Expert Report of Dr. Loren Collingwood

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Executive Summary

In this report, I examine past election results in North Dakota's recently enacted Legislative District 4. I do this to determine if voting is racially polarized—i.e., if Native American voters generally prefer one set of candidates, and white voters generally prefer a different set of candidates. In conducting this analysis, I analyzed 35 general elections from 2014 to 2022, and used the Ecological Inference (EI) and Rows by Columns (RxC) statistical methods to evaluate if racially polarized voting (RPV) exists. RPV is present in every election contest.

I also conducted electoral performance analyses in the following jurisdictions: The newly adopted full District 4, as well as Subdistricts 4A and 4B. An electoral performance analysis reconstructs previous election results based on new district boundaries to assess whether a Native or white preferred candidate is most likely to win in a given jurisdictions under consideration (i.e., the newly adopted legislative map).

Overall, the accumulated evidence leads me to conclude the following:

- Racially polarized voting (RPV) is present in the areas comprising the newly adopted Legislative District 4. This is particularly clear in the 2016 elections featuring three Native American candidates, and is also evident in the 2022 contest featuring a Native American candidate (Moniz).
- I used two well-known statistical methods to assess RPV, which consistently demonstrated racially polarized voting patterns between Native Americans and non-Hispanic white voters.
- Native American voters cohesively prefer the same candidates for political office in the newly adopted Legislative District 4. White voters cohesively prefer a different set of candidates for political office.
- In my reconstituted electoral performance analysis, Native American-preferred candidates lose every single race in the full District 4 for a block rate of 100%; but win handily in the newly adopted Legislative Sub-District 4A (33 of 34 contests) for a block rate of 3%. However, Native American-preferred candidates lose 34 of 34 contests in the newly adopted Legislative Sub-District 4B for a block rate of 100%.
- In the recent legislative general election held Sub-District 4A, the Native-American-preferred candidate, Lisa Finley-Deville, who is Native-American herself, won

Exhibit 42

handily in District 4A 69% to 31% for Terry Burton Jones. A correlation analysis in this contest shows a relationship between percent Native-American and percent Finley-Deville over 0.7 on a 0-1 scale – a very strong relationship.

- Native-American voters strongly backed Native-American candidate, Cesar Alvarez, in the 2016 Legislative District 4 election, whereas white voters split their votes evenly between two different candidates.

My opinions are based on the following data sources: Statewide and local North Dakota general elections from 2014-2022; 2020 U.S. Census voting age population data taken from Dave's Redistricting, and North Dakota Legislative Districts shape files.

Background and Qualifications

I am an associate professor of political science at the University of New Mexico. Previously, I was an associate professor of political science and co-director of civic engagement at the Center for Social Innovation at the University of California, Riverside. I have published two books with *Oxford University Press*, 40 peer-reviewed journal articles, and nearly a dozen book chapters focusing on sanctuary cities, race/ethnic politics, election administration, and racially polarized voting. I received a Ph.D. in political science with a concentration in political methodology and applied statistics from the University of Washington in 2012 and a B.A. in psychology from the California State University, Chico, in 2002. I have attached my curriculum vitae, which includes an up-to-date list of publications.

In between my B.A. and Ph.D., I spent 3-4 years working in private consulting for the survey research firm Greenberg Quinlan Rosner Research in Washington, D.C. I also founded the research firm Collingwood Research, which focuses primarily on the statistical and demographic analysis of political data for a wide array of clients, and lead redistricting and map-drawing and demographic analysis for the Inland Empire Funding Alliance in Southern California. I was the redistricting consultant for the West Contra Costa Unified School District, CA, independent redistricting commission in which I am charged with drawing court-ordered single member districts. I am contracted with Roswell, NM Independent School District to draw single member districts.

I served as a testifying expert for the plaintiff in the Voting Rights Act Section 2 case *NAACP v. East Ramapo Central School District*, No. 17 Civ. 8943 (S.D.N.Y.), on which I worked from 2018 to 2020. I am the quantitative expert in *LULAC vs. Pate (Iowa)*, 2021, and have filed an expert report in that case. I am the BISG expert for plaintiff in *LULAC Texas, et al. v. John Scott, et al.*, having filed one report in that case. I am the racially polarized voting expert for the plaintiff in *East St. Louis Branch NAACP, et al. vs. Illinois State Board of Elections, et al.*, having filed two reports in that case, and submitted written testimony. I am the Senate Factors expert for plaintiff in *Pendergrass v. Raffensperger (N.D. Ga. 2021)*, having filed a report in that case and submitted written testimony. I am the racially polarized voting expert for plaintiff in *Johnson, et al., v. WEC, et al., No. 2021AP1450-OA*, having filed three reports in that case and submitted written testimony. I am the racially polarized voting expert for plaintiff in *Faith Rivera, et al. v. Scott Schwab and Michael Abbott No. 2022-CV-000089*. I have filed a report in that case and provided testimony. I served as the RPV

expert in *Lower Brule Sioux Tribe v. Lyman County* where I filed a report and testified at trial. I am the RPV expert for plaintiff in *Soto Palmer et al. vs. Hobbs et al.* and have filed a report and been deposed. In each instance courts have accepted my opinion. In this case I am compensated at a rate of $325/hour.

District 4A Characteristics

District 4A has a Native American voting age population of 67.2%. It scores very high on measures of compactness. Two common measures are the Reock and Polsby-Popper scores. District 4A has a Reock score of .45 and a Polsby-Popper score of .57. These scores reflect a very compact district.

Racially Polarized Voting

Racially polarized voting (RPV) occurs when one racial group (i.e., Native American voters) consistently votes for one candidate or set of candidates, and another racial group (i.e., non-Hispanic white voters) regularly votes for another candidate or set of candidates. I analyze multiple elections across four election years to determine whether a pattern of RPV is present in a given geography and/or political jurisdiction (i.e., statewide, Legislative District 4, etc.). In an election contest between two candidates, RPV is present when a majority of voters belonging to one racial/ethnic group vote for one candidate and a majority of voters who belong to another racial/ethnic group prefer the other candidate. The favored candidate of a given racial group is called a ``candidate of choice.'' However, if a majority of voters (i.e., 50%+1) of one racial group back a particular candidate and so do a majority of voters from another racial group, then RPV is not present in that contest.

Racially polarized voting does not mean voters are racist or intend to discriminate. In situations where RPV is clearly present, however, majority voters may often be able to block minority voters from electing candidates of choice by voting as a broadly unified bloc against minority voters' preferred candidate.

I examine RPV in the context of North Dakota statewide general elections – subsetting to voting districts located inside of the newly enacted District 4.

Ecological Inference

To determine if RPV exists, experts must generally infer individual level voting behavior from aggregate data – a problem called ecological inference. We turn to aggregate data because most of the time we do not have publicly available survey data on all election contests and in particular geographic areas where we want to see if RPV is present. In general, we want to know how groups of voters (i.e., Native Americans or non-Hispanic whites) voted in a particular election when all we have to analyze are precinct vote returns and the demographic composition of the people who live in those precincts.

Experts have at their disposal several methods to analyze RPV: homogeneous precinct analysis (i.e., taking the vote average across high density white precincts vs. high density

Black precincts), ecological regression (ER), ecological inference (EI), and ecological inference Rows by Columns (RxC), which is designed specifically for the multi-candidate, multi-racial group environment, though all of these methods can be used to assess whether RPV is present in diverse election environments involving multiple candidates and multiple groups. In this report I rely on the ecological inference (EI) and RxC method to assess whether voting is racially polarized. I also focus my attention on the two top of the ticket candidates in each contest.

The R software package, eiCompare (Collingwood et al. 2020), builds upon packages eiPack (Lau, Moore, and Kellermann 2020) and ei (King and Roberts 2016) to streamline RPV analysis, and includes all of these aforementioned statistical methods. In this report I include ecological inference estimates accounting for variation in turnout by race. That is, I divide candidate vote by voting age population and include an estimate for no vote. I then calculate vote choice estimates by race for only people estimated to have voted. In this way, the method differences out non-voters and attempts to account for variation in turnout by race.

The rest of the report presents my results: 1) A list of the elections analyzed; 2) District 4 RPV analysis; 3) District 4, 4A and 4B electoral performance analysis.

List of Elections Analyzed

Table 1 presents the analyzed exogenous elections. Native-American candidates have an asterisk after their name. Overall, there are 35 elections. In the full District 4, I analyze 34 elections across five election cycles finding RPV in each contest. I also examined the most recent 4A election, taking a slightly different approach, which I discuss later in the report. In addition, I analyzed the 2014 LD-4 contest between Terry Jones, Bill Oliver, Kenton Onstad, and Cesar Alvarez (Native-American candidate). This district is very similar to the newly adopted LD-4 but has a few additional precincts.

Table 1. List of contests analyzed, between 2014-2022. Native American candidates have an asterisk after their name.

Year	Contest	Candidate 1	Candidate 2	Native Prefer	D4 RPV	D4 Native-Prefer Win	D4A Native-Prefer Win	D4B Native-Prefer Win
2022	U.S. Senate	Christiansen	Hoeven	Christianse n	YES	No	Yes	No
2022	U.S. House	Mund	Armstrong	Mund	YES	No	Yes	No
2022	Agriculture Commissioner	Dooley	Goehring	Dooley	YES	No	Yes	No
2022	Attorney General	Charles Lamb	Wrigley	Charles Lamb	YES	No	Yes	No
2022	Secretary of State	Powell	Howe	Powell	YES	No	Yes	No
2022	Public Service Commissioner	Moniz*	Fedorchak	Moniz	YES	No	Yes	No
2022	Public Service Commissioner 4yr	Hammer	Haugen-Hoffart	Hammer	YES	No	Yes	No
2020	President	Biden	Trump	Biden	YES	No	Yes	No
2020	U.S. House	Raknerud	Armstrong	Rakenrud	YES	No	Yes	No
2020	Governor	Lenz	Burgum	Lenz	YES	No	Yes	No
2020	Auditor	Hart	Gallion	Hart	YES	No	Yes	No
2020	Treasurer	Haugen	Beadle	Haugen	YES	No	Yes	No
2020	Public Services Commissioner	Buchmann	Kroshus	Buchmann	YES	No	Yes	No
2018	U.S. Senate	Heitkamp	Cramer	Heitkamp	YES	No	Yes	No
2018	U.S. House	Schneider	Armstrong	Schneider	YES	No	Yes	No
2018	Secretary of State	Boschee	Jaeger (I)	Boshee	YES	No	Yes	No
2018	Attorney General	Thompson	Stenhjem	Thompson	YES	No	Yes	No
2018	Agriculture Commissioner	Dotzenrod	Goehring	Dotzenrod	YES	No	Yes	No
2018	Public Services Commissioner	Brandt	Christmann	Brandt	YES	No	Yes	No
2018	Public Services Commissioner 2yr	Buchmann	Kroshus	Buchmann	YES	No	Yes	No
2018	Tax Commmissioner	Oversen	Rauschenberge r	Oversen	YES	No	Yes	No
2016	President	Clinton	Trump	Clinton	YES	No	Yes	No
2016	U.S. Senate	Glassheim	Hoeven	Glassheim	YES	No	No	No
2016	U.S. House	Iron Eyes*	Cramer	Iron Eyes	YES	No	Yes	No
2016	Governor	Nelson	Burgum	Nelson	YES	No	Yes	No
2016	Insurance	Buffalo*	Godfread	Buffalo	YES	No	Yes	No
2016	Public Services Commissioner	Hunte Beaubrun*	Fedorchak	Hunte Beaubrun	YES	No	Yes	No
2014	Attorney General	Kraus	Stenehjem	Kraus	YES	No	Yes	No
2014	Agriculture Commissioner	Taylor	Goehring	Taylor	YES	No	Yes	No
2014	Public Service Commissioner 2yr	Axness	Fedorchak	Axness	YES	No	Yes	No
2014	Public Service Commissioner	Reisenauer	Kalk	Reisenauer	YES	No	Yes	No
2014	Secretary of State	Fairfield	Jaeger	Fairfield	YES	No	Yes	No
2014	Tax Commmissioner	Astrup	Rauschenberge r	Astrup	YES	No	Yes	No
2014	U.S. House	Sinner	Cramer	Sinner	YES	No	Yes	No

Racially Polarized Voting District 4

To conduct the analysis, I gathered precinct election returns for candidates running in each statewide contest either from the redistricting data hub[1] or the North Dakota Secretary of State, which provides precinct vote returns.[2] While the redistricting data hub data come formatted in precincts/VTDs and in GIS shape files, not all contests are always available. In the case where I downloaded data from the Secretary of State website I joined the data with VTD shape files based on common precinct names.

Next, I downloaded Census VTD files containing Voting Age Population (VAP) data from the 2020 U.S. Census from Dave's Redistricting – a popular website and program for redistricting. These data contain counts of VAP by race per precinct/VTD. I join precinct vote returns with VAP data using a combination of GEOID20 indicators and precinct names. Thus, I now have datasets that contain both candidate votes and racial demographics. Next, I subset the full statewide data to just the precincts found in the new District 4, which is presented in Figure 1.

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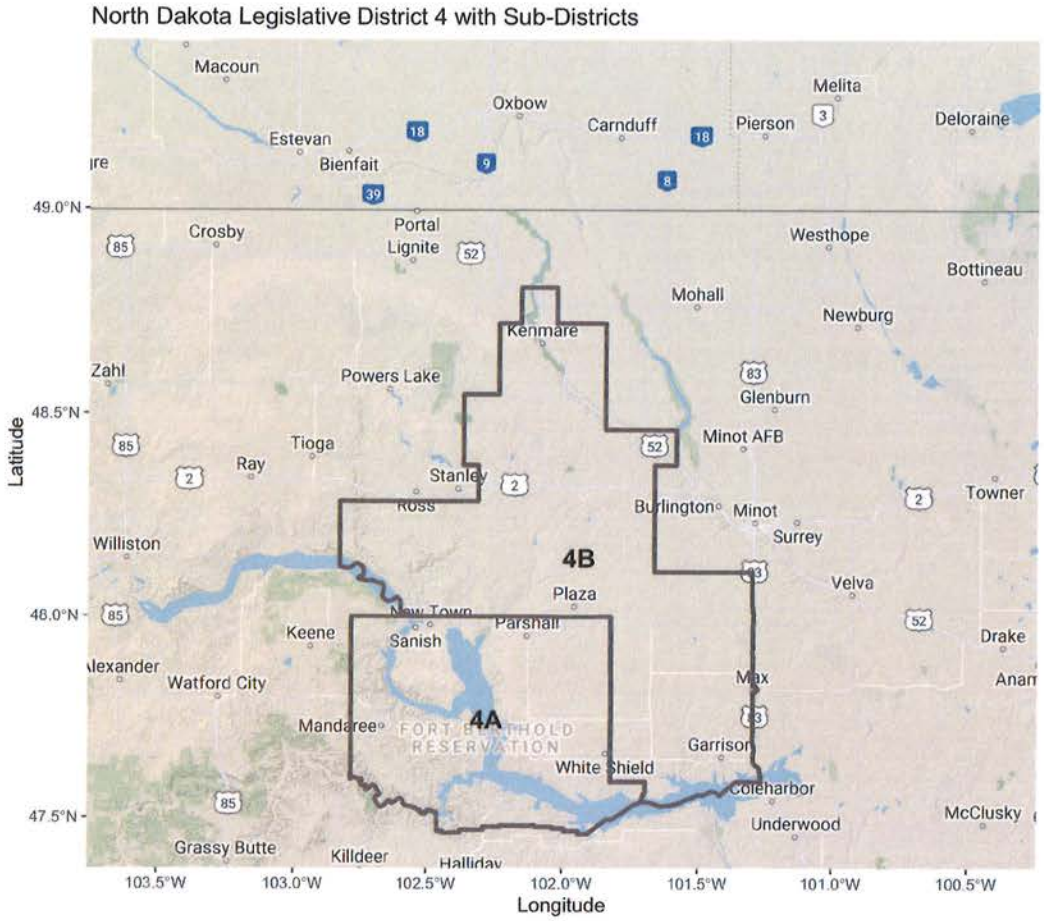
[1] https://redistrictingdatahub.org/state/north-dakota/

[2] See https://results.sos.nd.gov/ResultsSW.aspx?text=All&type=SW&map=CTY&eid=292 for 2016 example.

Figure 1. District 4 under new North Dakota map.



The last step is to develop the inputs to the ecological inference model. I convert the precinct racial estimates to a percent, generating a percent Native American by dividing the estimated number of VAP Native American individuals by the total number of VAP individuals in a precinct. To generate my estimate of percent white, I do the same for non-Hispanic white. I then collapse all other race groups into a catch-all group – which is required for statistical estimation -- although I do not substantively analyze race: other. I then calculate vote choice estimates by race for people estimated to have voted. In this way, the method attempts to difference out non-voters and accounts for variation in turnout by race.

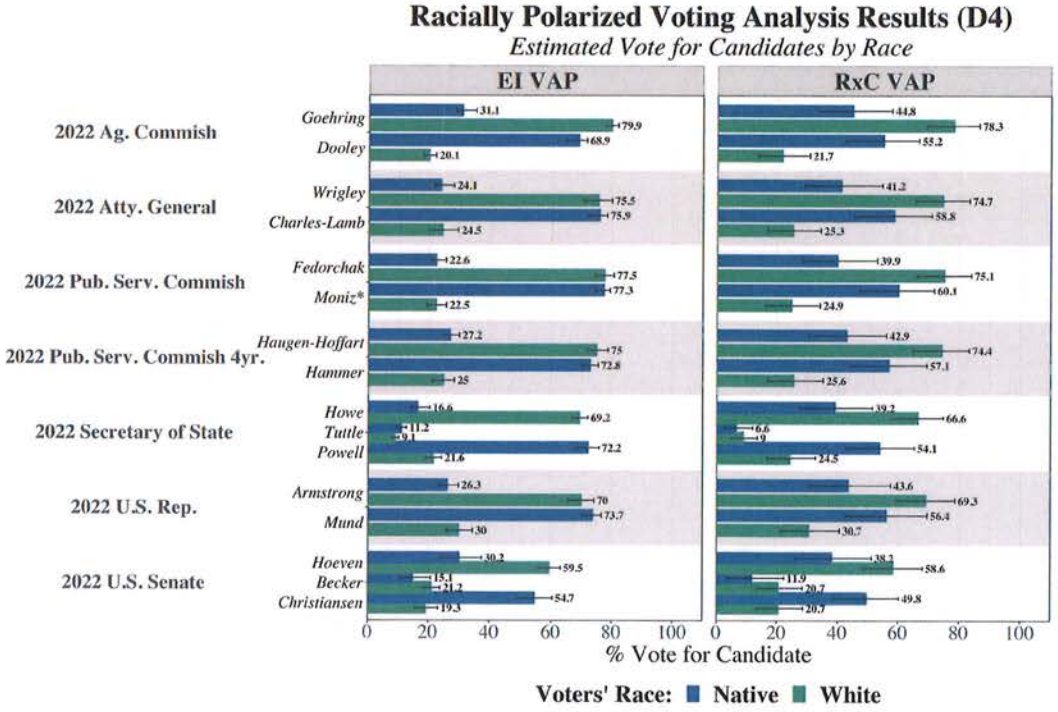
I do not conduct an ecological inference RPV analysis in Sub-Districts 4A and 4B because 1) there are relatively few precincts in each subdistrict, and 2) Sub-District 4A has a large share of Native Americans, whereas 4B does not, so locating homogeneous precincts of both racial groups in both subdistricts is challenging. Instead, I rely on the overall District 4 RPV results to assess candidate preference in the general region. However, I do conduct

performance analysis in the subdistricts to evaluate whether white votes block Native American candidates and Native-preferred candidates.

Figure 2 presents the 2022 RPV results. The left column axis shows the contest name, the middle panel the EI results, and the rightmost panel the RxC results. The results are generally consistent, showing RPV in every contest, or an RPV rate of 100%.[3] I also present 95% confidence error bands showing each model's statistical uncertainty. Finally, candidates with an asterisk are known Native-American candidates.

There are so many contests I will not enumerate the results of each one; rather I will provide one example: the 2022 Agriculture Commissioner. In the EI model, 69% of Native voters backed Dooley (55% in the RxC model); whereas 80% of whites backed Goehring (78% in the RxC model). Thus, a majority of Native voters favor one candidate, and a clear majority of white voters favor a different candidate.

Figure 2. Racially Polarized Voting assessment in statewide contests subset to the new District 4 boundaries, 2022 general election.



While I did not conduct ecological inference analyses in either subdistrict, I did conduct a correlation analysis of the most recent election in Sub-District 4A. Figure 3 presents bivariate (race and candidate vote share) scatterplots and reveals a trend consistent with an RPV analysis. For instance, in the bottom left corner, as the share of Native-American

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[3] The 2022 Senate race shows lower rates of RPV in the RxC model but diverging candidate preference by race is still very evident.

voters in a precinct increases, the vote share for Finley-Deville also rises. The converse occurs for Burton – who does best in the whitest precincts in Sub-District 4A (top right panel).

Figure 3. Scatterplots showing correlation/association between race and candidate choice in Sub-District 4A.

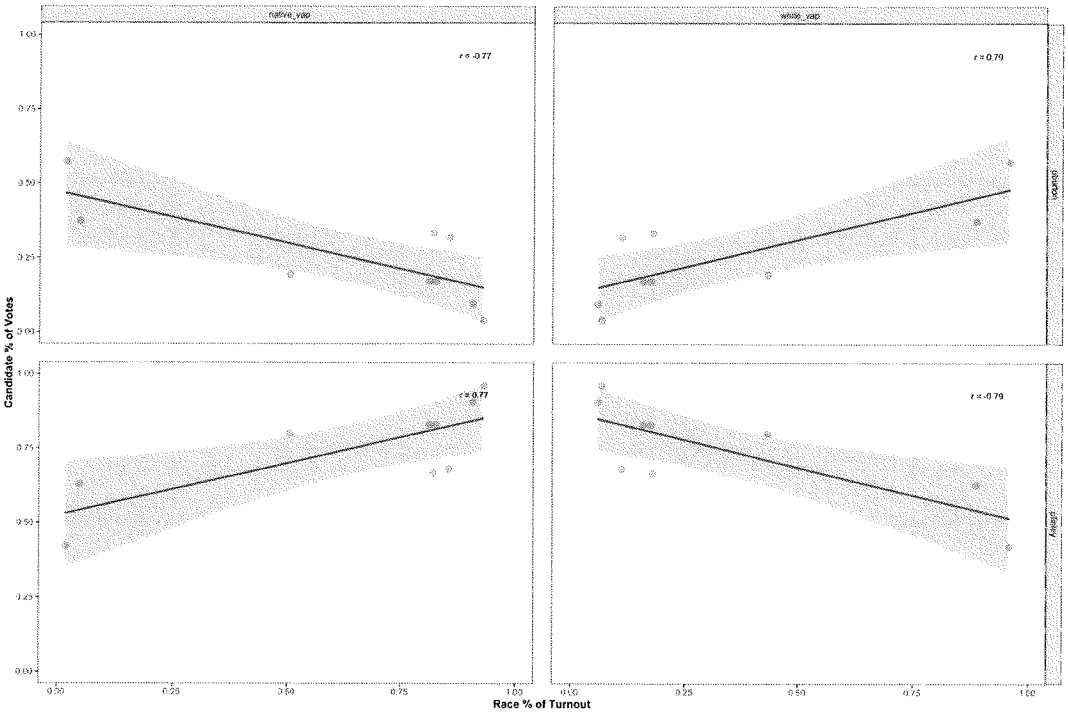


Figure 4 presents the racially polarized voting results for the 2020 contests. The results are consistent: in every single contest there is overwhelming evidence of RPV.

Figure 4. Racially Polarized Voting assessment in statewide contests subset to the new District 4 boundaries, 2020 general election.

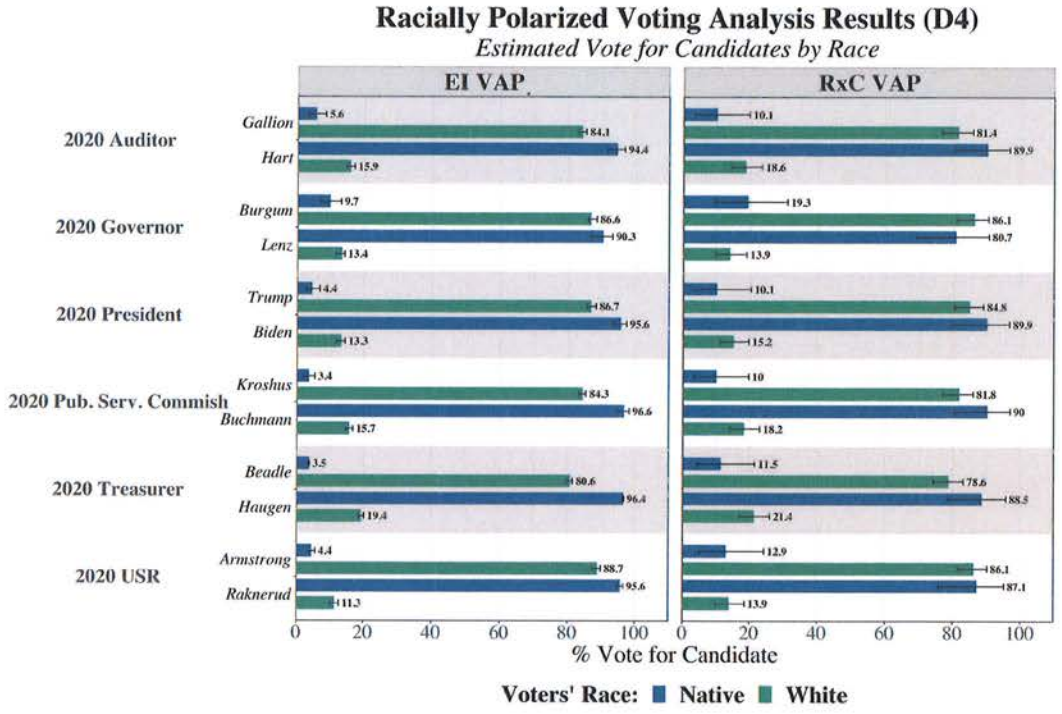


Figure 5 presents the racially polarized voting results for the 2018 contests. Again, the results show overwhelming evidence of RPV.

Figure 5. Racially Polarized Voting assessment in statewide contests subset to the new District 4 boundaries, 2018 general election.

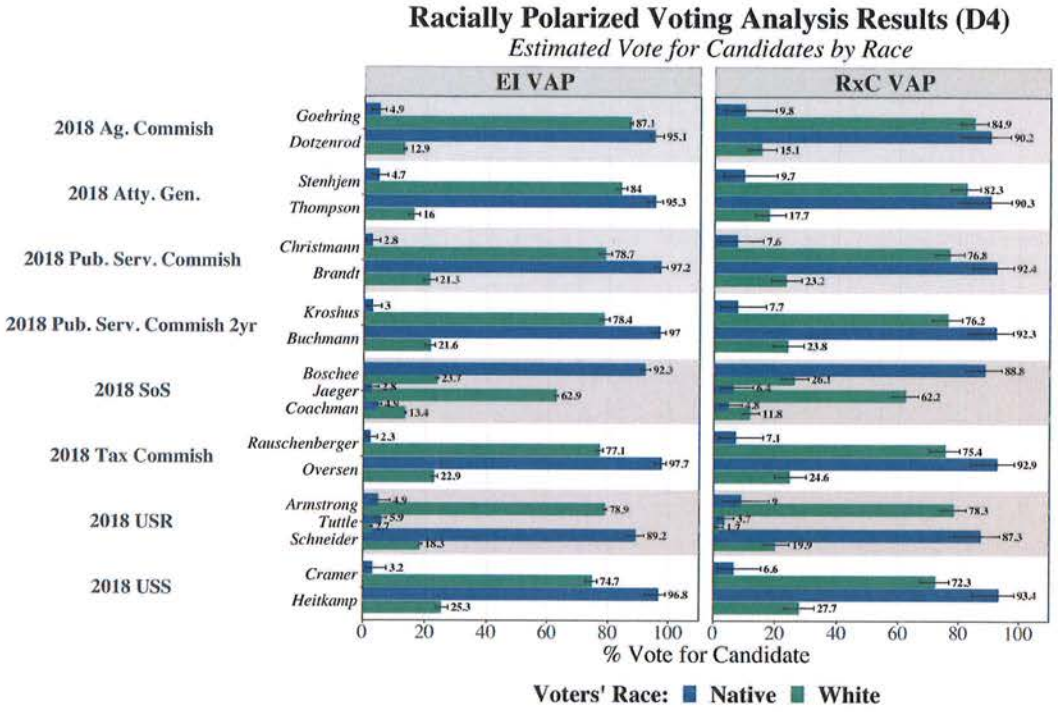


Figure 6 presents the racially polarized voting results for the 2016 contests.

Figure 6. Racially Polarized Voting assessment in statewide contests subset to the new District 4 boundaries, 2016 general election.

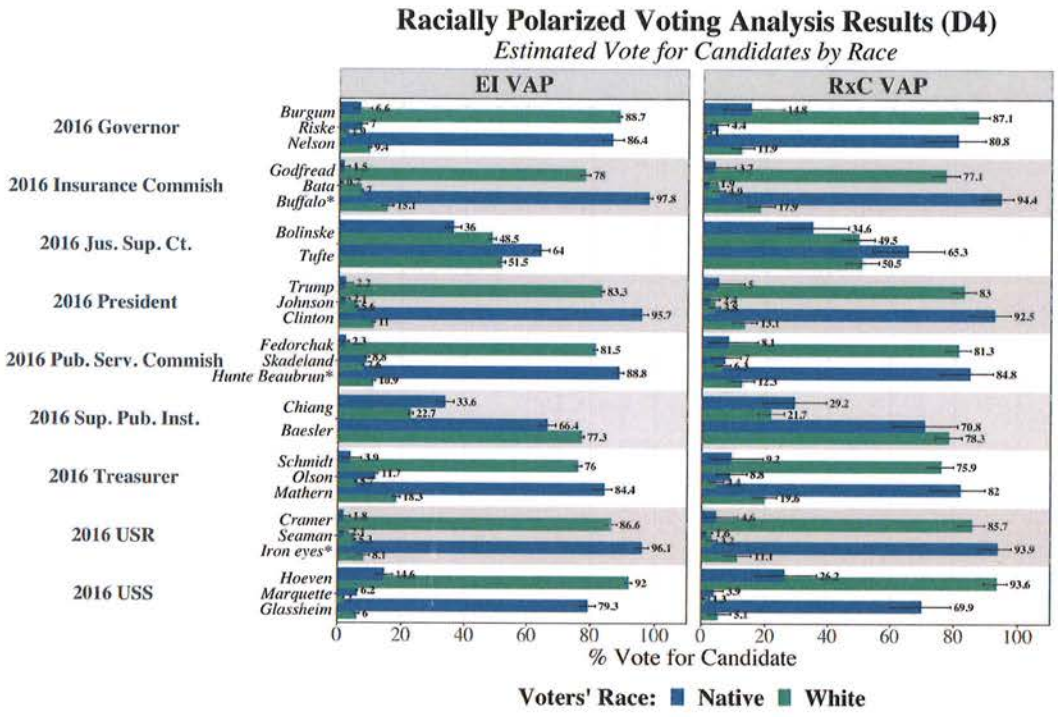


Figure 7 presents the racially polarized voting results for the 2016 Legislative District/State Representative 4 featuring Terry Jones, Bill Oliver, Kenton Onstad, and Cesar Alvarez. Mr. Alvarez is Native American while the remaining three candidates are white. Although this election was conducted under the prior version of District 4, and not the newly enacted version of the district, there were very few changes between the prior and the new district (2,364 people removed (91.4% white VAP) and 2,039 added (93.3% white VAP)). Because the district remained largely the same, with no change to the predominantly Native American portions of the district, the 2016 state legislative election is probative, especially so as an endogenous election featuring a Native American candidate. Voters could cast up to two ballots so I have normalized the results to account for overall voting behavior in preparing the RPV data. Native-American voters overwhelmingly backed Alvarez (62-65% of the vote), followed by Onstad – a white Democrat (31%). Note, that Native-American voters clearly prefer the Native-American Democrat over the white Democrat. Meanwhile, white voters cast split their ballot somewhat evenly between Oliver and Jones (34-36%) – the eventual winners. Indeed, only around 10% of white voters supported Alvarez. Notably, white voters were much more willing to vote for the white Democrat (20.3%) compared to the Native American Democrat (9.5%). This election illustrates how race, not partisanship, motivates racially polarized voting in the region.

Figure 7. Racially Polarized Voting assessment in Legislative District 4 for state representative, 2016.

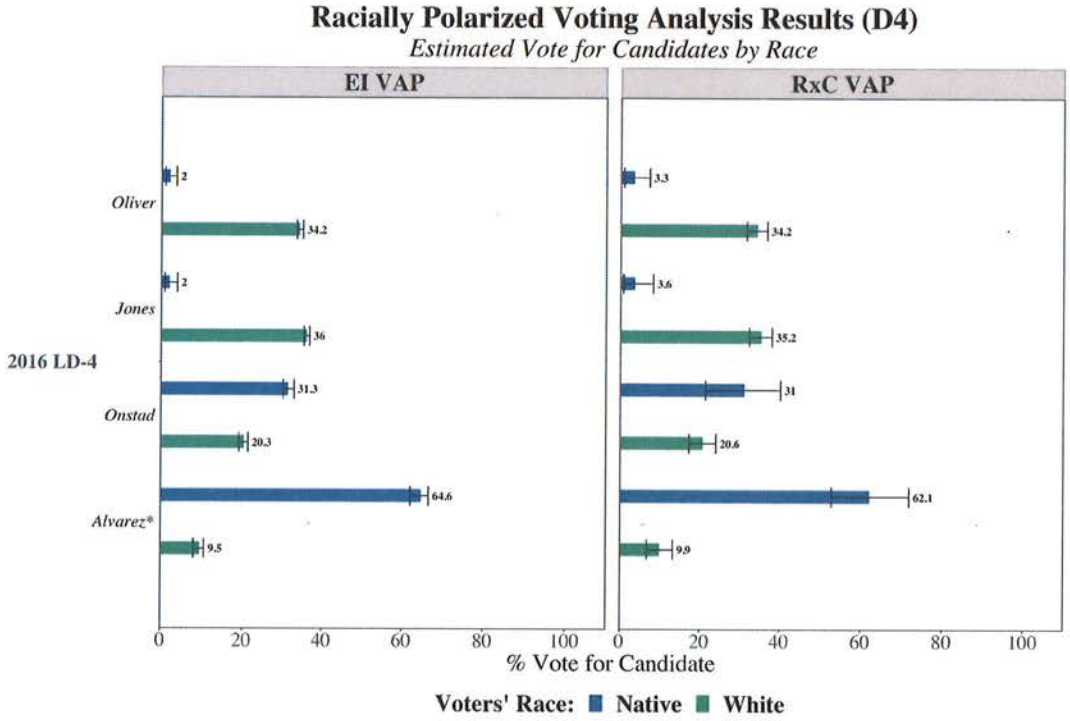
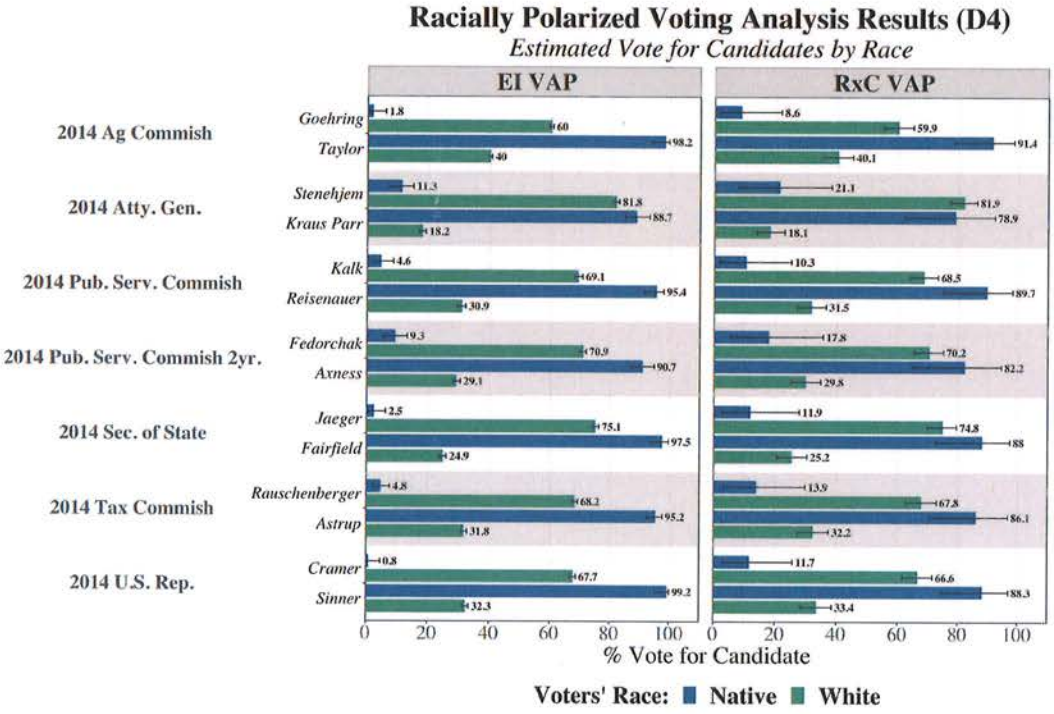


Figure 8 presents the racially polarized voting results for the 2014 contests.

Figure 8. Racially Polarized Voting assessment in statewide contests subset to the new District 4 boundaries, 2014 general election.



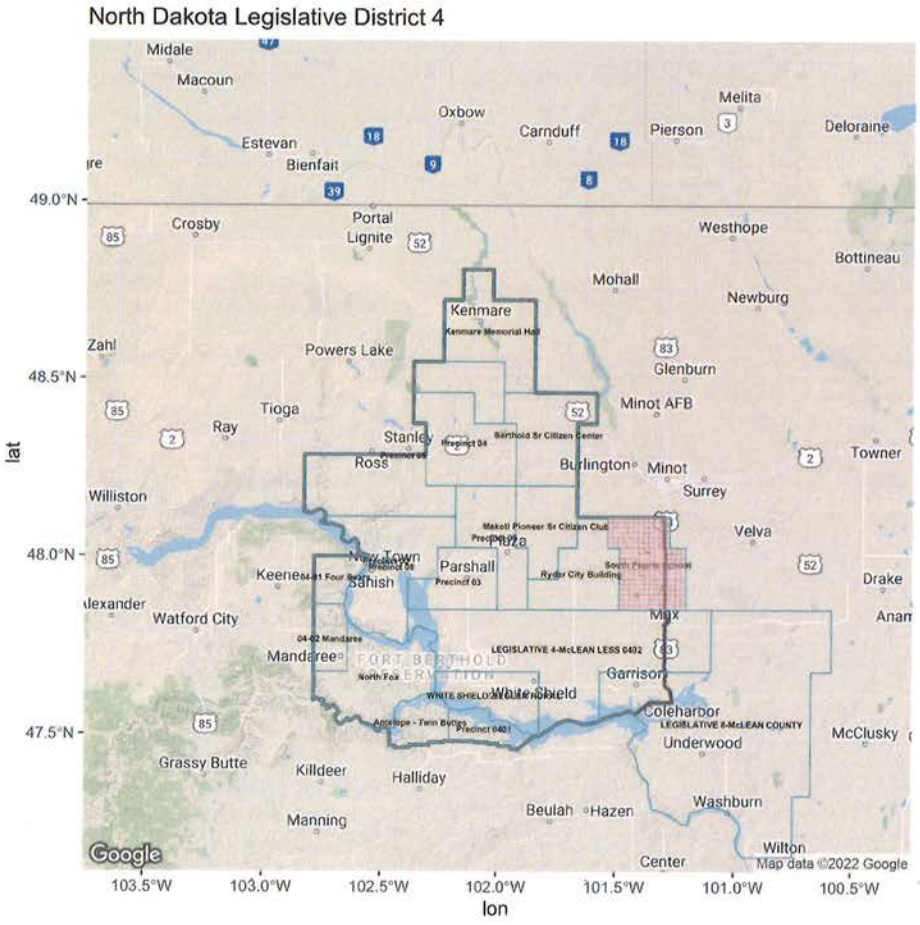
Performance Analysis District 4

To conduct the performance analysis, for 2022, I simply take the appropriate precincts falling within the full D4, then also look at D4A and D4B discretely. For the earlier contests where results are not presented by subdistrict, I take an additional step with regard to split precincts. For the full District 4, there are 3 precincts split across D4 and neighboring districts (i.e., District 8). These include South Prairie School (76.5% geographically in the district), LEGISLATIVE 4-McLEAN LESS 0402 (86.5% geographically inside the district),

and LEGISLATIVE 8-McLEAN COUNTY (7.4% geographically in the district). There are also several split precincts between D4A and D4B.

To account for these splits in my electoral performance analysis, I overlaid the precinct polygon shape file with the 2020 block polygon shape file and join population-level data including voting age population (VAP). Because blocks are fully nested inside precincts in this instance, I can make adjustments to precinct vote totals by weighting votes by total voting age population. In precincts that split between districts I take blocks on the one side of the District 4 boundary to estimate the share of the VAP that is inside/outside of the district. Figure 9 illustrates the idea. The part of the pink precinct to the left of the district boundary is included in D4, the part to the right is not.

Figure 9. Example of South Prairie School split precinct between District 4 and neighboring district, with Census blocks shaded pink.



One way to address this issue may be to turn to geographic distribution instead of population distribution. For example, a precinct might be geographically split 50-50 between District 4 and District 8. If there are 100 votes in the precinct, I could assign 50 votes to the part of the precinct in the district, and divide all candidate votes in half. If

Trump had received 70 of the precinct's initial 100 votes, and Biden 30, I would assign Trump 35 votes (70*0.5) and Biden 15 (30*0.5) totaling 50 votes.

However, another method when data are available is to take account of where the population lives within the precinct by using blocks – a much smaller and more compact geographic unit. Each block contains a tally for voting age population (VAP); therefore I can sum the VAP for all blocks for the part of the precinct falling inside of District 4, and for the part of the precinct outside of D4. This method more adequately accounts for population distribution within the precinct instead of relying on geographic area alone. It could be the case that 70% of the VAP resides in the part of the precinct falling into D4, and 30% in a neighboring district. So instead of multiplying the initial 100 votes by 0.5, for District 4, I multiply the precinct's initial 100 votes by 0.7. In this scenario, Trump would receive 49 of the 70 votes and Biden 21 votes. While the candidate vote share ratio might be the same the Trump net differential moves from plus 20 (35-15) to plus 28 (49-21).

Having accounted for the three split precincts, I combine those vote estimates with the 16 precincts fully inside D4. For each contest, I then sum votes for candidate 1 and candidate 2, respectively, and divide by total votes cast. I conduct the same procedure for the two subdistricts.

Figure 10 presents the 2022 electoral performance analysis results of the full District 4, then Sub-Districts 4A and 4B. The results show that the white-preferred candidate wins seven of seven (100%) contests in the full D4, loses all seven contests in D4A, and wins seven of seven contests in D4B. These results plainly show the need for a subdistrict in D4 – as the full district results show strong evidence of white voters blocking Native voters in their ability to elect candidates of choice at the full district level.

Figure 10. Performance analysis assessment in statewide contests subset to the new District 4 boundaries, 2022 elections.

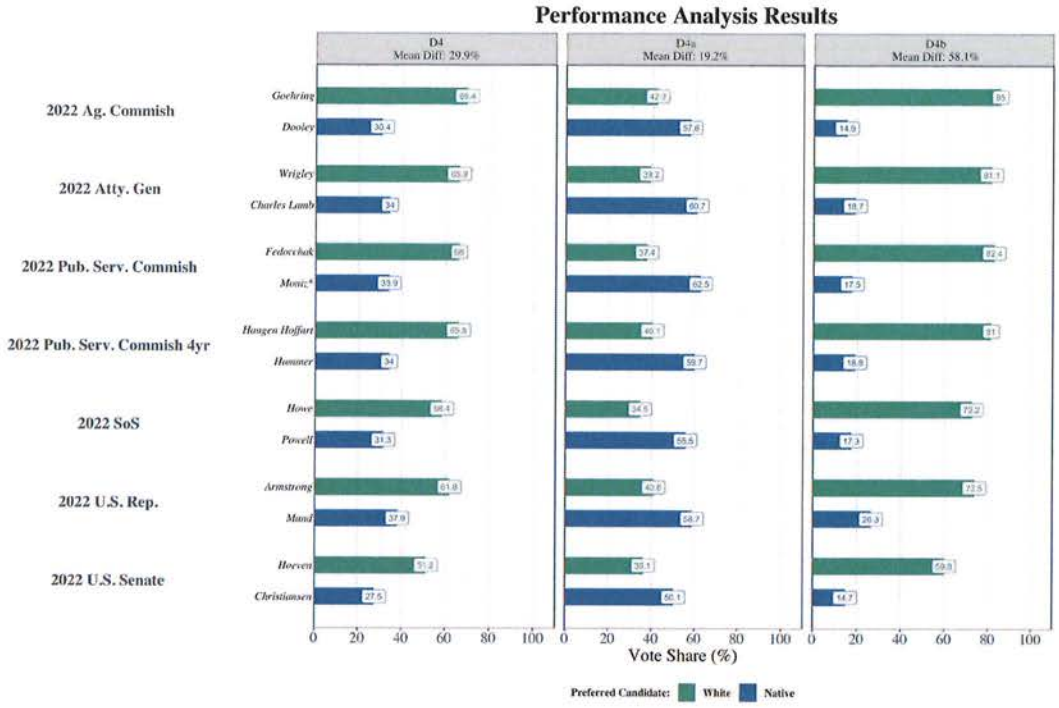


Figure 11 presents the 2020 election performance analysis results of the full District 4, then Sub-Districts 4A and 4B. Beginning with the leftmost panel – the full District 4 – the Native-preferred candidates loses 6 of 6 contests for a block rate of 100%. The middle panel tells a different story though. The Native-preferred candidates wins 6 of 6 contests for a block rate of 0%.

Finally, the rightmost panel (Sub-District 4B) tells the opposite story – the Native-preferred candidates loses 6 of 6 contests for a block rate of 100%.

Figure 11. Performance analysis assessment in statewide contests subset to the new District 4 boundaries, 2020 elections.

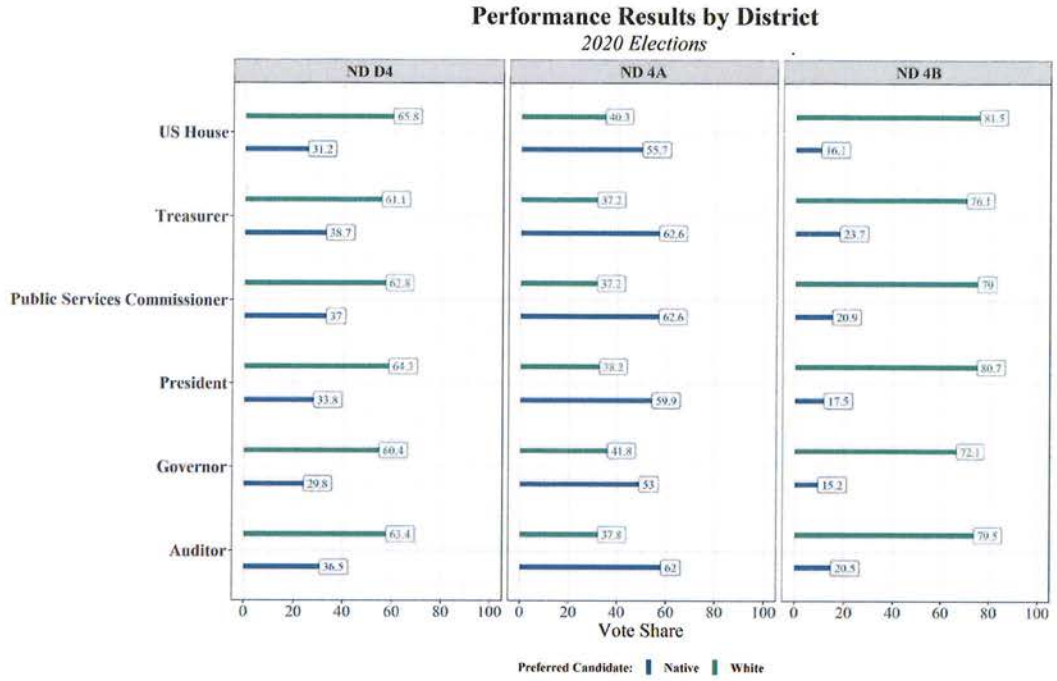


Figure 12 presents the 2018 election performance analysis results of the full District 4, then Sub-Districts 4A and 4B. Beginning with the leftmost panel – the full District 4 – the Native-preferred candidates loses 8 of 8 contests for a block rate of 100%. The middle panel tells a different story though. The Native-preferred candidates wins 8 of 8 contests for a block rate of 0%.

Finally, the rightmost panel (Sub-District 4B) tells the opposite story – the Native-preferred candidates loses 8 of 8 contests for a block rate of 100%.

Figure 12. Performance analysis assessment in statewide contests subset to the new District 4, 4A, and 4B boundaries, 2018 elections.

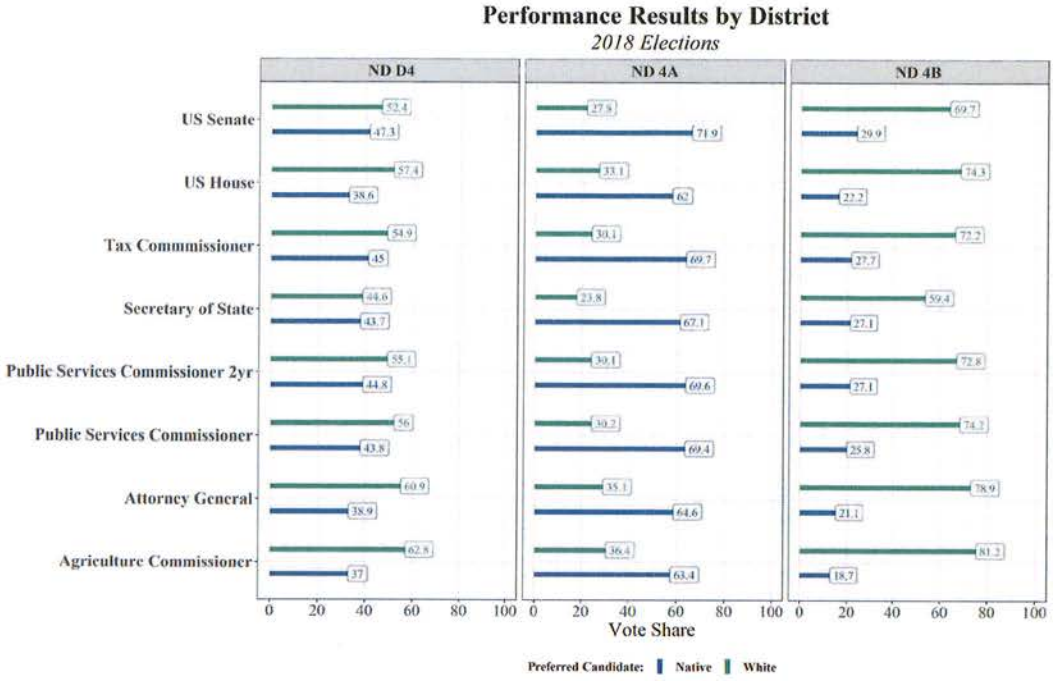


Figure 13 presents the 2016 election performance analysis results of the full District 4, then Sub-Districts 4A and 4B. Beginning with the leftmost panel – the full District 4 – the Native-preferred candidates loses 7 of 7 contests for a block rate of 100%. The middle panel tells a different story though. The Native-preferred candidates wins 6 of 7 contests for a block rate of 14%.

Finally, the rightmost panel (Sub-District 4B) tells the opposite story – the Native-preferred candidates loses 7 of 7 contests for a block rate of 100%.

Figure 13. Performance analysis assessment in statewide contests subset to the new District 4 boundaries, 2016 elections.

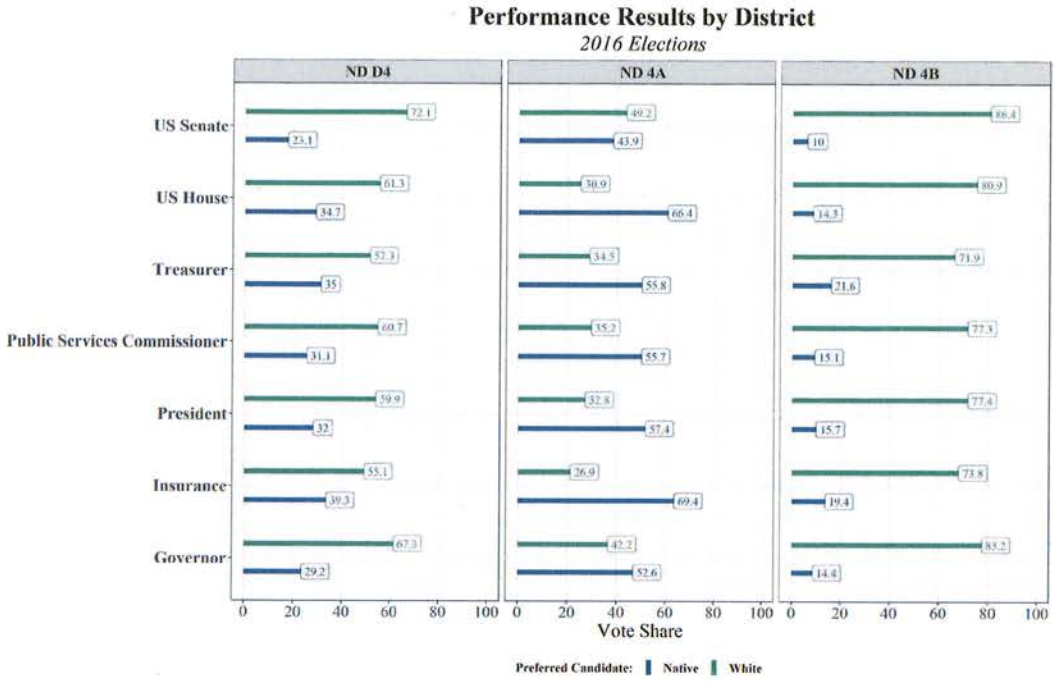
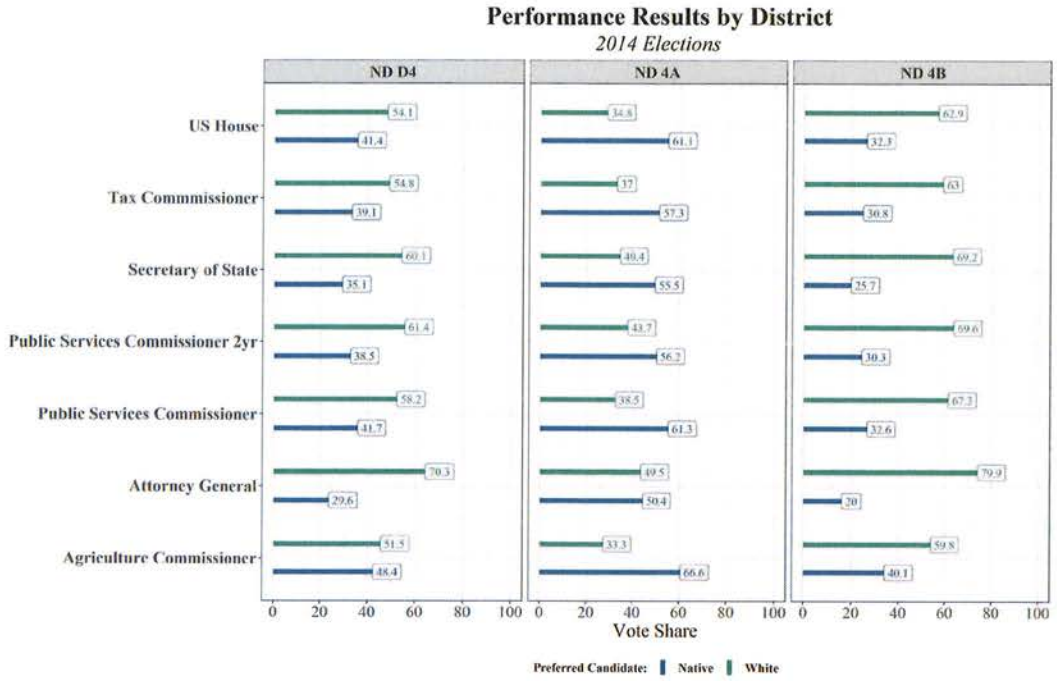


Figure 14 presents the 2014 election performance analysis results of the full District 4, then Sub-Districts 4A and 4B. Beginning with the leftmost panel – the full District 4 – the Native-preferred candidates loses 7 of 7 contests for a block rate of 100%. The middle panel tells a different story though. The Native-preferred candidates wins 7 of 7 contests for a block rate of 0%.

Finally, the rightmost panel (Sub-District 4B) tells the opposite story – the Native-preferred candidates loses 7 of 7 contests for a block rate of 100%.

Figure 14. Performance analysis assessment in statewide contests subset to the new District 4 boundaries, 2014 elections.



Conclusion

In conclusion, without any doubt, racially polarized voting between Native American voters and non-Hispanic whites is present in North Dakota's recently enacted District 4. RPV is especially clear in elections featuring Native American candidates – but is present across every single election I analyzed across five election years (2014, 2016, 2018, 2020, and 2022). RPV is also present in the 2016 LD-4 election featuring a Native American candidate who ran and lost. Thus, the Gingles II threshold is clearly met. A Gingles III analysis reveals that whites vote as a bloc to block Native Americans from electing candidates of choice at the full District 4 level in 34 of 34 contests. Narrowing in on the new Sub-Districts 4A and 4B, Native-preferred candidates win 97% of the time in 4A. However, in Sub-District 4B, Native-preferred candidates win 0% of the time meaning that they are very likely to lose contests in that subdistrict. Therefore, Gingles III is present in Sub-District 4B, in District 4 overall, but not in Sub-District 4A (which was drawn to allow Native American voters to overcome white bloc voting). Sub-District 4A thus affords Native American voters the opportunity to elect their candidates of choice that they otherwise lack in the absence of the sub-district.

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