, note 22.

¹⁵ Grofman, “Expert Witness Testimony,” 1992, 216.

¹⁶ Ecological regression is an application of ordinary least squares regression or “linear regression.”

Y = the percentage of votes received by a given candidate (the dependent variable);

a = constant in the equation (the Y -intercept at $X=0$);

X = the percentage of voters who are Latino (the independent variable);

b = the slope of the regression line (or the regression coefficient);

e = the error term (estimated by the standard error).

21. With this equation we can estimate the percentage of votes received by a candidate at any level of ethnic density in a precinct. At $X=0$, we are estimating the percent of non-Latinos voting for the candidate. At $X=100$, we are estimating the percent of Latinos voting for the candidate.

22. The scatterplot in Figure 1 plots the percent of vote for Herrero in the 2012 race for state representative in District 34 (Y -axis) against the percent of voters who have Spanish surnames in Nueces County (X -axis). Note that percents are shown in proportions on the graph and in the equation.

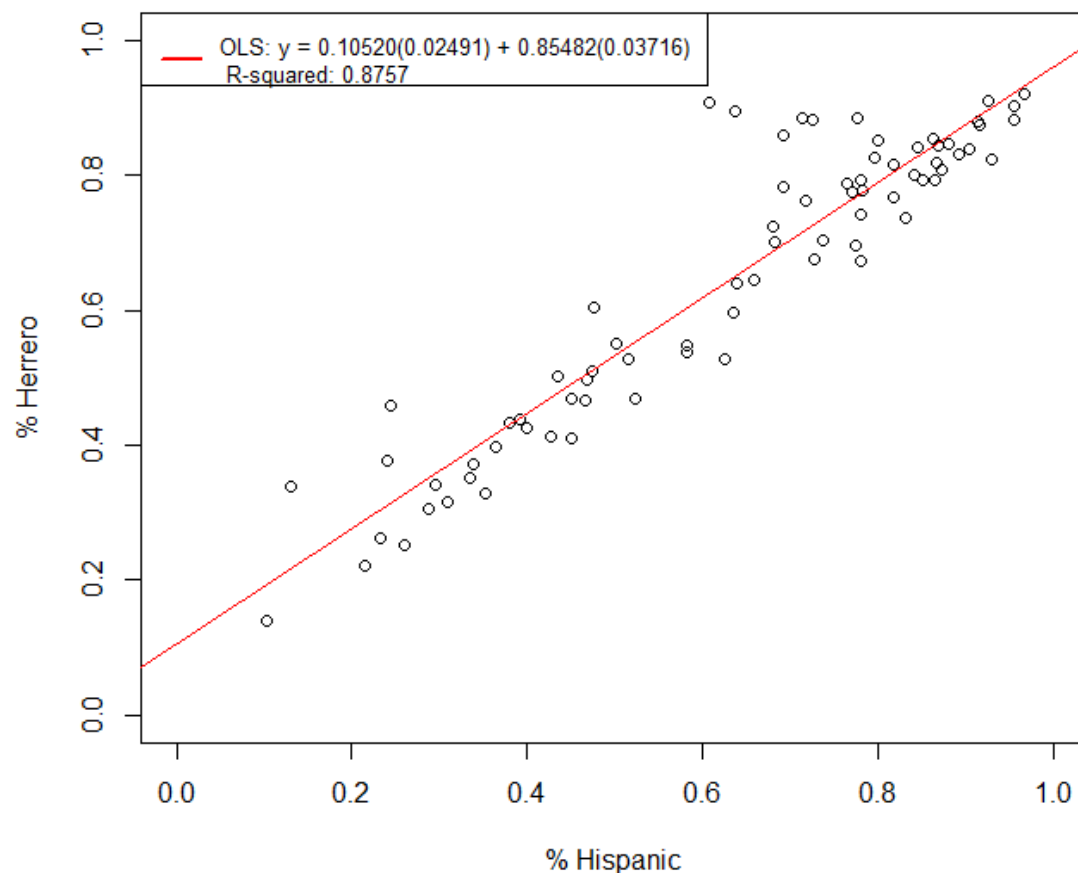


Figure 1. Scatterplot of % Voting for Herrero for State Representative, D 34, By Percent Hispanic of Voters in 2012 General Election in Nueces Co.

23. To estimate the non-Latino vote for a candidate: simply substitute the value of X for a precinct with no Latinos ($X=0$) into the equation ($Y=a+bX$). The estimate of the non-Hispanic vote for Herrero is 10.5%. To estimate the Latino vote, substitute a value of $X=100$. The estimate of the Hispanic vote for Herrero is 96% ($10.5 + 85.5$). The Pearson r (correlation coefficient) between the percent voting for Herrero and the percent Hispanic of precinct voters is .93. R-squared (*coefficient of determination*) is .88,

indicating that we have “explained” 88% of the variation on how people vote, knowing their ethnicity.

24. There is always some uncertainty in our estimates and that is expressed as the error term in the equation as measured by the standard error (SE) of the estimate. The range of errors that is often used by convention is two SEs, allowing us to be 95% confident that the true vote percentage falls within that range (confidence interval). In Figure 1, the SE of the estimated vote by non-Latinos is shown in parentheses (2.5%). Thus, the 95% confidence interval for the non-Latino vote (10.5%) is plus or minus 5%. The SE of the estimate for Latinos is confidence interval for the Latino vote (96%) is plus or minus 7.4%.

Weighted Correlation and Regression

25. Because precincts may vary in the number casting votes at that voting place, relative size of the precinct (in number of votes cast) should be taken into consideration in the analysis of racial or ethnic or racial group voting behavior. Thus, each precinct is given a weight equal to its relative size or number of persons voting. The ecological correlation and regression analyses are thus weighted by the relative size of each precinct ($N \text{ votes cast} / (\text{Mean of votes cast})$).¹⁷

Ecological Inference

¹⁷ What I have described here is the Ordinary Least Squares Regression (OLS) model used in most cases prior to the late 1990s. Bernard Grofman developed a double-equation variation of OLS in the mid-1980s. See: Bernard Grofman, Michael Migalski and Nicholas Novello. 1985. “The ‘Totality of Circumstances Test’ in Section 2 of the 1982 Extension of the Voting Rights Act: A Social Science Perspective.” *Law and Policy* 7 (April): 209-23 and Bernard Grofman and Michael Migalski. 1988. “Estimating the Extent of Racially Polarized Voting in Multicandidate Elections.” *Sociological Methods and Research* 16: 43-62. Also: James Loewen and Bernard Grofman. 1989. “Comment: Recent Developments in Methods Used in Voting Rights Litigation.” *Urban Lawyer*: 589-604.