Exhibit A

STATE OF NEW MEXICO
COUNTY OF LEA
FIFTH JUDICIAL DISTRICT COURT

REPUBLICAN PARTY OF NEW MEXICO; DAVID GALLEGOS; TIMOTHY JENNINGS; DINAH VARGAS; MANUEL GONZALES, JR.; BOBBY KIMBO; DEANN KIMBRO; and PEARL GARGIA, Plaintiffs, v. MAGGIE TOULOUSE OLIVER, in her official capacity as New Mexico Secretary of State; MICHELLE LUJAN GRISHAM, in her official capacity as Governor of New Mexico; HOWIE MORALES, in his official capacity as New Mexico Lieutenant Governor and President of the New Mexico Senate; MIMI STEWART, in her official capacity as President Pro Tempore of the New Mexico Senate; and JAVIER MARTÍNEZ, in his official capacity as Speaker of the New Mexico House of Representatives, Defendants.	No. D-506-CV-2022-00041 (The Honorable Fred Van Soelen, District Court Judge)

BRIEF OF *AMICI CURIAE* DR. JONATHAN CERVAS, PAUL MITCHELL, DR. SAMUEL S.-H. WANG, RODERICK KENNEDY, ELECTION REFORMERS NETWORK, COMMON CAUSE NEW MEXICO, AND LEAGUE OF WOMEN VOTERS NEW MEXICO IN SUPPORT OF NEITHER PARTY

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INTRODUCTION

On July 5, 2023, the Supreme Court of New Mexico held that partisan gerrymandering claims are justiciable under Article II, Section 18 of the New Mexico Constitution and provided the Court with holdings and standards to apply in evaluating Plaintiffs' challenge to the State's congressional plan (the "Enacted Plan"). In its order, the Supreme Court explicitly adopted the three-part test summarized in Justice Kagan's dissenting opinion in *Rucho v. Common Cause* for adjudicating partisan gerrymandering claims under the New Mexico Constitution.[1] Order at 3-4, *Grisham, et al. v. Van Soelen, et al.*, No. S-1-SC-39481 (N.M. Sup. Ct., July 5, 2023) ("NMSC Order") (citing 139 S. Ct. 2484, 2516 (2019)).

Amici—foremost experts in the methods used to evaluate redistricting plans, redistricting experts with experience in mapmaking for over 100 state and local jurisdictions, and nonpartisan civic organizations and organizers—submit this brief to illustrate the types of evidentiary analyses that may be conducted to assess partisan gerrymandering claims and to discuss how the applicable legal frameworks apply to such claims. *Amici* file this brief in support of neither party and do not take a position on whether the Enacted Plan is a partisan gerrymander or whether any given part of the applicable three-part test is satisfied.[2]

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[1] The New Mexico Constitution "provides broader protection" than the federal constitution when federal comparators are inapt or unpersuasive. *State v. Gomez*, 122 N.M. 777, 783, 932 P.2d 1 (1997). This is the case here because the federal analysis of partisan gerrymandering is "flawed," based on "undeveloped federal analogs," and fails to account for "structural differences between state and federal government" and "distinctive state characteristics." *Id.*

[2] *Amici* offer the Court illustrations from independent experts solely to assist the Court in understanding the legal framework and methodologies for evaluating the parties' submissions.

ARGUMENT

"The right to vote is the essence of our country's democracy, and . . . dilution of that right strikes at the heart of representative government." *Maestas v. Hall*, 2012-NMSC-6, ¶ 1, 274 P.3d 66. Partisan gerrymandering infringes this right and violates Article II, Section 18 of the New Mexico Constitution by denying voters the "equal protection of the laws" through vote dilution—"the devaluation of one citizen's vote as compared to others." *Rucho*, 139 S. Ct. at 2513 (Kagan, J., dissenting).

The New Mexico Supreme Court adopted the three-part partisan gerrymandering test summarized in Justice Kagan's dissenting opinion in *Rucho v. Common Cause* focused on intent, effects, and causation. NMSC Order at 3. **First**, to prove intent, a plaintiff must show that "state officials' predominant purpose" in devising the map "was to entrench their party in power by diluting the votes of citizens favoring its rival." 139 S. Ct. at 2516 (Kagan, J., dissenting). **Second**, to prove effects, a plaintiff must show "that the lines drawn . . . substantially dilut[ed] their votes." *Id.* **Third**, if the plaintiffs make these showings, then the burden shifts to the State, which must provide a sufficient, "nonpartisan justification to save its map," *id.*, and which must show that the district lines are "substantially related to [this] important government interest," *see* NMSC Order at 4 (holding that "[i]ntermediate scrutiny is the proper level of scrutiny for

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Amici do not propose that the analyses here are themselves evidence or endorse any particular methodology, but provide these illustrations to assist the Court in parsing the proposed findings of the parties.

adjudication of a partisan gerrymandering claim" and citing *Breen v. Carlsbad Mun. Sch.*, 2005-NMSC-028, ¶¶ 11-15, 138 N.M. 331, 120 P.3d 413).[3]

Below, *amici* describe the legal framework required by the New Mexico Supreme Court and the evidence applicable at each step.

I. Part 1, Intent: How to Identify "Predominant Partisan Purpose"

To satisfy **Part 1**, plaintiffs must show that the mapmakers had "a specific and predominant intent to entrench [political actors] in power by manipulating district lines." *Rucho,* 139 S. Ct. at 2517 (Kagan, J., dissenting). This inquiry has parallels in federal malapportionment and racial gerrymandering cases, where plaintiffs must show that illegitimate considerations were the "predominant motivation behind the plan's deviations," *Harris v. Ariz. Indep. Redistricting Comm'n*, 578 U.S. 253, 263 (2016), or provided the "essential basis for the lines drawn," *Bethune-Hill v. Va. State Bd. of Elections*, 137 S. Ct. 788, 799 (2017).[4] And several state court partisan gerrymandering cases provide examples of how courts evaluate evidence of partisan intent. *See, e.g.*, *League of Women Voters v. Commonwealth* (*LWVPA*), 178 A.3d 737,

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[3] "[B]y requiring plaintiffs to make difficult showings relating to both purpose and effects, the standard invalidates . . . only the most extreme[] partisan gerrymanders." *Rucho,* 139 S. Ct. at 2515-16 (Kagan, J. dissenting). This is consistent with the New Mexico Supreme Court's indication that some "reasonable degree" of gerrymandering is permissible under Article II, Section 18, given "the inherently political nature of redistricting." NMSC Order at 3-4.

[4] This brief cites federal cases as persuasive authority only, not to suggest that federal law in any way controls the outcome. If the Court finds these or other federal doctrines provide a useful way to analyze any aspect of the partisan gerrymandering claim before it, the Court should specifically state that the federal citations are relied upon for persuasive authority only and that adequate and independent state grounds under the New Mexico Constitution control the decision it renders. *See, e.g.*, *Michigan v. Long,* 463 U.S. 1032, 1041 (1983).

768-81, 818-21 (Pa. 2018); *Harkenrider v. Hochul*, 197 N.E.3d 437, 451-54 & n.14 (N.Y. 2022); *League of Women Voters of Fla. v. Detzner*, 172 So. 3d 363, 388-93 (Fla. 2015).

Evidence relevant to this inquiry includes quotes and documents from key actors in the redistricting process revealing partisan goals; indicators that the process for developing the enacted plan was driven by one party (such as departures from the normal legislative process, development of plans in secret, party-line committee and/or floor votes, exclusion of minority-party input, and disregard for public input); and expert evidence (such as quantitative, statistical, and geospatial analyses). *See Rucho*, 139 S. Ct. at 2510-11 (Kagan, J., dissenting).

Expert evidence is especially helpful in partisan gerrymandering cases because direct evidence of intent by partisan actors is often not available. Skilled mapmakers may draw "stealth gerrymanders" that can dilute votes while drawing maps which, to the layperson, appear to be reasonable.[5] Conversely, in other cases, a map which looks to the eye like a monstrosity could be a function of underlying geography, varying density of population, or a community of interest which causes the final map to have unusual shapes.

Below the *amici* discuss three types of evidence that plaintiffs alleging partisan gerrymandering may use to prove partisan intent: (1) ensemble analysis, (2) descriptive statistics, and (3) other circumstantial evidence relied upon by Justice Kagan in her *Rucho* opinion.

(1) Ensemble Analysis. Ensemble analysis is a computational technique used across a variety of fields. In the context of redistricting, it can help determine whether electoral district boundaries were drawn for the purpose of providing an unfair advantage to a political party. To

[5] *See* Jonathan R. Cervas & Bernard Grofman, *Tools for identifying partisan gerrymandering with an application to congressional districting in Pennsylvania*, 76 Pol. Geo. 102069 (2020).

do this, a computer generates thousands of districting maps—all drawn based on the same underlying redistricting criteria.[6] A plaintiff could then compare the enacted map to this "ensemble" of maps drawn by the computer. If political outcomes under the enacted map are drastically different than the political outcomes that occur most frequently under the maps in the ensemble, this shows that the enacted map is an "outlier"—and one can deduce that something *other than* the established criteria actually drove the districting decisions that went into the enacted map, including predominant partisan intent.[7]

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[6] These criteria are set by the ensemble programmer, who instructs the computer what rules to follow when drawing each map. To be most persuasive, the criteria programmed into the ensemble should follow the state's established criteria as closely as possible.

[7] As discussed *infra* Part III, the State can establish that something other than partisanship explains the outlier status of the enacted map. But for the Part I analysis, the map being an outlier in an ensemble is useful "circumstantial evidence . . . showing that no other explanation (no geographic feature or nonpartisan districting objective) could explain the districting plan" because such analysis can "incorporate the State's physical and political geography and . . . its declared districting criteria." *Rucho*, 139 S. Ct. at 2518, 2523 (Kagan, J., dissenting). "Physical geography" refers to the shape of the state itself, as influenced by geographic features, and "political geography" refers to population density and the ways in which voters with varying partisan preferences might be arranged in the state. *Id.* at 2520. "Declared districting criteria" refers to criteria that, by state law or policy, are to be prioritized in the mapmaking process. *See, e.g.*, NMSA 1978 § 1-3A-7(A) (requiring the Citizen Redistricting Committee to "develop district plans in accordance with" criteria such as equal population, avoiding split precincts, contiguity, compactness, political (county/city) boundaries, geographic boundaries, preserving communities of interest, and—optionally—preserving the cores of existing districts). For a discussion of other potential redistricting criteria, see Samuel S.-H. Wang, *Three Tests for Practical Evaluation of Partisan Gerrymandering*, 68 Stanford L. Rev. 1263, 1263-1321 (2016). These factors are set as parameters the computer must follow when drawing its maps.

In preparing ensembles, an analyst should draw many possible maps. Then, the analyst can evaluate how those maps would perform using an average of past precinct-by-precinct statewide election results whose overall performance reflects the likely statewide partisan vote in future elections.[8] By averaging several real-world elections, the ensemble can smooth over unusual variations in election data based on quirks unique to a specific race (*e.g.*, Governor versus Secretary of State) or dynamics unique to a particular year (*e.g.*, 2016 versus 2022).[9]

The below table shows the results of the ensemble analysis *amici* present here, which is further described in Appendix A:

TABLE 1 – ENSEMBLE ANALYSIS: Predictions Based on Aggregated Election Data[10]

Number of winning districts	**% of maps**
Percentage of ensemble maps predicting that Democrats win in **zero** congressional districts	0%
Percentage of ensemble maps predicting that Democrats win in **one** congressional district	0.3%
Percentage of ensemble maps predicting that Democrats win in **two** congressional districts	91.3%
Percentage of ensemble maps predicting that Democrats win in **three** congressional districts	8%

Under this illustrative ensemble analysis, Democrats would be likely to win two congressional districts in 91.3% of the maps generated using non-partisan criteria. Democrats

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[8] Ensemble election data typically includes statewide federal races (President, Senate) and/or statewide state races (Governor, Attorney General, and statewide down-ballot races). Election data, not voter registration data, is the relevant source of analysis. *See Easley v. Cromartie*, 532 U.S. 234, 244 (2001); *Hunt v. Cromartie*, 526 U.S. 541, 550-51 (1999).

[9] Individual elections can be examined in isolation to test the durability and responsiveness of a plan. This use of an ensemble is most relevant to the second part of Justice Kagan's standard. *See infra* Part II (discussing effects).

[10] In the interest of brevity, *amici* adopted a convention of consistently displaying tables with figures as they pertain to Democrats and do not reproduce each table's data to show the inverse results as applied to Republicans.

would be likely to win three congressional districts in 8% of the maps generated using non-partisan criteria.

This independent analysis substantially aligns with the expert analysis conducted by Dr. David Cottrell and the findings contained in the report issued by the Citizen Redistricting Committee (CRC) pursuant to NMSA 1978, § 1-3A-8.[11] Under state law, the CRC was required to adopt at least three distinct congressional "Concept Plans" to submit to the legislature for consideration. *See id*. The CRC considered a variety of maps, but only voted to submit three maps: Concept Plans A, E, and H. The legislature then adopted its own map (the Enacted Plan), which resembled—but made changes to—Concept Plan H. An analysis of these plans shows that Democrats would likely win two districts under Concepts A and E, and Democrats would likely win three districts under Concept H and the Enacted Plan.[12]

(2) Descriptive Statistics. Apart from ensembles, plaintiffs may also prove predominant purpose by demonstrating that a map fares significantly worse than a small number of alternative maps across traditional redistricting criteria. Below is a table comparing the three CRC Concept Plans and the Enacted Plan based on county splits, compactness scores, and population deviation.

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[11] *See* Citizen Redistricting Committee, *CRC District Plans & Evaluations for New Mexico Congress, State Senate, State House of Representatives, & Public Education Commission: 2020 Redistricting Cycle*, Appendix, *14 (Nov. 2, 2021) [hereinafter "CRC Report"], *available at* https://www.nmredistricting.org/wp-content/uploads/2021/11/2021-11-2-CRC-Map-Evaluations-Report-Reissued-1.pdf

[12] *See infra* Table 3 (with respect to Enacted Plan); *see also* CRC Report, *supra* note 11, Appendix, *14 (with respect to Concepts A, E, H).

TABLE 2– DESCRIPTIVE STATISTICS: Traditional Redistricting Criteria Comparison of Enacted Plan and CRC Concept Plans[13]

	Number of Counties Divided	Number of County Splits	Compactness (Reock)	Compactness (Polsby Popper)	Overall Population Deviation
Concept A	4	5	0.411	0.385	8 persons
Concept E	6	7	0.42	0.286	271 persons
Concept H	9	9	0.385	0.298	96 persons
Enacted	9	10	0.369	0.282	12 persons

(3) Other Circumstantial Evidence. Plaintiffs may also use other forms of quantitative evidence to demonstrate a predominant partisan purpose. For example, if mapmakers reassign a large number of voters between districts on a seemingly partisan basis despite such changes being unnecessary to achieve the state's declared redistricting objectives, this may provide a sufficient basis to satisfy the intent requirement. *See, e.g.*, *Rucho*, 139 S. Ct. at 2511 (Kagan, J.,

[13] For *counties divided* and *county splits*, a lower number is better. These numbers may diverge if a county is split two or more times. For example, Chavez County, which is split three ways, would count as one "county divided" but two "county splits." For *compactness*, scores range from 0 to 1, with 1 being the most compact under the two common metrics provided here: Reock and Polsby-Popper. *See* Daniel D. Polsby & Robert Popper, *The Third Criterion: Compactness as a Procedural Safeguard Against Partisan Gerrymandering*, 9 Yale L. & Pol'y Rev. 301 (1991); Ernest C. Reock, *A Note: Measuring Compactness as a Requirement of Legislative Apportionment*, 5 Midwest J. of Pol. Sci. 70 (1961). The Enacted Plan is the least compact of all the plans under both metrics. For comparison, Concept A was drawn using a "least change" approach to updating the prior congressional map, so the scores for Concept A reflect districts that are roughly as compact as the court-drawn map for 2010-2020. *See* Judgement and Final Order (Congressional Trial), *Egolf v. Duran*, No. D-101-CV-2011-02942, (1st Jud. Dist., Jan. 17 2012).

dissenting) (describing number of voters needlessly moved across districts).[14] Nothing in Justice Kagan's opinion limits the Court to the categories of evidence described above.

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Whether evidence introduced using methods such as those described above is sufficient to show a predominant partisan intent raises questions of fact and law for the Court to decide.

II. Part 2, Effect: How to Identify "Substantial Partisan Vote Dilution"

To satisfy **Part 2**, plaintiffs must demonstrate a substantial dilution of their votes. A plaintiff can make this showing by introducing evidence that their vote was "cracked" or "packed" to ensure their vote "carries less weight—has less consequence—than it would under a neutrally drawn (nonpartisan) map." *Id.* at 2514. In this analysis, courts typically evaluate the "magnitude" of the alleged dilution and may also consider whether that effect is "durable" such that the map's expected partisan results are unlikely to be impacted by changes in voter sentiment from election to election. *See, e.g.*, *Adams v. DeWine*, 2022 Ohio 89, 195 N.E.3d 75, 86-87 (2022); *Ohio A. Philip Randolph Inst. v. Householder*, 373 F. Supp. 3d 978, 1097 (S.D. Ohio), *vacated and remanded*, 140 S. Ct. 101 (2019); *LWV of Mich. v. Benson*, 373 F. Supp. 3d 867, 896 (E.D. Mich.), *vacated*, 140 S. Ct. 429 (2019).

To examine the magnitude and durability of vote dilution caused by a map, a partisan gerrymandering plaintiff could seek to rely upon a variety of evidence, including (1) district-specific and statewide ensemble analyses, (2) statewide symmetry analyses, (3) alternative maps, and (4) evidence that the movement of voters into and out of specific districts caused notable

[14] *See, e.g.*, John D. Cranor et al., *The Anatomy of a Gerrymander*, 33 Am. J. of Pol. Sci. 222 (1989).

changes to the partisan composition and performance of those districts.[15] Each method is applicable to New Mexico's congressional map.

(1) Ensemble Analysis. In addition to showing intent as presented in Part 1, ensembles can be used to assess the dilutive effects of a plan *in individual districts* and *on a statewide basis*. To show vote dilution *in individual districts*, one can rank the districts from each ensemble plan from most Republican to most Democratic to show when a district has been excessively "packed" or "cracked." This district-specific analysis shows the odds that a district would have had as many (or as few) partisans in it as one would expect from a district in a neutrally drawn plan based on similar criteria. *See, e.g.*, *Harkenrider*, 197 N.E.3d at 444. An extremely large or small number of partisans in the challenged district can provide strong evidence of vote dilution and shift the burden to the state to justify the unexpected figures. *See infra* Part III (causation).

To show vote dilution *on a statewide basis*, one can compare the expected election results from the enacted plan with the expected election results under thousands of alternative plans. Relevant measures of each plan in the ensemble include the likely partisan performance of individual districts, the average statewide number of Democratic and Republican seats, and the number of competitive districts.[16]

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[15] *See, e.g.*, CRC Report, *supra* note 11, Appendix, *14 (performing "partisan fairness" analysis of CRC maps by comparing their likely partisan outcome and symmetry to ensemble of 1,000 alternative maps).

[16] *See e.g.*, *Rucho*, 139 S. Ct. at 2518-20 (Kagan, J., dissenting); *Benson*, 373 F. Supp. 3d at 893-94, 897-98; *Householder*, 367 F. Supp. 3d at 723-24; *Common Cause v. Rucho*, 318 F. Supp. 3d 777, 893-94, 901 (M.D.N.C.), *vacated*, 139 S. Ct. 2484 (2019); *LWV of Ohio v. Ohio Redistricting Comm.*, 199 N.E.3d 485, 500-03 (2022) (discussing the measures used to assess

One potential way to evaluate the *magnitude* of the alleged vote dilution harm using ensembles that Justice Kagan proposes is for the plaintiff to show "where the State's actual plan falls on the spectrum—at or near the median or way out on one of the tails[.]"[17] *Rucho*, 139 S. Ct. at 2518 (Kagan, J., dissenting). The ensemble shows how the range of alternative configurations in which voters from different parties have varying opportunities to elect their preferred candidates compares to the enacted plan. Justice Kagan deduced that "[t]he further out on the tail, the more extreme the partisan distortion and the more significant the vote dilution," compared to the sampling of known alternatives. *Id.*[18] One potential way a plaintiff could use ensembles concerning *durability* is to use alternative statewide election results figures underlying

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partisan gerrymandering); *Adams*, 195 N.E.3d at 87 (concluding that the "petitioners' various expert evidence [including ensembles] significantly outweighs the evidence offered by respondents as to both sufficiency and credibility").

[17] One important factor to consider is the *direction* of the unexpected result. An outlier in one tail-end of the distribution can be far more probative of vote dilution than an outlier in the other tail-end. This is because one result would at least be consistent with the majoritarian principle that a majority of votes should usually elect a majority of seats, whereas a map in the other tail would show that a majority of votes usually *cannot* elect a majority of seats.

[18] To be sure, the "median plan" in a distribution is not always the most desirable. There may be criteria that entered into the drawing of an enacted map that were not factored into the ensemble, and these criteria may be wholly appropriate. For example, the U.S. Supreme Court recently rejected the notion that vote dilution under the Voting Rights Act (VRA) should be measured against the median map in a "race-neutral" ensemble because the VRA itself requires equal opportunity to elect, not race-neutrality. *Allen v. Milligan*, 143 S. Ct. 1487, 1506-10 (2023). And an outlier could, in some cases, be for a positive reason. For instance, splitting fewer counties than 99.999% of alternatives could be a plan that treats all voters equally, even if the state's political and physical geography make it difficult to achieve such goals.

the ensemble of maps to show that the challenged map remains a relative outlier under a range of potential future electoral conditions.[19]

In New Mexico, 91.3% of the maps in the ensemble provided in Part I would likely result in two Democrats and one Republican being elected. The question of whether a map that is likely to elect three Democrats and zero Republicans under typical electoral conditions constitutes a partisan gerrymander then depends upon just how unlikely such a map is, whether the expected results would remain durable under a range of electoral conditions, and whether other evidence supports or contradicts these conclusions.

(2) Symmetry Analysis. A partisan gerrymandering plaintiff could use partisan symmetry analyses to show the statewide impact of a gerrymander and "assess whether supporters of the two [major] parties can translate their votes into representation with equal ease." *Id.* at 2518 n.4 (citing Stephanopoulos & McGhee, *The Measure of a Metric*, 70 Stan. L. Rev. 1503, 1505–1507 (2018)). Numerous state courts employ these metrics in partisan gerrymandering cases. *See, e.g.*, *LWVPA*, 178 A.3d at 769-779, 820; *Carter v. Chapman*, 270 A.3d 444, 470-71 & n.30 (Pa. 2022); *Adams*, 195 N.E.3d at 91-92; *LWV of Ohio*, 192 N.E.3d at 411; *Szeliga v. Lamone*, C-02-CV-21-001816, 2022 WL 2132194, *29-40 (Md. Cir. Ct., Mar. 25, 2022). Symmetry metrics are built on the principle that if the parties switch places in their vote share, they should also switch in the number of seats won (*i.e.*, a 57%-43% statewide Democratic

[19] For example, if the median number of seats expected for each party in a distribution was based on an average statewide vote share of 53% Democratic and 47% Republican, plaintiffs could show what the expected number of seats might be for each party in an election year where the statewide vote share is 51% Republican and 49% Democratic.

win should produce a similar number of seats for Democrats as a 57%-43% Republican statewide win would produce for Republicans).

Researchers have developed multiple tools to assess partisan symmetry, including metrics such as partisan bias, mean-median, and efficiency gap, among others. [20] In each case, the metric looks at patterns of expected or actual wins and losses, then calculates a figure that expresses the degree of vote dilution caused by the map as a whole.[21] These metrics require additional care and attention to individual districts where, as here, a plan has a small number of districts, or if a state has a significant overall lean towards one party. Based on how symmetry metrics are calculated, the results of these measures can fluctuate significantly when applied to a small number of

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[20] *Partisan bias* measures the seat share a party receives when the vote is exactly 50% for each of the two major parties. For example, if both parties receive the same number of votes, but one party receives 57% of the seats, the partisan bias is 7%. *See, e.g.,* Bernard Grofman & Gary King, *The Future of Partisan Symmetry as a Judicial Test for Partisan Gerrymandering after LULAC v. Perry*, 6 Election L. J.: Rules, Politics, and Pol'y 2–35 (2007).

Mean-median measures the difference between the median district's partisan vote and the overall average across all districts. *See, e.g.,* Sam Wang, *Let Math Save Our Democracy*, New York Times, Dec. 5, 2015.

Efficiency gap measures the difference between the parties' respective "wasted votes" in an election, divided by the total number of votes cast. *See, e.g.*, Nicholas Stephanopoulos & Eric McGhee, *Partisan Gerrymandering and the Efficiency Gap*, 82 U. Chi. L. Rev. 831 (2014).

[21] Symmetry metrics provide statewide evidence of packing and cracking. *See Gill*, 138 S. Ct. at 1933. This evidence can be combined with other district-specific evidence to demonstrate how a plan imposes district-specific harms in the pursuit of conferring a statewide partisan advantage. *See id.* at 1937 (Kagan, J., concurring); *Rucho*, 139 S. Ct. at 2518 n.4 (Kagan, J., dissenting).

districts, reducing their reliability unless special precautions are taken.[22] *Amici* have not undertaken such an analysis and so express no view about the direct application of partisan symmetry metrics in this case.

Nonetheless, one way to partially examine partisan asymmetry in this case may be to test the plan's adherence to the "majoritarian principle" that when a party receives the most votes it should *usually* win the majority of seats. A plan that violates this principle undermines the foundational premise that legislatures "should be bodies which are collectively responsive to the popular will" for which "a majority of the people of a State" should reasonably be able to "elect a majority" in "a society ostensibly grounded on representative government." *Reynolds v. Sims*, 377 U.S. 533, 565 (1964); *see also LWVPA*, 178 A.3d at 788, 820.

The majoritarian principle is usually assessed by comparing elections in which one party won a majority of votes to elections in which the other party won a majority. But, if one party consistently wins a majority of votes and no recent, real-world examples of the other party winning are available, one can create a hypothetical tied election by applying a "uniform shift" to each district and then evaluate the seat share for each party.[23]

To illustrate, the amici first use election data from six statewide elections between 2016 and 2020 to determine the number of districts that a party would have won under each map.

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[22] For example, the measures may be calculated based on the composite of previous statewide election results to provide a probabilistic estimate of the two-party vote shares, seat shares, and the relevant metric (*e.g.*, the efficiency gap) that accounts for variation across election cycles. *Amici* have not undertaken such an analysis here.

[23] Uniform shift is standard methodology in political science for calculating the seats/votes curve, and for measuring partisan bias. *See* Edward R. Tufte, *The Relationship between Seats and Votes in Two-Party Systems*, 67 Am. Pol. Sci. Rev. 540, 540–554 (1973).

Table 3 shows actual electoral outcomes under the Enacted Plan and the three CRC Concept Plans. The table also shows the number of Democratic wins (out of three) in each of the six elections, and the average percentage of seats won across all six elections.

TABLE 3 –PLAN COMPARISON: Number of Districts the Democratic Candidate Would Have Won, Based on Previous Election Outcomes, Projected into CRC Proposals and Enacted Plan

	President 2016	**Senate 2018**	**AG 2018**	**Gov 2018**	**Senate 2020**	**President 2020**	**Average Seat Share**
Enacted Plan	3	3	3	3	3	3	100.0%
Concept A	2	3	3	2	2	2	77.8%
Concept E	2	3	3	2	2	2	77.8%
Concept H	3	3	3	3	2	3	94.4%
Democratic Statewide Vote	54.7%	63.9%	64.9%	57.2%	53.1%	55.5%	

As the final column in Table 3 shows, Democrats would have won in every one of the three districts in the Enacted Plan, based on the voting history from every election analyzed here (18 of 18). Under Concepts A and E, Democrats would have won in 14 of the 18 elections in the concept map districts, and under Concept H, Democrats would have won 17 of 18 elections in the concept map districts.

Next, the *amici* apply a "uniform shift" across all districts for each election to show the number of districts Democrats might have won if the statewide vote were tied. Take the 2020 Presidential election. To simulate a 50/50 election, the *amici* subtract 5.5 percentage points from each district. The *amici* then count up the new total districts won by each party. The table below shows the hypothetical outcomes for each election in a tied statewide vote.

TABLE 4 – SIMULATED TIE: Number of Districts the Democratic Candidate Would Have Won, Based on Hypothetical Electoral Outcomes in a Tied Election

	President 2016	Senate 2018	AG 2018	Gov 2018	Senate 2020	President 2020	Average Seat Share
Enacted Plan	1	2	2	1	2	1	50.0%
Concept A	2	2	2	2	2	2	66.7%
Concept E	2	2	2	2	2	2	66.7%
Concept H	2	2	2	1	2	2	61.1%
Simulated Statewide Vote	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	

In this particular analysis, under hypothetical "tied" conditions, Democrats and Republicans are equally likely to win congressional seats under the Enacted Plan. In Concepts A and E, Democrats always win two out of three seats, and in Concept H, they win two seats in all but one circumstance (Governor 2018). This type of analysis may be used to examine whether a plan satisfies the majoritarian principle that a majority of voters should usually elect a majority of seats or whether it exhibits some degree of partisan bias.[24]

(3) Alternative Maps. A plaintiff may also introduce individual alternative maps to show that their vote would have carried greater weight in another, hypothetical district and that the "composition of the voter's own district" in the enacted plan caused their vote to "carry less weight." *Gill*, 138 S. Ct. at 1931; *accord id.* at 1936 (Kagan, J., concurring). To be persuasive, the alternative map (or maps) must perform similarly to or better than the enacted plan on a

[24] One should take caution not to assume, however, that a map avoids vote dilution simply because it exhibits little-to-no partisan bias after an unlikely uniform shift to electoral conditions. Mapmakers typically draw districts based on likely or expected electoral results.

state's own legitimate, adopted districting criteria. *See, e.g.*, *LWVPA*, 178 A.3d at 819-20.[25] *Amici* do not provide illustrations of any specific alternative maps.

(4) Partisan Composition. If a plaintiff's case focuses on the manipulation of individual districts, the plaintiff may demonstrate vote dilution through evidence of the nature and severity of the changes to those districts and how such changes impacted the partisan composition of the districts. *See Rucho*, 139 S. Ct. at 2519 (Kagan, J., dissenting). If, for example, the likely partisan outcome in the district is flipped or if a previously competitive district is rendered uncompetitive, this may show vote dilution. *See id. Amici* do not provide an example of this analysis.

To be sure, such evidence must be treated with care. Redistricting will always impact the partisan composition of some districts, and "judges should not be striking down maps left, right, and center, on the view that every smidgen of politics is a smidgen too much." *Rucho*, 139 S. Ct. at 2515-16 (Kagan, J., dissenting); *accord* NMSC Order at 3-4. Moreover, a state's prior map may not provide a reliable baseline if the prior map itself was unlawful. *See* Robert Yablon, *Gerrylaundering*, 97 NYU L. Rev. 985 (2022); *see also Milligan*, 143 S. Ct. at 1505 (noting that a state interest in "core retention" cannot "immunize from challenge a new [unlawful] plan simply by claiming that it resembled an old [unlawful] plan").

* * *

[25] Ensembles (consisting of thousands of alternative maps) are accordingly not *required* evidence. They may provide a more robust basis to identify vote dilution, but "the fundamental right of voting" cannot turn on "computer simulations that are technically complicated, expensive to produce, and available to only a small cadre of university researchers that have the resources and expertise to run them." *Milligan*, 143 S. Ct. at 1513 (cleaned up).

Whatever evidence a plaintiff relies upon during Step 2, the plaintiff must show that the vote dilution is "substantial." *Rucho,* 139 S. Ct. at 2521 (Kagan, J., dissenting). Here, three points bear consideration:

First, the Court may find that a map creates substantial harm based on the record without identifying any kind of bright-line threshold, especially if the case involves "blatant examples of partisanship driving districting decisions." *Id.* at 2522. As Justice Kagan observes in *Rucho,* "courts all the time make judgments about the substantiality of harm without reducing them to particular percentages," and it is sufficient in any given case, particularly as the doctrine develops, to say: "This much is too much." *Id*.

Second, this approach need not leave mapmakers forever twisting in the wind. Doctrine almost always grows more granular over time. Indeed, the celebrated "one person one vote" doctrine followed precisely this path over the course of time. *Compare Reynolds*, 377 U.S. at 579 ("[T]he overriding objective must be substantial equality of population among the various districts, so that the vote of any citizen is approximately equal in weight to that of any other citizen in the State.") *with Brown v. Thomson*, 462 U.S. 835, 842-43 (1983) (establishing that a plan with a total population disparity larger than 10% "creates a prima facie case of discrimination [that] must be justified by the State").

Finally, if the Court believes a threshold is necessary, the cutoff need not be (and should not be) dispositive of liability. Creating a "safe harbor" may invite mapmakers to toe directly up to the line since "officials respond to what th[e] [c]ourt determines the law to sanction." *See Rucho,* 139 S. Ct. at 2523 n.5 (citing Guy-Uriel E. Charles & Luis E. Fuentes-Rohwer, *Judicial Intervention as Judicial Restraint,* 132 Harv. L. Rev. 236, 269 (2018)). The Court could instead model the approach taken in the malapportionment context, where a designated threshold (10%)

only creates a *presumption* of lawfulness or unlawfulness that can be rebutted based on the unique facts of each case. *Compare Cox v. Larios*, 542 U.S. 947 (2004) (holding map with 9.98% population deviation unconstitutional under specific circumstances), *with Mahan v. Howell*, 410 U.S. 315 (1973) (holding map with 16.4% population deviation constitutional).[26]

III. Part 3, Causation: How to Evaluate a State's Alternative, Nonpartisan Justifications

If a plaintiff satisfies Part 1 and Part 2, under **Part 3** the burden shifts to defendants to establish a sufficient nonpartisan justification for the enacted plan. *Rucho*, 139 S. Ct. at 2516 (Kagan, J., dissenting). This step is referred to as a causation analysis because it probes whether a partisan-neutral goal could be the real moving force behind the map. *See Common Cause*, 318 F. Supp. 3d at 896-98 (illustrating analysis); *Householder*, 373 F. Supp. 3d at 1135-50 (same). To assess any potential alternative, nonpartisan justification, the Court applies intermediate scrutiny. *See* NMSC Order at 4 (citing *Breen*, 2005-NMSC-028, ¶¶ 11-15). The burden is on defendants to establish both that the enacted plan was designed to serve "an important government interest" and that the district lines are sufficiently tailored to be "substantially related to" that interest. *Breen*, 2005-NMSC-028, ¶ 13 (citation omitted).

The stated justification must be a partisan-neutral interest. This is because seeking partisan advantage—whether openly or indirectly—"reflect[s] no policy" at all "but simply arbitrary and capricious action." *Vieth v. Jubelirer*, 541 U.S. 267, 316 (2004) (Kennedy, J.,

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[26] Dr. Cottrell's report for the CRC assumed plans were "fair" if they fell within the middle 95% of expected outcomes in the ensemble. *See* Cottrell, *supra* note 11, Appendix, *13. *Amici* do not propose any threshold in this brief but note that the New Mexico Supreme Court's recognition of a partisan gerrymandering claim now makes this a *legal* question—not a *factual* question—and the Court may adopt an appropriate threshold, or no threshold at all.

concurring) (quoting *Baker v. Carr*, 369 U.S. 186, 226 (1962)). Any legitimate stated justification must also be sufficiently weighty and "supported by the evidence in the record." *Griego v. Oliver*, 2014-NMSC-003, ¶ 57, 316 P.3d 865. In other words, the justification "must be genuine, not hypothesized or invented *post hoc* in response to litigation." *United States v. Virginia*, 518 U.S. 515, 533 (1996) (applying intermediate scrutiny under the Fourteenth Amendment); *accord Breen*, 2005-NMSC-028, ¶ 19 (relying on *United States v. Virginia*). Rejecting "*post hoc* justifications the legislature in theory could have used but in reality did not" is common in redistricting litigation. *See Bethune-Hill*, 137 S. Ct. at 799. The Court also tests the sufficiency of the tailoring of the map to the asserted compelling justification. *Breen*, 2005-NMSC-028, ¶¶ 30-32. In doing so, the Court employs "a least restrictive alternative analysis" that, for intermediate scrutiny, is "not as exacting as" strict scrutiny but still must examine "the concern with over- and under-inclusiveness." *Id.*; *accord Griego*, 2014-NMSC-003, ¶ 56 (distilling *Breen* least restrictive alternative analysis).

At this stage, the government may rely upon many of the same evidentiary sources described above, including testimonial and documentary evidence supporting the credibility of the asserted interest, process-related evidence, and quantitative methods. A useful tool in scrutinizing the government's claimed interests can be whether there are numerous maps with less dilutive effects that perform in a substantially similar manner to the challenged map in furthering the stated objective. Moreover, just because a map is an outlier in an ensemble in the Part 1 analysis often does not alone prove it was drawn for an unlawful purpose—the mapmaker could have been driven by some factor or goal *other than* the criteria used to create the maps in

the ensemble that is also not seeking partisan advantage.[27] For example, if a mapmaker tries to minimize county splits but the ensemble was not programmed to include that goal, the mapmaker's plan will likely be an "outlier" compared to the thousands of maps in the ensemble. The state can refute the evidence of intent demonstrated in an ensemble analysis by establishing that a legitimate, nonpartisan objective instead explains why the enacted map is an outlier.

Expert evidence may therefore be helpful in assessing any state interest put forward by defendants. Three potential objectives may warrant examination in this case: enhancing competition, uniting a purported community of interest consisting of Hispanics in the South Valley of Albuquerque and the oil patch region in the southeast, and combining urban and rural voters in each district.

Enhancing Competition. Under the New Mexico Supreme Court's precedent, a legislature is constitutionally permitted to advance a state interest in enhancing competition. *See Maestas,* 2012-NMSC-006, ¶ 41. Four states' codified criteria also explicitly call for the drawing of competitive districts. Yunsieg P. Kim & Jowei Chen, *Gerrymandered by Definition: The Distortion of "Traditional" Districting Criteria and A Proposal for Their Empirical Redefinition*, 2021 Wis. L. Rev. 101, 179 (2021). Notably, however, the legislature did not adopt

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[27] A mapmaker might also be pursuing the State's declared criteria in a different manner than the person who programmed the ensemble. Overall, courts recognize that ensemble mapping provides probative—while not necessarily dispositive—evidence in partisan gerrymandering cases. *See Rucho,* 139 S. Ct. at 2516-20 (Kagan, J., dissenting); *see also* Milligan, 143 S. Ct. at 1513 n.8 (discussing use of ensemble evidence in VRA cases and noting only that "courts should exercise caution before treating results produced by algorithms as all but dispositive" of liability); *id.* at 1518 (Kavanaugh, J., concurring) (emphasizing that ensemble evidence is probative of discriminatory intent).

competition as a criterion to guide its own redistricting this cycle, and the legislature prohibited the CRC from using political data in its work for any reason (such as to measure competition) other than compliance with federal law. *See, e.g.*, NMSA 1978, §§ 2-7F-2, 2-8F-2, 1-3A-7.

A justification grounded in competitiveness must be supported in relevant evidence. Under intermediate scrutiny, the Court could consider contemporaneous statements and/or legislative actions, ensemble analyses showing a distribution of maps that reflects this goal, consistency in the pursuit of this goal within the Enacted Plan and across other legislative maps, and an absence of alternative maps that can achieve this goal without imposing the same effects as the Enacted Plan.

Uniting Communities of Interest. Maintaining defined, connected communities within the same district may also be a legitimate, partisan-neutral justification. A community of interest is a homogenous group of individuals that share common goals and preferences. *Maestas*, 2012-NMSC-006, ¶ 37. This can be framed as a "territorial community" which "is (1) a geographically defined group of people who (2) share similar social, cultural, and economic interests and (3) believe they are part of the same coherent entity." Nicholas O. Stephanopoulos, *Redistricting and the Territorial Community*, 160 U. Pa. L. Rev. 1379, 1430 (2012); *accord* Sandra J. Chen, Samuel S.-H. Wang, Bernard Grofman, Richard F. Ober, Jr., Kyle & T. Barnes, Jonathan R. Cervas, *Turning Communities of Interest into A Rigorous Standard for Fair Districting*, 18 Stan. J. Civ. Rts. & Civ. Liberties 101, 103 (2022) (defining similarly).

"The rationale for giving due weight to clear communities of interest is that to be an effective representative, a legislator must represent a district that has a reasonable homogeneity of needs and interests; otherwise, the policies he supports will not represent the preferences of most of his constituents." *Maestas*, 2012-NMSC-006, ¶ 37 (citation omitted). The identified

communities of interest must be supported in evidence to provide a sufficient justification. *See, e.g., Milligan v. Merrill*, 582 F. Supp. 3d 924, 1012-15 (N.D. Ala. 2022) (finding support for one community of interest "less compelling" compared to another because the testimony "was partial, selectively informed, and poorly supported"), *aff'd sub nom. Allen v. Milligan*, 143 S. Ct. 1487 (2023). Ignoring established communities may be a hallmark of partisan gerrymandering. *See, e.g., Matter of 2021 Redistricting Cases*, 528 P.3d 40, 88 (Alaska 2023).

Some communities may be identified based on New Mexico case law from prior redistricting cycles, and evidence may establish that the same community continues to exist today. *See, e.g., Egolf v. Duran*, No. D-0101-CV-201102942, *8-10 (N.M. D. Ct. January 3, 2012) (recognizing Native American groups in the northwest as a community of interest).[28] Communities could also include cohesive Hispanic populations in New Mexico. Any inquiry into this question must take care to evaluate the record evidence and determine whether the groups have sufficient shared interests to comprise a cohesive community beyond just ethnic or racial identity. One helpful tool for evaluating this issue may be a "racially polarized voting analysis," which can be used to quantitatively assess whether different racial or ethnic groups are voting in a cohesive manner.[29]

Consider the Hispanic population in Albuquerque and its neighboring areas. The Census population of Albuquerque is 564,559, over three-fourths that of an ideal congressional district. Neighboring unincorporated South Valley has a population of 38,338, which is 80.6%

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[28] The CRC's communities of interest findings may also inform the analysis. *See* CRC Report, *supra* note 11, *9-11, 22-25, 36.

[29] *See About RPV Near Me* (Election Law Clinic, Harvard Law School), *available at* https://www.rpvnearme.org/about.html (discussing tools used to show racially polarized voting).

Hispanic.The Enacted Plan places certain parts of Albuquerque—notably the Barelas neighborhood and other southwest areas with large Hispanic populations—in CD2 with South Valley, demonstrated to the left of the black district line in the map shown in Appendix B.

The Enacted Plan's combination of these areas may be argued to be maintaining communities of interest. If so, an appropriate application of intermediate scrutiny would be to identify whether the joining of these communities is supported in evidence, if the State argues that joining these communities of interest justifies the Enacted Plan.

Combining Urban and Rural Voters. Some may claim that the Enacted Plan seeks to balance urban and rural interests in New Mexico in the districts. One relevant legal question for the Court's consideration may be whether any purported state interest in "balancing urban and rural interests" is a permissible one. It is not among the traditional redistricting criteria applied in any state, *see* Kim & Chen, *supra*, at 148 (collecting criteria), and federal courts have rejected "claim[s] that . . . apportionment is sustainable as involving an attempt to balance urban and rural power." *Davis v. Mann*, 377 U.S. 678, 692 (1964); *Luna v. Cnty. of Kern*, 291 F. Supp. 3d 1088, 1142 & n.20 (E.D. Cal. 2018) (collecting cases rejecting justification). Other state courts have also observed that the "dispersion of urban populations into larger rural areas" may be a sign of partisan gerrymandering. *Hellar v. Cenarrusa*, 682 P.2d 539, 544 (Idaho 1984) (citing unrefuted evidence); *accord State v. Moorhead*, 156 N.W. 1067, 1068 (Neb. 1916).

In applying intermediate scrutiny, the Court may assess whether the goal of combining urban and rural voters is legally permissible and, if so, rely upon record evidence—including expert evidence—to determine whether the objective was credible or a pretext. *See, e.g.*, Op. and Order at 7-8, 42-44, *LWV of Utah v. Utah Leg.*, No. 220901712 (Utah 3d Dist. Ct. Nov. 22, 2022), tinyurl.com/9pd8ktnt (crediting allegations of pretext of stated urban-rural mix objective).

The Court can consider, for example, whether the mapmaker defined or measured urban-rural balancing, and can use expert evidence to help evaluate if the Enacted Plan uses expected differing voting preferences of urban and rural areas and the relative distribution in the districts to achieve partisan objectives.

CONCLUSION

Amici offer the foregoing explanations and illustrations to assist the Court in assessing the Enacted Plan under the three-part standard protecting voters' equal protection rights in Article II, Section 18 of the New Mexico Constitution.

Respectfully submitted: August 14, 2023

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APPENDIX A

The maps used in this ensemble were created using a method known as sequential monte carlo, using precincts as building blocks given the State of New Mexico's requirement to keep precincts whole. Like the New Mexico Citizen Redistricting Committee (CRC) proposed maps and the Enacted Plan, the *amici* did not seek to achieve a one-person deviation, but a minimal deviation which was often in the 20-100 person range. *See Tennant v. Jefferson Cnty. Comm'n*, 567 U.S. 758, 759-60 (2012).

The program is written to achieve a set of criteria modeled largely to approximate the criteria that governed the CRC, as enacted into law by the state legislature. *See* NMSA 1978, § 1-3A-7(A). This includes drawing congressional districts that are as equal in population as practicable, use the most recent federal decennial census data, avoid splitting precincts, comply with the Voting Rights Act and federal constitutional standards governing the use of race in redistricting, utilize only single-member districts, and accord with other traditional redistricting principles such as contiguity, reasonable compactness, and respect for political and geographic boundaries. The program did not include any pursuit of the CRC's discretionary goal to preserve the core of existing districts. *See id.* at § 1-3A-7(A)(10) (stating that "in addition, and to the extent feasible, the committee *may* seek to preserve the core of existing districts") (emphasis added).

Consistent with NMSA 1978, § 1-3A-7(C), the program did not rely upon or reference partisan data (except to the extent necessary to comply with federal law) or consider the voting address of candidates or incumbents.

The contests analyzed represent high-profile statewide contests in which historically we see very strong partisan voting patterns: President, Governor, Attorney General, and Secretary of State.

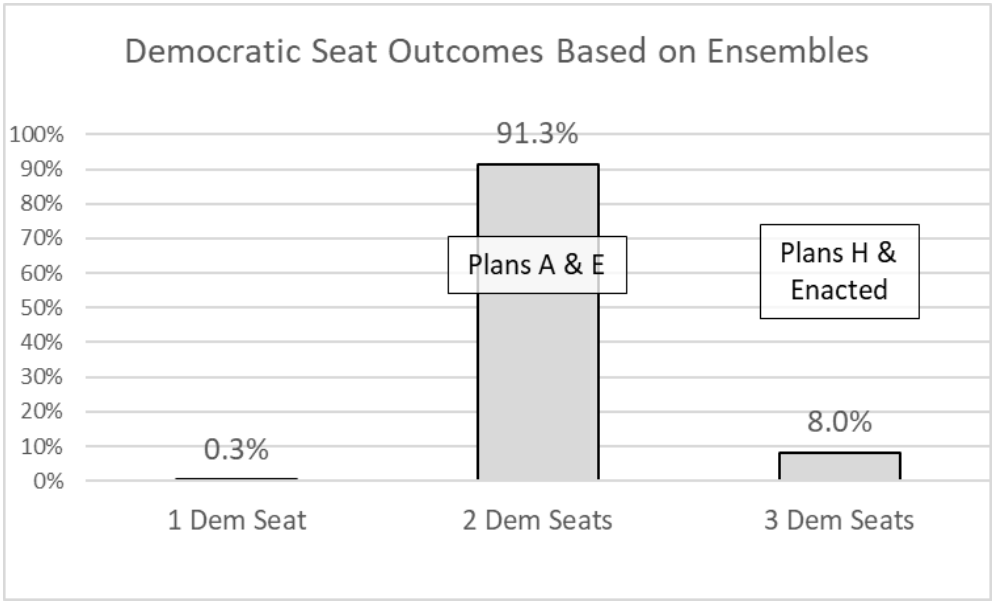
Voters throughout the country have become much more reliably partisan in their voting patterns, and as such, knowing the results in one contest can be informative as to how those same voters would cast ballots in another. If, as an example, voters in a congressional district voted for the Democratic Governor, Senator, Attorney General, and Secretary of State, then it can be inferred that district "performs" for Democrats (*i.e.*, it is an effective Democratic seat). From that position the *amici* can determine the likely voter choices for Congress, particularly when the partisan choices in other elections are extremely reliable and persistent over multiple elections. As the table below shows, in the ensemble analysis, looking at 1,000 plans, two of the districts are consistently performing for Democrats when using past election results. This means that among a sample of plans drawn with constraints set to mirror the required criteria, the *amici* can project that a redistricting process following the CRC's criteria and not seeking partisan advantage would achieve two Democratic members of Congress over 90% of the time. A map that would elect three Democrats appears in the ensemble 8% of the time. At the other end of the spectrum, New Mexico could have maps that elect only one Democrat, and two Republicans, but that outcome would be seen in the ensemble only 0.3% of the time. And the ensemble would suggest a map which would be projected to elect three Republicans is not mathematically possible using the CRC's criteria.

TABLE 5 – ENSEMBLE ANALYSIS DISAGGREGATED BY CONTEST: Ensembles Compared to CRC Concept Plans and Enacted Plan

Race Used for Voting History	Number of Districts Electing the Democratic Candidate			
	0	1	2	3
President 2020	0%	0.1%	91%	9%
Governor 2022	0%	1%	94%	5%
Attorney General 2022	0%	0.1%	90%	10%
Secretary of State 2022	0%	0%	90%	10%
Average of 4 Contests	0%	0.3%	91.3%	8.0%

The following Figure 1 shows visually Democrats would be likely to win two congressional districts in 91.3% of the maps generated using non-partisan criteria. This aligns with the expected results under Concept Plans A & E. The figure shows Democrats would be likely to win three congressional districts in 8% of the maps generated using non-partisan criteria. This aligns with the expected results under Concept Plan H and under the Enacted Plan.

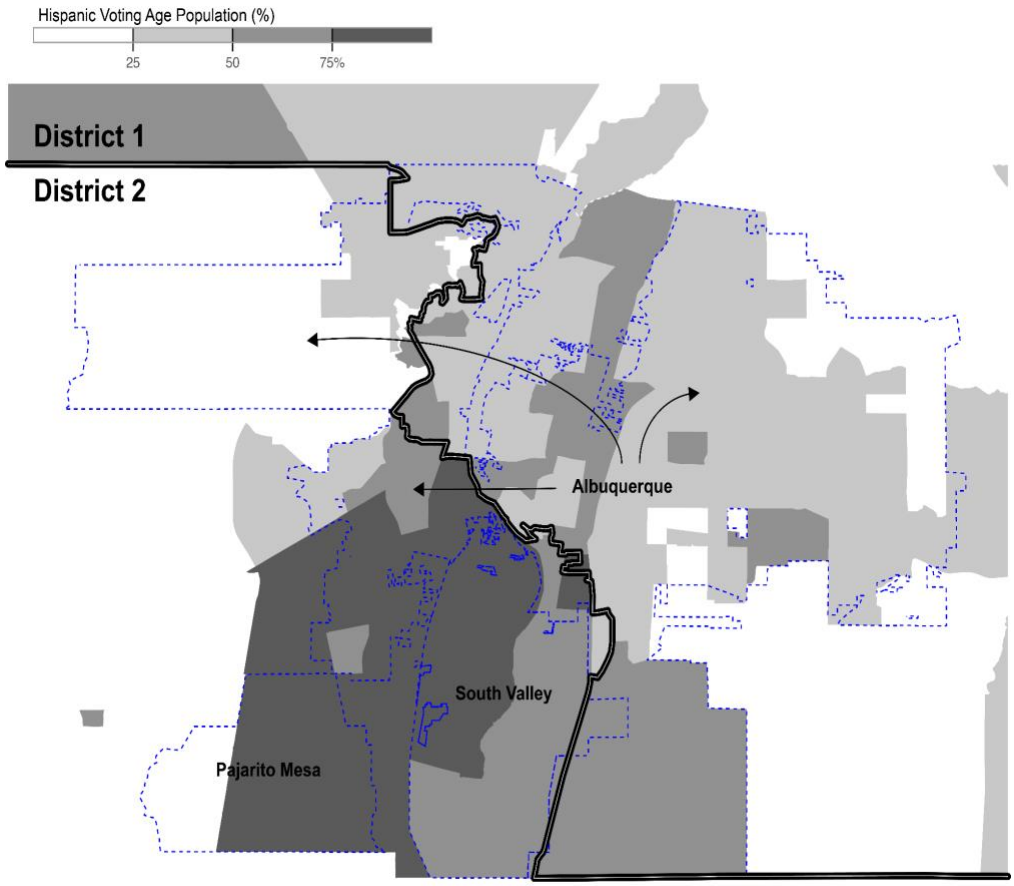
FIGURE 1 - HISTOGRAM: Ensemble Analysis Based on Aggregated Election Data



APPENDIX B

This choropleth map shows census "tracts" colored by percent voting age Hispanic in the Albuquerque area. Also shown, in blue, are the census "place" boundaries for the city of Albuquerque, and for South Valley, which is southwest of Albuquerque. Albuquerque has a total population of 564,559, and South Valley has 38,338 residents according to the 2020 census. Hispanics make up 49.8% of Albuquerque and 80.6% of South Valley.[30] The solid black line shows the boundary between District 1 and District 2 in the Enacted Plan. Heavily Hispanic tracts of Albuquerque are combined with South Valley.

FIGURE 2 - CHOROPLETH MAP: Hispanic Voting Age Population in the Albuquerque Area and Congressional District Boundary in Enacted Plan



[30] Data available from the U.S. Census Bureau at https://www.census.gov/quickfacts/fact/table/southvalleycdpnewmexico,US/PST045222.