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IN THE THIRD JUDICIAL DISTRICT COURT
IN AND FOR SALT LAKE COUNTY, STATE OF UTAH

LEAGUE OF WOMEN VOTERS OF UTAH, MORMON WOMEN FOR ETHICAL GOVERNMENT, STEFANIE CONDIE, MALCOLM REID, VICTORIA REID, WENDY MARTIN, ELEANOR SUNDWALL, and JACK MARKMAN,

Plaintiffs,

v.

UTAH STATE LEGISLATURE, et al.,

Defendants.

PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION ON COUNTS 16-21 OF PLAINTIFFS' THIRD SUPPLEMENTAL COMPLAINT

(Expedited Consideration Requested)

Case No. 220901712

Honorable Dianna Gibson

HEARING REQUESTED

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RELIEF REQUESTED AND GROUNDS

Pursuant to Rule 65A of the Utah Rules of Civil Procedure, Plaintiffs League of Women Voters of Utah, Mormon Women for Ethical Government, Stefanie Condie, Malcolm Reid, Victoria Reid, Wendy Martin, Eleanor Sundwall, and Jack Markman hereby move for a preliminary injunction on Counts 16-21 of their Third Supplemental Complaint.[1] Plaintiffs are entitled to a preliminary injunction under Utah Rule of Civil Procedure 65A for the reasons explained below.

INTRODUCTION

Once again, Defendants had an opportunity to follow Proposition 4, and once again Defendants have chosen to undermine it instead. Seven years ago, the people of Utah voted to prohibit partisan gerrymandering and ensure fair representation in Utah. But Defendants have simply refused to accept this. First, they repealed Proposition 4 and replaced it with S.B. 200 and the gerrymandered 2021 congressional map. When the Utah Supreme Court told them that citizens' right to alter and reform their government was constitutionally protected from unrestrained interference, Defendants attempted to trick Utah voters into changing their constitution to nullify that right. And now, after this Court ruled that Defendants' repeal of Proposition 4 was unconstitutional and that a new congressional map must finally be drawn that conforms to Proposition 4's requirements, Defendants are once again doing everything they can to resist. This time, they have passed an eleventh-hour bill *again* changing Proposition 4 in a way that thwarts its central purpose and that would require the use of the very gerrymandered maps Proposition 4 was passed to prevent.

[1] References to Plaintiffs' Third Supplemental Complaint are to the corrected version filed on October 7, 2025.

This latest attack on Proposition 4 is accomplished through S.B. 1011's mandate that only certain tests, cherry-picked by Defendants to the exclusion of all others, be used to assess whether a map satisfies Proposition 4's partisan gerrymandering prohibition. First, S.B. 1011 requires the use of the "partisan bias test," a statistical measure universally recognized as inappropriate to use in a state like Utah with lopsided statewide partisan votes. The partisan bias test benefits the majority party by basing its assessment on a hypothetical 50-50 statewide election that will not occur in reality. Second, S.B. 1011 mandates the use of the "mean-median difference test," which essentially mandates "cracking" the minority party under the guise of protecting against "packing." Third, S.B. 1011 requires district plans be compared to an "ensemble analysis" that is untethered to Proposition 4's requirements and then "culled" to remove plans that do not pass the flawed partisan bias test. Fourth, S.B. 1011 alters the standards for judicial review, making it harder for Utahns to challenge biased maps in court.

This combination of statistical tests works together to systematically greenlight redistricting plans that are gerrymandered to favor the majority party and is unable to detect gerrymanders that disfavor the minority party. This is a direct impairment of Proposition 4's central government reform of prohibiting plans that "purposefully or unduly" favor or disfavor a political party and its mandate that maps be judged against the "best available data and scientific and statistical methods," not just a select few designed solely to benefit one party. S.B. 1011's partisan manipulation also undermines other constitutional rights of Plaintiffs—and all Utahns—to be ensured a free government, to be treated equally, to have their voices heard, and to have their votes respected in free elections. These rights could not be more critical, and Defendants' latest effort to subvert them must be stopped. The voice of the people should not be silenced.

FACTUAL BACKGROUND

1. On August 25, 2025, this Court reinstated Proposition 4 and enjoined enforcement of the 2021 congressional map. In its opinion and order, this Court found that in enacting Proposition 4, "the people exercised their initiative power to propose redistricting legislation within the alter or reform clause in the Utah Constitution." Order Granting MSJ on Count V at 61. This Court further found that by replacing Proposition 4 with S.B. 200, the Legislature "infringed on the people's exercise of their right to propose and enact legislation to alter or reform their government and impaired the core redistricting reform" of Proposition 4. *Id.*

2. This Court found that the justifications offered by the Legislature for its impairment of Proposition 4 did not satisfy strict scrutiny and "fail[ed] to justify overriding the will of the people of Utah." *Id.* at 62. As a result of these findings, this Court ruled that the Legislature's repeal and replacement of Proposition 4 was void *ab initio* and that Proposition 4 "stands as the only valid law on redistricting." *Id.* at 69. This Court further found that the "Legislature unconstitutionally repealed Proposition 4, enacted S.B. 200 and then, under that framework, enacted H.B. 2004, the 2021 Congressional Plan." *Id.* at 71. Furthermore, "[a]s a result, H.B. 2004, and the 2021 Congressional Plan must be enjoined." *Id.* at 72.

3. In the August 25 order, later amended on September 6, this Court ordered a remedial process to ensure the adoption of a congressional map that complies with Proposition 4 in time for use in the 2026 midterm elections. The order set a timeline that included an opportunity for the Legislature to adopt a compliant map if it chose to do so, for Plaintiffs to submit any proposed remedial map if necessary, and for the Court to adjudicate any dispute about the maps' compliance with Proposition 4 at a hearing to be held on October 23 and 24, 2025.

4. The Legislature chose to take the opportunity to draw a new map. As part of its process to select and adopt a new congressional map, the Legislature held three hearings of the Legislative Redistricting Committee ("LRC"), co-chaired by Senator Sandall and Representative Pierucci. The first meeting of the LRC took place on September 22, 2025. At this meeting, five map proposals were presented, Maps A-E.[2]

5. Also, at the September 22 LRC hearing, Senator Brammer discussed a new bill for which he had opened a bill-file. Senator Brammer's bill would mandate that only the "partisan bias test" could be used to follow Proposition 4's requirement of determining partisan favoritism using "judicial standards and the best available data and scientific and statistical methods including measures of partisan symmetry." *Id.*

6. At the September 22 hearing, Senator Brammer gave a slideshow presentation about the partisan bias test, legislative counsel provided an illustration of how the partisan bias test would work, and members of the LRC asked Senator Brammer questions about the partisan bias test. *Id.* Also at the hearing, the Legislature's expert, Dr. Sean Trende, testified about how he had created Maps A-E, including his use of the partisan bias test to evaluate and select them.[3] During the public comment portion of the hearing, the reaction to Senator Brammer's bill was overwhelmingly and near-universally negative. *Id.* On September 24, a second hearing of the LRC was held. At this meeting, there were additional questions from the committee about the partisan

[2] Leg. Redistricting Cmte. Minutes, Sep. 22, 2025, available at https://le.utah.gov/interim/2025/pdf/00003658.pdf.
[3] *Id.*

bias test, and additional public testimony about it—again overwhelmingly and nearly uniformly negative.[4]

7. Questions and comments from members of the committee as well as testimony from the public underscored the fact that the partisan bias test was ill-suited to the political realities of Utah. This is because, as commenters stressed, the test requires a comparison to a hypothetical 50-50 state-wide election which is virtually guaranteed not to happen in Utah. *Id.*

8. On Friday, October 3, an altered version of Senator Brammer's bill was posted on the Legislature's website as S.B. 1011. This new version retained the requirement to use the inapplicable partisan bias test, but mandated the use of additional flawed metrics as well.[5] That version was further amended on the floor to add additional flawed metrics before the bill's final adoption on October 6, 2025.

9. The enacted S.B. 1011 makes four major amendments to Proposition 4 that mandate specific tests be used to evaluate whether a redistricting plan "purposefully or unduly" engages in partisan favoritism. First, it mandates use of the partisan bias test. Utah Code § 20A-19-103(1)(c)-(d), 4(c) (as amended). This test is designed to test partisan fairness in states with approximately even state-wide elections by evaluating whether in a hypothetical 50-50 election each party will get 50% of the seats. Ex. 1 (Decl. of Dr. Chris Warshaw) at 5. The partisan bias test is widely considered by experts to be inapplicable and render irrational results in states with a lopsided state-wide vote share such as Utah. *Id.* at 12-14, 17-19. For example, it rates as "unbiased" a map where

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[4] Leg. Redistricting Cmte. Draft Minutes, Sep. 24, 2025, available at https://le.utah.gov/interim/2025/pdf/00003705.pdf; Leg. Redistricting Cmte. Audio/video, Sep. 24, 2025, available at https://le.utah.gov/av/committeeArchive.jsp?mtgID=20167.

[5] *See* S.B. 1011, 10-03 17:19, available at https://le.utah.gov/Session/2025S1/bills/introduced/SB1011.pdf.

the majority party wins all four seats and the minority party wins none because in the counterfactual where the statewide vote is tied, the parties would each win two seats. *Id.* at 18. In contrast, it rates "biased" a map where the minority party wins one seat, if in a hypothetical 50-50 election, the minority party would not also win a second seat. *Id.*

10. S.B. 1011 applies the partisan bias test only to congressional plans—and not to state legislative plans; both legislative plans would fail the test. *See* Utah Code § 20A-19-103(1)(c) (as amended); Ex. 1 at 18.

11. Second, S.B. 1011 requires use of the mean-median difference test. Utah Code § 20A-19-103(1)(b) (as amended). Like the partisan bias test, this test is also not designed for states that heavily favor one party in state-wide elections. *Id.* at 14-15. To protect against "packing," the mean-median difference test requires that the difference between the mean statewide vote and the median district vote for a party be minimized. *Id.* at 14. In a state like Utah where the minority party only has enough voters to form a majority in one district (and thus faces partisan gerrymandering harms from "cracking," not "packing"), the mean-median test disfavors the minority party by requiring that they be spread out among the different districts. *Id.* at 21-22.

12. Third, S.B. 1011 requires a flawed ensemble analysis. Utah Code § 20A-19-103(1)(a) (as amended). S.B. 1011's ensemble analysis requires the use of at least 4,000 computer simulated plans to create a set that is compared against a redistricting plan to assess partisan favoritism. Ex. 1 at 22. But S.B. 1011 prohibits consideration of Proposition 4's neutral criteria in constructing this ensemble. *Id.* Furthermore, in certain circumstances, S.B. 1011 requires comparison only to a "culled" set of plans in the ensemble, but this culling is done by removing those plans that fail the partisan bias test, thus reinforcing and magnifying the flaws of that test. *Id.* at 22-23.

13. Fourth, S.B. 1011 restricts judicial review under Proposition 4. Instead of allowing judges to consider the full range of available evidence, S.B. 1011 mandates the use of only three biased and inapplicable tests. It also changes the evidentiary standard judges apply to determine purposeful partisan favoritism, making it more difficult for litigants to prove a violation of Proposition 4. Utah Code § 20A-19-103(4)(b) (as amended).

14. On Monday, October 6, the LRC held a hearing scheduled to begin at 8:00 a.m. In this meeting, the committee voted to recommend Map C to the full Legislature and then adjourned with minimal discussion, and no mention of S.B. 1011. Later, on October 6, Representative Thurston moved to substitute an updated version of S.B. 1011. This new version further explained and altered the description of how the ensemble analysis mandated in S.B. 1011 was to be conducted. This updated version of S.B. 1011 also retained all the flawed and biased metrics as the previous version.

15. S.B. 1011 passed with single-party support in each chamber of the Legislature in the face of bi-partisan opposition in both the House and Senate. It passed the Senate with a vote of 22 to 7, and it passed the House with a vote of 55 to 18, with two abstentions. Shortly thereafter, Governor Cox signed S.B. 1011 into law. Immediately following the official enactment of S.B. 1011, the Legislature passed S.B. 1012, its codification of Map C, and Governor Cox signed this as well.

16. Within hours of the passage of S.B. 1011, Plaintiffs filed a Motion for Leave to File a Third Supplemental Complaint, and the Complaint itself, alleging that S.B. 1011 violates

numerous provisions of the Utah Constitution.[6] Plaintiffs also filed their map submissions with this Court.

17. Later that evening, Defendants filed with the Court a Notice of Legislation and attached the enacted versions of both S.B. 1012 (the Legislature's enacted map), and S.B. 1011 (the challenged legislation).

18. One day after S.B. 1011 was passed and Plaintiffs filed their supplemental complaint challenging it, Plaintiffs now request a preliminary injunction asking this Court to enjoin enforcement of the S.B. 1011 because of its violations of the Utah Constitution, including an impairment of the government alterations and reforms contained in Proposition 4.

19. Plaintiffs are directly harmed by S.B. 1011. Plaintiff organizations LWVUT and MWEG supported Proposition 4 and oppose S.B. 1011 because it condones maps that exhibit the partisan gerrymandering Proposition 4 was designed to guard against. Ex. 2 (Decl. of Katharine Biele) ¶¶ 5-6, 10-12; Ex. 3 (Decl. of Emma Petty Addams) ¶¶ 5-6, 9-10. Both organizations also have members who supported Proposition 4 and oppose partisan gerrymandering. Ex. 2 ¶¶ 5, 9, 11; Ex. 3 ¶¶ 5, 10, 12. Both organizations have members who oppose S.B. 1011 and who are harmed by the bill because it sanctions the use of congressional districts that dilute their vote and deprive them of accountable representation. Ex. 2 ¶¶ 10-11, 13-15; Ex. 3 ¶¶ 9-10, 12-14. Individual Plaintiffs are harmed as well. For example, Plaintiffs Wendy Martin and Malcolm Reid are both Democratic voters who support Proposition 4 and oppose S.B. 1011 because it condones partisan gerrymanders that systematically harm Democrats. Ex. 4 (Decl. of Wendy Martin) ¶¶ 4-6, 8-11; Ex. 5 (Decl. of Malcolm Reid) ¶¶ 4-7, 9-12.

[6] The next morning, Plaintiffs filed a Corrected Third Supplemental Complaint, updated to reflect the changes to S.B. 1011 made by Representative Thurston's substitution.

ARGUMENT

I. Plaintiffs are likely to prevail on the merits of their claims.

A. Plaintiffs are likely to succeed on the merits of their Alter and Reform claim.

Plaintiffs are likely to succeed on their claim that S.B. 1011 violates their Alter and Reform Clause rights under Article I, Section 2 of the Utah Constitution. To establish a violation of their alter and reform rights, Plaintiffs must prove (1) that the people exercised or attempted to exercise their initiative rights to pass an "alter and reform" initiative, and (2) that the Legislature "amended . . . the initiative in a manner that impaired the reform contained in the initiative." *League of Women Voters of Utah v. Utah State Legislature*, 2024 UT 21, ¶ 74, 554 P.3d 872, 892 ("*LWVUT I*"). If Plaintiffs establish these two elements, the legislative action is unconstitutional unless the Legislature can show that the impairment is "narrowly tailored to advance a compelling government interest." *Id.* ¶ 75.

The first element is indisputably met and not at issue here: Proposition 4 is an alter and reform initiative, as this Court has already found. *See* Order Granting MSJ on Count V at 15, 61. The second element is also met. Proposition 4's goal was to eliminate partisan gerrymandering, which it did by enacting a government reform and alteration that explicitly prohibits the practice of "divid[ing] districts in a manner that purposefully or unduly favors or disfavors . . . any political party" and by providing a private right of action to enforce this prohibition in court. Utah Code § 20A-19-101(3). S.B. 1011 impairs this reform in several ways, and the Legislature's justifications for these impairments do not satisfy strict scrutiny.

1. Prohibiting partisan gerrymandering is a core reform of Proposition 4.

The central goal of Proposition 4 is prohibiting partisan gerrymandering. As this Court noted, Proposition 4's voter pamphlet described "prohibiting partisan gerrymandering [as] its

'most important' provision." Order Granting MSJ on Count V at 52 (citing *2018 Voter Information Pamphlet*). To that end, Proposition 4 "adopt[ed] redistricting standards" that are "enforceable by the people of Utah." *Id.* at 16. And, as this Court explained, "[e]ssential" to those "core reforms" is that the standards chosen by the People are binding on the Legislature. *Id.*; *see id. at* 28 (explaining that the Legislature is "bound to comply" with Proposition 4's prohibition on partisan gerrymandering). The U.S. Supreme Court, in finding that partisan gerrymandering was nonjusticiable under the federal constitution, explained that a solution to partisan gerrymandering could be found in "[p]rovisions in state statutes . . . [that] provide standards and guidance for state courts to apply." *Rucho v. Common Cause*, 588 U.S. 684, 719 (2019). As this Court recognized, "Proposition 4 is that solution for Utah." Order Granting MSJ on Count V at 29.

Proposition 4 effectuated its goal to eliminate partisan gerrymandering by requiring redistricting plans to abide by a ranked-ordered set of neutral criteria, Utah Code § 20A-19-103(2), and by prohibiting any plans that "divide districts in a manner that purposefully or unduly favors or disfavors . . . any political party," *id.* § 20A-19-103(3). The express prohibition on partisan favoritism, whether intentional or in effect, mirrors similar language in several other states, which courts have readily interpreted and applied. *See, e.g.*, Ohio Const. art. XIX, § 1(C)(3)(a); Haw. Const. art. IV, § 6; Del. Code Ann. tit. 29, § 804; Va. Code § 24.2-304.04(8).

To ensure that its prohibition on partisan favoritism is effective, Proposition 4 further specifies that compliance must be assessed by "judicial standards and the best available data and scientific and statistical methods, including measures of partisan symmetry." Utah Code § 20A-19-103(4). This standard includes a quality requirement that the applied methods be most appropriate to the context (i.e., "best"), an understanding that the methods and their applicability may evolve over time (i.e., "available"), and a flexibility in the types of evidence that can serve as

proof (i.e., "data and scientific and statistical methods, including measures of partisan symmetry"). This is a common legal standard that government bodies and courts routinely apply. *See, e.g.*, *Keep the N. Shore Country v. Bd. of Land & Nat. Res.*, 506 P.3d 150, 169 (Haw. 2022) (interpreting "best scientific and other reliable data available" to require evaluation of "applicability and quality of the information" and to allow some information to be deemed inapplicable or insufficiently reliable); *Nation Ford Chem. Co. v. United States*, 166 F.3d 1373, 1377 (Fed. Cir. 1999) (holding that "best available information" standard allowed agency assessments to "depend on the circumstances" of a given case and what information is available); *Cent. Coast Forest Ass'n v. Fish & Game Comm'n*, 389 P.3d 840, 845 (Cal. 2017) (interpreting requirement under California Endangered Species Act that assessments be "based upon best scientific information available" to be "legislative recognition that information and scientific understanding are subject to change" (cleaned up)).

The requirement to apply the "judicial standards" and "best available" methods also aligns with how state courts have assessed other states' similarly worded prohibitions in practice. *See, e.g.*, *Adams v. DeWine*, 195 N.E.3d 74, 84 (Ohio 2022) (assessing the Ohio Constitution's prohibition on maps that unduly favor a political party based on various scientific methods applicable in the state). And it makes eminent sense in the redistricting context. There is a wide variety of scientific and statistical methods to assess partisan gerrymandering. *See* Ex. 1 at 4-5 (Decl. of Dr. Chris Warshaw). The appropriateness of any given method or measure depends on the context (including the state's political environment, political geography, and the type of plan under review) and may change over time. *Id.* And in some contexts, certain methods cannot yield reliable or interpretable results. *Id.*

One of the non-exclusive methods Proposition 4 identifies is "measures of partisan symmetry." *See* Utah Code § 20A-19-103(4). Partisan symmetry refers to "whether supporters of each of the two parties are able to translate their votes into representation with equal ease." *Common Cause v. Rucho*, 318 F. Supp. 3d 777, 885 (M.D.N.C. 2018), *vacated on other grounds*, 588 U.S. 684 (2019); Ex. 1 at 4. And there are multiple accepted measures of partisan symmetry, as courts have recognized, which may apply or not in each case depending on the context. *See, e.g.*, *Whitford v. Gill*, 218 F. Supp. 3d 837, 898 (W.D. Wis. 2016), *vacated on other grounds*, 585 U.S. 48 (2018) (concluding that plaintiffs had met burden to prove an unlawful partisan effect in map through "plaintiffs' proposed measure of asymmetry, the efficiency gap"); *Ga. State Conf. of NAACP v. State*, 269 F. Supp. 3d 1266, 1284 (N.D. Ga. 2017) ("partisan symmetry, measured by the efficiency gap, is one way to make a political gerrymandering claim").[7]

2. S.B. 1011 impairs Proposition 4's prohibition of partisan gerrymandering.

S.B. 1011 impairs Proposition 4's partisan gerrymandering prohibition in several ways. Instead of the "best" tests that yield meaningful results for Utah, S.B. 1011 mandates the exclusive use of three cherry-picked statistical tests—partisan bias, mean-median difference, and a flawed ensemble analysis—that cannot detect partisan favoritism in Utah and yield false, irrational results privileging maps favoring Republican voters and disfavoring Democratic voters. S.B. 1011 also restricts the ability of courts to conduct effective judicial review. Whereas Proposition 4 sought to eliminate partisan gerrymandering, S.B. 1011's standards effectively mandate the practice and make it impossible to police as voters intended.

[7] During the legislative hearing, the Legislature's expert Dr. Trende stated the view that the partisan bias test is the only pure measure of partisan symmetry. But that is not how courts have interpreted that phrase.

First, the **partisan bias test** impairs Proposition 4. The partisan bias test codified in S.B. 1011 depends on an unrealistic hypothetical that bears no resemblance to the reality of Utah that Proposition 4 is intended to address. In essence, the partisan bias test asks whether in a hypothetical election where each of two parties wins 50% of the statewide vote, will each party win 50% of the congressional seats. *See* Utah Code § 20A-19-103(1)(f), (4)(c) (as amended). If yes, the map passes the test; if no, the map fails the test. *See* Ex. 1 at 12-13.

But the partisan bias test is inapplicable in Utah. As Professor Gary King, the author of the partisan bias test, has emphasized repeatedly in his published work, "we only propose to apply the methodology to jurisdictions where it is factually reasonable to assume that elections can be competitive" statewide. Bernie Grofman & Gary King, *The Future of Partisan Symmetry as a Judicial Test for Partisan Gerrymandering after LULAC v. Perry*, 6:1 Election L.J. 2, 19 (2007); Ex. 1 at 13. That is not the case in Utah, where statewide elections are famously uncompetitive and no Democrat has won statewide office in decades. Ex. 1 at 15. Many other scholars have warned against applying the partisan bias test in states like Utah where one party consistently receives a significant majority of the statewide vote. *See id.* at 13. As Plaintiffs' expert Dr. Chris Warshaw opines, the partisan bias metric is not an appropriate method to assess partisan favoritism in Utah redistricting plans because it "relies on assessing a counterfactual circumstance where both parties receive exactly 50% of the statewide vote share—a hypothetical scenario that has not and does not occur in Utah." *Id.* at 1.

Because Utah is so far outside the conditions necessary for its valid application, the partisan bias test yields irrational results that operate to systematically benefit Republicans and disfavor Democrats. This is best illustrated by example. As Dr. Warshaw shows, accepted measures of partisan symmetry like the efficiency gap—which *can* be applied in states with uncompetitive

statewide elections—register the state's 2021 congressional map as one of the most extreme partisan gerrymanders in the country. *Id.* at 7-8 (reporting an efficiency gap score more biased than 97% of all prior congressional plans in states with at least 4 districts over the last 50 years). Other metrics designed by scholars for use in Utah point in the same direction. *See id.* at 9-11. This is unsurprising because the map cracked the largely Democratic Salt Lake County across all four districts, ensuring Republicans efficient victory in each. *Id.* at 16. The partisan bias test, however, gives the 2021 map a perfect passing score, zero bias, "because in the hypothetical world of a 50-50 statewide vote" Democrats would win two seats. *Id.* at 16-17. Compare this to the Commission's proposed maps, which each included a reliable Democratic district. Partisan bias for those maps "paradoxically reports a pro-*Republican* bias." *Id.* at 17 (emphasis added). As Dr. Warshaw explains, this is how the partisan bias test operates in Utah due to the state's political geography: it gives a "pass" to 4-0 maps gerrymandered in favor of Republicans while deeming 3-1 maps that provide Democrats representation unfair to Democrats. *Id.* at 19-21.

Thus, because S.B. 1011's mandatory use of the partisan bias test operates to greenlight gerrymandered maps that unduly favor the majority party, it directly impairs the Proposition 4 prohibition on maps that favor or disfavor a political party.

Second, S.B. 1011's mandated use of the **mean-median difference test** impairs Proposition 4 for similar reasons. *See* Utah Code § 20A-19-103(1)(b), (4)(c) (as amended). The mean-median difference test under S.B. 1011 takes the difference between a party's mean statewide vote share and its median district vote share. *Id.*; Ex. 1 at 14.[8] Like the partisan bias test, the mean-median difference only tends to be "probative" in states with competitive statewide

[8] As Dr. Warshaw points out, S.B. 1011's definition of the mean-median difference differs from the test used in political science, which takes the difference between a party's mean *district* vote share and median district vote share.

elections," *id.* at 14-15, and produces similarly paradoxical results in Utah that singularly favor the state's majority party, *id.* at 21-22.

This is in part because, as Dr. Warshaw explains, the mean-median difference test was designed only to detect packing gerrymanders, not cracking gerrymanders. *Id.* at 14. By way of background, partisan gerrymandering occurs by either "packing" disfavored voters into few districts to prevent them from electing candidates of choice in more than that district, or by "cracking" them across multiple districts so they cannot elect a candidate of choice anywhere. *LWVUT I*, 2024 UT 21, ¶ 20; Ex. 1 at 4. When the minority party is concentrated in one geographic region and too few in number to form a majority in more than one district, as in Utah, cracking is the primary way to disfavor them in congressional elections. *Id.* By requiring that the difference between a party's state-wide mean vote and its vote in the median district be reduced, the mean-median difference test only gives a passing score to plans that evenly spread a party's voters around the state—namely, in the median district—to prevent them from being "packed" into only one district. *Id.* at 21-22. But in Utah, the minority party is geographically concentrated and can realistically only elect a candidate in one district total. Thus, plans that happen to keep Democrats together tend to have a higher mean-median difference, and plans that crack Democrats appear fair under this test. By setting an arbitrary cut-off of 2% for a passing score, S.B. 1011 ensures that a 3-1 map allowing Democrats to elect a representative in one district will fail the test, and maps with more uniform vote shares across districts (favoring Republicans) will pass the test. *Id.* Thus, the mean-median test blesses maps that unduly favor Republicans and disfavor Democrats. *Id.* at 21. Because Proposition 4 seeks to prohibit such partisan favoritism, S.B. 1011's imposition of the mean-median test impairs its reforms.

Third, S.B. 1011 mandates a flawed **ensemble analysis test** that impairs Proposition 4's prohibitions on both intentional and undue partisan favoritism. S.B. 1011 requires that to determine whether a redistricting plan exhibits purposeful favoritism, it must fall outside the "acceptable bounds of the ensemble analysis." Utah Code § 20A-19-103(4)(b) (as amended). S.B. 1011's "ensemble analysis" requires comparing a redistricting plan to at least 4,000 computer-generated maps *before* the set is culled to ensure compliance with any of Proposition 4's requirements found in the same section, including the law's neutral redistricting criteria. *Id.* § 20A-19-103(1)(a)(ii) (as amended). An ensemble analysis sheds light on a plan's partisan purpose when it is constructed to *follow* a state's neutral redistricting criteria, including by culling (*i.e.*, excluding) maps from the ensemble that violate those criteria. Only then can an ensemble begin to serve its purpose of helping to determine whether the plan is a partisan outlier among neutrally drawn maps. *See, e.g.*, *In re Colo. Indep. Legis. Redistricting Comm'n*, 2021 CO 76, ¶ 59, 513 P.3d 352, 365 ("In an ensemble analysis, a particular district plan is compared to a large collection of randomly generated, legally valid plans, referred to as an 'ensemble' of plans."); *Common Cause*, 318 F. Supp. 3d at 876 (crediting an ensemble analysis comparing enacted plan to set of simulated district plans "which conformed to all of the traditional nonpartisan districting criteria" required in the jurisdiction). By instead *prohibiting* an ensemble from being filtered to exclude maps that violate Proposition 4's neutral criteria, S.B. 1011 renders any ensemble useless to determine partisan purpose and invites partisan manipulation and gamesmanship. This directly impairs Proposition 4's express goal of detecting and barring purposeful partisan favoritism.

S.B. 1011's codified ensemble analysis test also undermines Proposition 4's prohibition on undue partisan favoritism. Even if a plan passes the Republican-favoring partisan bias test discussed above, S.B. 1011 still deems the map unlawful if it does not also pass a version of the

ensemble analysis where the ensemble is "culled" to exclude all maps that do not pass the partisan bias test. *See id.* § 20A-19-103(1)(c)(ii), (4)(c) (as amended). In other words, an ensemble generated with no regard for Proposition 4's neutral criteria is then "culled" to exclude all plans that do not pass the same flawed test. The ensemble analysis then requires comparing the plan in question to the culled ensemble of maps to see if one cherry-picked partisan characteristic—its "ranked marginal deviation"—is below the 95th percentile for ensemble maps. Based on a preliminary analysis, Dr. Warshaw explains that the "ranked marginal deviation" appears to be a measure of the variance in the parties' vote shares across districts. Ex. 1 at 22-23. If the plan has a higher degree of variation among districts than 95% of the maps in the ensemble, it is unlawful. *Id.* Underneath the complicated math, this has pernicious partisan effects. As Dr. Warshaw explains:

> [M]aps with low deviations across districts nearly always lead to the election of four Republicans. . . . Plans where Democrats can win a seat will invariably have higher deviations across districts from the statewide mean. So it is puzzling that SB 1011's [ensemble] test requires plans to have a low variance across districts. This seems to be mandating the exact type of favoritism toward Republicans that Proposition 4 seeks to ban.

Id. at 23. So, S.B. 1011 first requires a redistricting plan to pass a flawed partisan bias test (which nearly always rejects maps with a Democratic-majority district), but that plan is still rejected if it keeps Democrats together in a district to a degree greater than 95% of an ensemble of other maps that also pass partisan bias. This is manipulation layered upon absurdity and directly impairs Proposition 4.

Fourth, the **judicial review provisions** of S.B. 1011 impair Proposition 4. Rather than allowing judges to rely on the full range of relevant evidence, S.B. 1011 restricts judicial review, mandating that it be based on an ensemble analysis, the partisan bias test, and the mean-median difference test, with all the attendant problems described above. Utah Code § 20A-19-103(8) (as

amended). This directly impairs Proposition 4, which requires that plans be assessed according to "judicial standards" and the "best" data and scientific methods available. S.B. 1011 also alters the standard of proof that litigants must meet to enforce their rights under Proposition 4, requiring that purposeful favoritism must be determined by a "clear and convincing" evidentiary standard. *Id.* § 20A-19-103(4)(b) (as amended). This raises the evidentiary threshold in a way that impairs Proposition 4 and contradicts it: Section 20A-19-301 sets a "preponderance of the evidence" standard for judicial review and requires *de novo* judicial review. These limitations and the heightened standard impair Proposition 4's express mandate that redistricting plans be subject to meaningful judicial review so that the people of Utah can enforce their right to fair maps in court.

* * *

In sum, the obvious purpose and effect of S.B. 1011 is to codify a set of tests that systematically favor the majority party and disfavor the minority party, a clear instance of partisan favoritism that impairs Proposition 4. The intentional selection of the partisan bias test privileges maps that scatter Democrats across a greater number of districts—fighting Utah's inherent political geography. It blesses maps that crack Democratic voters, leaving them zero seats in the real world, simply because in the make-believe world of 50-50 statewide elections, Democrats could win two seats under those maps. And S.B. 1011 rejects maps that include a district Democrats can reliably win in the real world because they couldn't win two in the imaginary world under those maps. The selection of the mean-median test further requires that Democratic voters be reallocated from the one district in which they could elect a candidate of choice to one of two other median districts where they cannot, which results in further "cracking" the voters of the state's minority party. And the use of a flawed ensemble analysis untethered to Proposition 4's neutral criteria and then "culled" to retain only those plans most favorable to the majority party rounds out the partisan enterprise.

The interlocking functioning of these tests ensures partisan favoritism, the very thing Proposition 4 was enacted to prohibit.

Under S.B. 1011, the statute is at war with itself. This hastily drafted amendment implements changes to Proposition 4 that do not just clarify the existing law—they directly contradict it, causing undeniable impairment of Proposition 4. Additionally, S.B. 1011 does not even apply its requirements uniformly across redistricting plans in Utah. Some requirements apply to all plans, but others apply only to the congressional plan. Thus, not only are the tests cherry-picked for partisan advantage, but they are also selectively applied only to those redistricting plans where doing so helps the majority party. *See* Ex. 1 at 18 (showing that the partisan bias test would fail the state's legislative maps, which are suspiciously exempt from scrutiny under the partisan bias test). What's more, S.B. 1011 not only requires use of the worst methods to assess partisan favoritism in Utah; it does so to the *exclusion* of the other effective and appropriate statistical methods that could be applied to assess purposeful or undue partisan favoritism in Utah. *See* Ex. 1 at 6-12. Instead of implementing any of these, S.B. 1011 injects into Proposition 4 an internally inconsistent and cherry-picked raft of partisan tests specifically crafted to retain power for the majority party at the expense of the people.

3. S.B. 1011 fails strict scrutiny.

Defendants bear the burden of identifying compelling interests and explaining how S.B. 1011 is narrowly tailored to achieve them. *LVWUT*, 2024 UT 21, ¶ 75. They have not done so. Nor could they. S.B. 1011 is not narrowly tailored to advance any compelling government interest. The Legislature has no interest—let alone a compelling one—in implementing statistical tests cherry-picked to allow gerrymandered districts in contravention of the express purpose and requirements of Proposition 4. As the U.S. Supreme Court has explained, "[p]artisan gerrymanders . . . [are

incompatible] with democratic principles." *Ariz. State Legislature v. Ariz. Indep. Redistricting Comm'n*, 576 U.S. 787, 791 (2015) (quoting *Vieth v. Jubilerer*, 541 U.S. 267, 292 (2004) (plurality opinion)); *see also Rucho*, 588 U.S. at 718 ("Excessive partisanship in districting leads to results that reasonably seem unjust."); *id.* at 719 (noting that the Court "does not condone excessive partisan gerrymandering"). The Legislature cannot advance a compelling interest mandating a test or tests that bake in a practice that is incompatible with the fundamental concept of democracy; indeed, the Utah Constitution requires adherence to fundamental principles of democracy. *See* Utah Const. art. I, § 27 ("Frequent recurrence to fundamental principles is essential to the security of individual rights and the perpetuity of free government.").

The Legislature claims that S.B. 1011's impairment of Proposition 4 was "invited" by this Court's acknowledgment that "the legislature retains discretion in determining what judicial standards are applicable and they retain discretion to determine the 'best available data and scientific and statistical methods' to use in evaluating redistricting plans for compliance with state and federal law and the Proposition 4 redistricting standards." Order Granting MSJ on Count V at 29-30. Not so. The quoted language comes from a section of this Court's opinion rejecting the Legislature's contention that by requiring the use of "judicial standards and the best available data and scientific and statistical methods," Proposition 4 displaced any legislative role in redistricting. *Id.* As this Court correctly explained, requiring that maps be evaluated using applicable standards, data, and methods does not displace the Legislature, which retains discretion in which standards and methods to apply in its assessment. *Id.* But while it retains discretion in how it evaluates its maps, the Legislature *does not* have free reign to mandate that maps conform to a specific set of cherry-picked tests that fatally undermine the core anti-gerrymandering goal of Proposition 4, nor

to neuter judicial review of the Legislature's decision to do so contrary to the provisions of Proposition 4. Nothing in the Court's Order should be construed as suggesting otherwise.

Multiple members of the Legislature have also gone so far as to suggest that S.B. 1011 was somehow ordered by this Court.[9] This Court's order did not invite the Legislature's meddling, and it certainly did not *require* it. This Court would "overstep[] its authority by ordering the Legislature to *enact"* legislation, Amended Ruling and Order at 2 n.2, and this Court did not so order. Where legislative action is premised on a "pure error of law," strict scrutiny is not satisfied. *See Cooper v. Harris*, 581 U.S. 285, 306 (2017). These legislators—and others who expressed similar sentiments—are plainly wrong, and to the extent their misunderstanding of the law serves as the justification for S.B. 1011, this further underscores why the bill fails strict scrutiny.

B. Plaintiffs are likely to succeed on the merits of their Free Elections Clause claim.

Plaintiffs are likely to succeed on the merits of their claim that S.B. 1011 violates the Free Elections Clause. By its text and structure, the Free Elections Clause prohibits partisan gerrymandering: "All elections shall be free, and no power, civil or military, shall at any time interfere to prevent the free exercise of the right of suffrage." Utah Const. art. I, § 17. Engaging in a close textual analysis, this Court correctly held that the provision creates two related but independent rights. Motion to Dismiss Order (Nov. 22, 2022) ("MTD Order") at 26-31. This is because the provision "is constructed as a compound sentence, separating two independent clauses by the conjunction 'and,'" which means the "two clauses are to be given equal value." *Id*. at 26; *see also* Bryan Garner, *Garner's Modern English Usage* 1199-201 (5th ed. 2022) (describing

[9] One Representative wrote that S.B. 1011 "was requested by [Plaintiffs] to the judge, who has asked us to define and establish these standards, otherwise we wouldn't be doing it. I don't want it either." 3d Amend. Compl. ¶ 137. Another Representative claimed that "[i]n the judge's ruling, she required the legislature to establish a partisan symmetry standard test. . . . If I don't vote in favor of it, I'm defying the judge's orders." *Id.* ¶ 138.

independent clauses and comma splice). The first part—"[a]ll elections shall be free"—is designed to prevent the type of manipulation of the electoral process and predetermination of outcomes inherent in cherry-picked evaluation of gerrymandered districts. MTD Order at 29.

The meaning of this provision, from Utah's founding to today, makes clear that elections are only free when the process is not manipulated and all voters have an equal opportunity to elect candidates. At Utah's statehood, "free" meant "[u]nconstrained; having power to follow the dictates of his own will;" and "[n]ot despotic; assuring liberty; defending individual rights against encroachment by any person or class; instituted by a free people; said of governments, institutions, etc." *Black's Law Dictionary*, 519 (1st ed. 1891), available at https://www.1215.org/lawnotes/dictionaries/1891_bld1/f/f0519.jpg. Other definitions included "determining ones' own course of action; not dependent; at liberty" and "[n]ot under an arbitrary or despotic government; . . . enjoying political liberty." Free, *Webster's Complete Dictionary of the English Language* (1886). This essential meaning of the term "free" remains true today. *See Black's Law Dictionary* (2019).

Moreover, the meaning of "elections" goes beyond activity on election day. It is instead the full "process in which people vote to choose a person . . . to hold an official position." MTD Order at 27 (quoting Election, Collins Dictionary). As courts understood at Utah's founding, "election" include the complete "system of choosing or electing officers." *State v. Hirsch*, 24 N.E. 1062, 1063 (Ind. 1890).

Guaranteeing "free" elections also inherently requires equal opportunity. As understood in 1895, "free" meant "[o]pen to all citizens alike[.]" William C. Anderson, *A Dictionary of Law*, 478 (1st ed. 1889), available at https://archive.org/details/cu31924022836534/page/478/mode/2up. And to be "free," all people must equally "[e]njoy[] full civic rights." *Black's Law Dictionary*, 519.

The Utah Constitution itself demands that free governments must be equal. Utah Const. art. I, § 2; *see also Lee v. Gaufin*, 867 P.2d 572, 581 n.12 (Utah 1993). This Court and the U.S. Supreme Court have also repeatedly recognized that equality is embedded in the concept of "free" in the electoral context. *See Gallivan v. Walker*, 2002 UT 89, ¶ 32; *Reynolds v. Sims*, 377 U.S. 533, 555 (1964); *Wesberry v. Sanders*, 376 U.S. 1, 17-18 (1964). Numerous other provisions guarantee equality in Utah's elections, which the Free Elections Clause reinforces. *See* Utah Const. art. I, § 24; art. IV, §§ 1, 2.

Here, S.B. 1011 is a direct affront to free elections in Utah. Through its intentional selection of metrics and tests that benefit one political party at the expense of the other, *see supra*, S.B. 1011 engages in exactly the kind of manipulation the Free Elections Clause guards against. Voters are denied a free choice when districts are gerrymandered. By instead changing state law to enshrine statistical tests that effectively mandate gerrymanders, S.B. 1011 only deepens the constitutional wound. And an election is not free if it is conducted under districts whose creation has been mandated by the intentional selection of tests and data biased in favor of one party at the expense of the other. S.B. 1011 violates the Free Elections Clause.

C. Plaintiffs are likely to succeed on the merits of their equal protection rights claim.

Plaintiffs are likely to succeed on the merits of their claim that S.B. 1011 violates their equal protection rights under the Utah Constitution. The Constitution provides: "All laws of a general nature shall have uniform operation," and the government is "founded on [the people's] authority for their equal protection and benefit." Utah Const. art. I, §§ 2, 24. These protections are "essential to a free society" and "are inherent in the very concept of justice." *Gallivan*, 2002 UT 89, ¶ 32 (quotations omitted). They prohibit "arbitrary laws that favor the interests of the politically powerful over the interests of the politically vulnerable." *Lee*, 867 P.2d at 581.

The Uniform Operation Clause is an effects-oriented standard that "protects against discrimination within a class and guards against disparate effects in the application of laws." *Gallivan*, 2002 UT 89, ¶ 38 (emphasis added). A law can be "unconstitutional both on its face and for any de facto disparate effects on similarly situated parties." *Cook v. Bell*, 2014 UT 46, ¶ 29. Although the Clause embodies similar principles as the Fourteenth Amendment, it affords "more" protection because it "demands more than facial uniformity; the law's operation must be uniform." *State v. Drej*, 2010 UT 35, ¶ 33, 233 P.3d 476 (emphasis added).

The Clause specifically protects against disparate burdens on the fundamental rights of voters—including the right to an undiluted vote. In *Gallivan*, for example, the Court invalidated an initiative signature requirement because it diluted urban Utahns' voting power based on only tenuous justifications. 2002 UT 89, ¶ 64. The Court recognized that "[w]eighting the votes of citizens differently, by any method or means, merely because of where they happen to reside" violates equal protection guarantees. *Id*. ¶¶ 32, 72 (citing *Reynolds*, 377 U.S. at 563).

In identifying whether a statute violates state equal protection rights, the Uniform Operation standard asks whether (1) the "law creates a classification;" (2) the "classification is discriminatory" or "treats the members of the class or subclass disparately;" and (3) the classification "is reasonably necessary to further a legitimate legislative goal." MTD Order at 41 (citing *Gallivan*, 2002 UT 89, ¶¶ 42-43). Applying this analysis demonstrates that S.B. 1011 violates Utah's equal protection principles.

Here, S.B. 1011 creates a classification. The classification need not be stated explicitly on the face of the law if it has the effect of creating such a classification. *See State v. Mohi*, 901 P.2d 991, 997 (Utah 1995) ("[f]or a law to be constitutional under [the Uniform Operation Clause], it is not enough that it be uniform on its face. What is critical is that the *operation* of the law be

uniform. A law does not operate uniformly if persons similarly situated are not treated similarly" (internal quotations omitted, emphasis in original)). S.B. 1011 does just that through its imposition of the partisan bias, mean-median difference, and flawed ensemble tests. When applied to redistricting plans in Utah, these tests require the enactment of gerrymandered redistricting maps that treat voters differently based on their party. All three tests require that minority party voters who are clustered in Salt Lake County be scattered across multiple districts in order to reach the numerical metrics required by these tests, rather than allowing them to remain in a single district as would result from neutral redistricting.

S.B. 1011's classification is discriminatory and treats voters of the minority party differently from other voters in the state. *See Gallivan*, 2002 UT 89, ¶ 45 ("[a] classification . . . is discriminatory [when] . . . the members of the class or subclasses are treated disparately"). Because Utah's minority party voters are largely clustered in the Salt Lake County area, the effect of "cracking" that group of voters is to dramatically dilute their voting power, with the inevitable countereffect being that the weight of votes cast for the majority party is boosted. As such, the result of applying S.B. 1011's biased tests is that minority party voters are treated disparately and are disproportionately disfavored compared to majority party voters. *See*, e.g., Ex. 2 ¶¶ 14-15; Ex. 3 ¶¶ 13-14; Ex. 4 ¶¶ 9-10; Ex. 5 ¶¶ 10-11.

S.B. 1011's discriminatory classification of voters is unnecessary and serves no legitimate legislative goal, *i.e.*, "it does not actually and substantially further the stated legislative purpose." *Gallivan*, 2002 UT 89, ¶ 50. Despite Defendant's claims to the contrary and as explained *supra*, complying with the Court's remedial order and Proposition 4 does not require them to pass legislation codifying the use of any particular metrics—let alone the worst available ones. And it certainly does not require the Legislature to impose biased tests ill-suited to Utah's political

realities chosen to reverse engineer a map favorable to the majority party. Subverting Proposition 4's ban on partisan gerrymandering in this way does not and cannot serve any legitimate legislative purpose. Plaintiffs are thus likely to succeed on the merits of their equal protection claim.

D. Plaintiffs are likely to succeed on the merits of their free speech and association claim.

Plaintiffs are likely to succeed on the merits of their claim that S.B. 1011 violates their freedom of speech and association rights under the Utah Constitution. S.B. 1011 violates Plaintiffs' freedoms of speech and association by retaliating against their political viewpoints. Utah's Constitution guarantees that "[a]ll persons have the inherent and inalienable right to . . . assemble peaceably," "petition for redress of grievances," and "communicate freely their thoughts and opinions," while commanding that "[n]o law shall be passed to abridge or restrain the freedom of speech." Utah Const. art. I, §§ 1, 15. Together, these clauses define Utahns' free speech and association rights and proscribe laws that either "discourage or prohibit political expression." *Cook*, 2014 UT 46, ¶ 57.

Safeguarding free speech and association in the electoral process is critical. These freedoms are "not only the hallmark of free people, but [are], indeed, an essential attribute of the sovereignty of citizenship." *Cox v. Hatch*, 761 P.2d 556, 558 (Utah 1988). As such, numerous courts have recognized the constitutionally protected expressive interest in voting. *Burdick v. Takushi*, 504 U.S. 428, 438 (1992).[10] Article I, sections 1 and 15 protect this expression and guarantee the "healthy political exchange that is the foundation of our system of free speech and free elections." *Jacob v. Bezzant*, 2009 UT 37, ¶ 29, 212 P.3d 535.

[10] *See* J. Gerald Hebert & Armand Derfner, *Voting Is Speech*, 34 Yale L. & Pol'y Rev. 471, 485-91 (2016) (collecting other cases).

Here, S.B. 1011 directly impairs this healthy exchange by implementing statistical tests that require minority party voters to be spread out into different districts, impairing their associational rights and their ability to effectively make their voice heard through their votes. Ex. 2 ¶ 13; Ex. 3 ¶ 12; Ex. 4 ¶ 8, 11; Ex. 5 ¶ 9, 12. The maps that S.B. 1011's mandated metrics inevitably produce will dilute the votes cast for the minority party solely on the basis of their political ideology. By rendering those voters unable to form a majority in any district, this legislation effectively politically silences them. In this way, S.B. 1011's biased tests and the gerrymandered maps they produce impair effective political expression in Utah.

E. Plaintiffs are likely to succeed on the merits of their right to vote claim.

Plaintiffs are likely to succeed on the merits of their claim that S.B. 1011 violates the Right to Vote Clause. Article IV, Section 2's Right to Vote Clause affirmatively guarantees the right to a meaningful, undiluted vote. The text provides an affirmative mandate to protect the right to vote: "[e]very citizen" who meets certain eligibility requirements "shall be entitled to vote." Utah Const. art. IV, § 2 (emphasis added). The use of "shall" signifies a command and a right secured to the people. And the text lacks a counterpart in the U.S. Constitution, meaning it provides a broader and distinct protection of Utahns' rights. *Gallivan*, 2002 UT 89, ¶ 33.

For over a century, the Utah Supreme Court has emphasized that the right to vote must be meaningful and undiluted. It has held that the right to vote is "among the most precious of the privileges for which our democratic form of government was established." *Rothfels v. Southworth*, 356 P.2d 612, 617 (Utah 1960). It cannot be "abridged, impaired, or taken away, even by an act of the Legislature," which must instead "secure[] a fair expression at the polls." *Earl v. Lewis*, 77 P. 235, 237-38 (Utah 1904); *accord Nowers v. Oakden*, 169 P.2d 108, 117 (Utah 1946) (reinforcing *Earl*). The judiciary is charged with ensuring this fair expression, including by "mak[ing] the [right

to vote] meaningful." *Shields v. Toronto*, 395 P.2d 829, 832 (Utah 1964); *Dodge v. Evans*, 716 P.2d 270, 273 (Utah 1985). Therefore, the government violates article VI, section 2 if it renders the "right to vote . . . improperly burdened, conditioned, or diluted." MTD Order at 54 n.30 (quoting *Dodge*, 716 P.2d at 273).

Here, S.B. 1011 directly infringes the Right to Vote Clause. The bill mandates that any congressional map must pass a variety of biased tests handpicked to ensure an outcome of a map disproportionately favorable to the majority party. S.B. 1011's tests accomplish this task by eliminating from consideration any map that does not crack the concentration of minority party voters in Salt Lake County. As a result, it blesses the passage of maps that unduly favor Republican voters and systematically disallows the passage of maps that include one majority-Democratic district. *See* Ex. 2 ¶ 12, 14; Ex. 3 ¶ 11, 13; Ex. 4 ¶ 9; Ex. 5 ¶ 10. S.B. 1011 thus improperly dilutes the votes of Utah's minority party voters, infringing on their right to vote.

F. Plaintiffs are likely to succeed on the merits of their free government claim.

Plaintiffs are likely to succeed on the merits of their claim that S.B. 1011 violates their right to free government. Article I, Section 2, of the Constitution—in addition to guaranteeing to the people the right to alter or reform the government—provides that "[a]ll political power is inherent in the people; and all free governments are founded on their authority for their equal protection and benefit." Utah Const. art. I, § 2. Likewise, Article I, Section 27 of the Constitution provides that "[f]requent recurrence to fundamental principles is essential to the security of individual rights and the perpetuity of free government." Utah Const. art. I, § 27. As the Supreme Court has explained in enforcing Article I, Sections 2 and 27, "[t]he cornerstone of democratic government is the conviction that governments exist at the sufferance of the people, in whom '[a]ll political power is inherent.'" *In re J.P.*, 648 P.2d 1364, 1372 (Utah 1982) (quoting Utah Const. art.

I, § 2); *see also LWVUT I*, 2024 UT 21, ¶ 133 (citing Article I, Section 27's "frequent recurrence" requirement and observing that "[t]hese declarations are not mere metaphors . . . but a vital princip[le] adhered to in the formation of the government of this state. . . . The people set up the state as their agent or servant through which they might for convenience *express their sovereign will*." (quoting *Utah Power & Light Co v. Ogden City*, 79 P.2d 61, 74 (Utah 1938) (Larson, J., concurring in part and dissenting in part) (cleaned up))). Here, S.B. 1011 undermines Plaintiffs' right to a free government for the same reasons it violates the constitutional rights discussed above.

II. The remaining factors favor granting Plaintiff's requested injunction.

Plaintiffs also satisfy the remaining preliminary injunction factors: (1) they "will suffer irreparable harm unless the . . . injunction issues," (2) "the threatened injury to [them] outweighs whatever damage the proposed . . . injunction may cause the party . . . enjoined," and (3) the "injunction, if issued, would not be adverse to the public interest." Utah R. Civ. P. 65A(f)(2)-(4); *see also* Utah Code § 20A-19-301(2)(b) (allowing preliminary relief if it is in the public interest).

First, Plaintiffs will suffer irreparable harm in the absence of an injunction against S.B. 1011. Irreparable harm is harm that "cannot be adequately compensated in damages or for which damages cannot be compensable in money." *League of Women Voters of Utah v. Utah State Legislature*, 2024 UT 40, ¶ 148, 559 P.3d 11, 42 ("*LWVUT II*") (quoting *Hunsaker v. Kersh*, 1999 UT 06, ¶ 9, 991 P.2d 67). Without the requested relief, any congressional map chosen in the course of this remedial process is required to satisfy S.B. 1011's heavily biased partisan metrics. In this way, Defendants seek to guarantee the passage of a partisan gerrymandered congressional map that favors the majority party at the cost of diluting the voting power of individual Plaintiffs and organizational Plaintiffs' members. *See* Ex. 2 ¶¶ 12-15; Ex. 3 ¶¶ 11-14; Ex. 4 ¶¶ 7-10; Ex. 5 ¶¶ 8-11. Additionally, the Lieutenant Governor has set a deadline of November 10, 2025, for

submission of a congressional map for the 2026 election. If the requested injunction is denied, and Plaintiffs are forced to vote yet again on a gerrymandered map drawn to satisfy S.B. 1011 but not the plain requirements of Proposition 4, Plaintiffs will suffer an irreparable deprivation of their constitutional rights.

Second, the balance of the equities, which "considers whether the applicant's injury exceeds the potential injury to the defendant," also favors Plaintiffs. *Planned Parenthood Ass'n of Utah v. State*, 2024 UT 28, ¶ 210, 554 P.3d 998, 1043. Without the requested relief, Plaintiffs will suffer the harm of having all potential congressional maps subjected to S.B. 1011's cherry-picked tests designed to ensure that any map chosen favors the majority party. Conversely, Defendants face no cognizable harm from being unable to enforce an unconstitutional statute. *See United States v. Alabama*, 691 F.3d 1269, 1301 (11th Cir. 2012) (there can be "no harm from [a] state's nonenforcement of invalid legislation").

Furthermore, under Proposition 4, all parties are free to advocate for and apply whatever data and methods they think are "best" given the context. And in doing so under the remedial schedule the parties agreed upon and this Court ordered, both parties will each be able to submit briefs and expert reports explaining why a particular metric or test is or is not well-suited to Utah, and which tests offer helpful assessment of the parties' respective proposed maps. Rather than engage in this considered process, Defendants passed S.B. 1011 as an end-run around it. Granting the injunction would allow all parties to still brief and argue for whatever tests they think are most applicable, and would not prevent any test from being considered. In contrast, allowing S.B. 1011 to stand would pre-determine the outcome and reject certain tests before they have even been presented or considered—not just for this remedial process, but into the future as well. The balance of equities thus decisively favors granting the injunction.

Third, the public interest weighs in favor of an injunction. S.B. 1011 reverse engineers a partisan gerrymandered congressional map by adopting a collection of metrics designed to produce a skewed outcome that disfavors any Utahns who do not vote for the majority party. Enjoining S.B. 1011 would properly restore the parties to the "last uncontested status between the parties which preceded the controversy." *Planned Parenthood Ass'n of Utah*, 2024 UT 28, ¶ 226. Here, that means subjecting Utah's congressional map to "judicial standards and the *best available* data and scientific and statistical methods" to determine whether that map "purposefully or unduly favors . . . any political party." Utah Code §§ 20A-19-103(3), (4) (emphasis added). The public interest can only be served, not threatened, by an injunction assuring compliance with standards the constitutionality of which was just affirmed by this Court. *See* Order Granting MSJ on Count V at 15 (finding that Proposition 4 was a proper exercise of the people's initiative power and that the subject matter of Proposition 4 contained government reforms or alterations within the meaning of the Alter or Reform Clause). The equities thus favor enjoining S.B. 1011.

CONCLUSION

For the reasons above, the motion for preliminary injunction on Counts 16-21 should be granted.

RESPECTFULLY SUBMITTED this 7th day of October 2025.

/s/ David C. Reymann

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IN THE THIRD JUDICIAL DISTRICT COURT
IN AND FOR SALT LAKE COUNTY, STATE OF UTAH

LEAGUE OF WOMEN VOTERS OF UTAH, MORMON WOMEN FOR ETHICAL GOVERNMENT, STEFANIE CONDIE, MALCOLM REID, VICTORIA REID, WENDY MARTIN, ELEANOR SUNDWALL, and JACK MARKMAN,

Plaintiffs,

v.

UTAH STATE LEGISLATURE, et al.,

Defendants.

DECLARATION OF CHRISTOPHER WARSHAW

Case No. 220901712

Honorable Dianna M. Gibson

CHRISTOPHER WARSHAW hereby declares and states as follows:

1. I am over 21 years of age and am in all respects competent to make this declaration. These facts are based on my personal knowledge.

2. I have been retained by counsel for Plaintiffs in the above-captioned action to offer expert opinion and analysis regarding certain matters. A true and correct copy of my report entitled *Methods to Determine Whether Utah Congressional Plans Favor or Disfavor a Political Party*, dated October 7, 2025, is attached hereto. The content of this report is true and accurate to the best of my knowledge, and I would testify consistently with its contents if called to do so.

3. I declare under penalty of perjury of the laws of the State of Utah that the foregoing is true and correct.

EXECUTED this 7th day of October 2025, in Maryland, United States.

/s/ Christopher Warshaw

Methods to Determine Whether Utah Congressional Plans Favor or Disfavor a Political Party

Christopher Warshaw*

October 7, 2025

*Professor, McCourt School of Public Policy, Georgetown University. Note that the analyses and views in this report are my own, and do not represent the views of Georgetown University.

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1 Introduction & Summary of Opinions

My name is Christopher Warshaw. I am a Professor at the McCourt School of Public Policy at Georgetown University. Previously, I was a Professor of Political Science at George Washington University from 2017-2025, an Associate Professor at the Massachusetts Institute of Technology (MIT) from 2016-2017, and an Assistant Professor at MIT from 2012- 2016.

I have been asked by Plaintiffs' Counsel to provide expert analysis and opinions about whether the methods and measures mandated by Utah's S.B. 1011 are among the best available data and scientific and statistical methods to assess whether a congressional redistricting map purposefully or unduly favors or disfavors a political party in Utah.

I conclude that the partisan bias and mean-median metrics are not the best methods, and likely the worst methods, to assess a redistricting map's level of partisan favoritism in a state like Utah. As I explain in further detail below, political scientists and courts generally apply a range of scientific and statistical methods, including multiple measures of partisan symmetry, to assess undue partisan favoritism in redistricting maps. Some methods and measures are more or less applicable in a state or to a particular map depending on the context, and best practice is to apply all appropriate measures. The best available quantitative measures and methods in Utah are the efficiency gap, the Least Republican Vote Share (LRVS) metric, and the standard deviation of vote shares.

The partisan bias metric is not an appropriate method to assess whether a Utah map purposefully or unduly favors a political party. This is because partisan bias relies on assessing a counterfactual circumstance where both parties receive exactly 50% of the statewide vote share—a hypothetical scenario that has not and does not occur in Utah. The author of partisan bias has himself repeatedly warned that the metric should not be used in states like Utah where statewide elections are uncompetitive. Scholars have found that the mean-median difference is similarly inapplicable when statewide elections are uncompetitive. Moreover, when applied to the state's redistricting maps, the partisan bias and mean-median difference metrics yield paradoxical, nonsensical results when applied to congressional and other district maps in the state, further illustrating why it cannot validly be used in Utah. And the partisan bias and mean-median tests, along with the flawed ensemble test required by S.B. 1011, tend to approve of congressional maps that, according to more reliable measures, unduly favor Republicans and disfavor Democrats in Utah.

2 Methods and Data

My opinions in this report are based on the knowledge I have amassed over my education, training, and experience, including a detailed review of the relevant academic literature and application of various partisan favor methods and measures to congressional maps in Utah. In applying measures of partisan symmetry and other methods to assess partisan favoritism, I rely on the following data:

- GIS Files of the enacted 2021 plan and alternative plans from the Utah Independent Redistricting Commission: I obtained the enacted 2021 plans and other plans considered during the 2021 redistricting cycle from the Utah Redistricting website and the All About Redistricting website.

- Precinct-level data on recent statewide Utah elections: I use shapefiles of precinct-level results in 2016-2020 from the Voting and Election Science Team (University of Florida, Wichita State University) and the state of Utah's official elections website. I obtained files with the 2016-2020 data from the Harvard Dataverse.[1] I obtained files with precinct-level results from the 2022 election from Counsel for Plaintiffs that were produced by Professor Michael McDonald, who leads the Voting and Election Science Team. I obtained precinct-level results from the 2024 election from the state of Utah[2] and merged it with a precinct-level GIS file that the New York Times developed based on official sources.[3]

- Estimates of the partisan advantage in previous congressional and state legislative elections: As part of my peer-reviewed academic research, I have estimated partisan advantage metrics of districting plans used in previous congressional and state legislative elections around the country from 1972-2020 (Stephanopoulos and Warshaw 2020). I recently extended this analysis through 2024.

3 Qualifications and Publications

My Ph.D. is in Political Science, from Stanford University, where my graduate training included courses in political science and statistics. I also have a J.D. from Stanford Law School. My academic research focuses on public opinion, representation, and elections in

1. See https://dataverse.harvard.edu/dataverse/electionscience.
2. See https://electionresults.utah.gov/results/public/utah/elections/general11052024
3. See https://github.com/nytimes/presidential-precinct-map-2024?tab=readme-ov-file

American politics. I have written over 30 peer-reviewed papers on these topics. Moreover, I have written many papers that focus on elections and several articles that focus specifically on redistricting. I also have written a book that includes an extensive analysis on the causes and consequences of partisan gerrymandering in state governments.

My curriculum vitae is attached to this report. All publications that I have authored and published appear in my curriculum vitae. My work is published or forthcoming in peer-reviewed journals such as: the *American Political Science Review*, *Nature Communications*, the *American Journal of Political Science*, the *Journal of Politics*, *Political Analysis*, *Political Science Research and Methods*, the *British Journal of Political Science*, the *Annual Review of Political Science*, *Political Behavior*, *Legislative Studies Quarterly*, *Science Advances*, the *Election Law Journal*, *Nature Energy*, *Public Choice*, and edited volumes from Cambridge University Press and Oxford University Press. My book entitled *Dynamic Democracy in the American States* was published by the University of Chicago Press in 2022. It won the American Political Science Association's Virginia Gray Best Book Award in 2024 for the best political science book published on the subject of U.S. state politics or policy in the preceding three calendar years. My non-academic writing has been published in the *New York Times* and the *Washington Post*. My work has also been discussed in the *Economist* and many other prominent media outlets.

I have previously provided expert reports in eleven redistricting-related cases. My expert testimony was extensively cited by the judges in many of their decisions. Between 2017 and 2019, I provided reports for *League of Women Voters of Pennsylvania v. Commonwealth of Pennsylvania*, No. 159 MM 2017, *League of Women Voters of Michigan v. Johnson*, 17-14148 (E.D. Mich), and *APRI et al. v. Smith et al.*, No. 18-cv-357 (S.D. Ohio). Between 2021 and 2023, I provided reports in *League of Women Voters v. Ohio Redistricting Commission*, No. 2021-1193 (Ohio 2022); *League of Women Voters v. Kent County Apportionment Commission*, No. 163952 (Mich. 2021); *League of Women Voters of Ohio v. Ohio Redistricting Commission*, No. 2021-144 (Ohio 2021-22); *League of Women Voters of Michigan v. Michigan Independent Citizens Redistricting Commission*, No. 164022 (Mich. 2022); *Rivera* et al. *v. Schwab*, No. 2022-CV-000089 (Kan. Dist. Ct. Wyandotte Cnty. 2022); *Benninghoff v. 2021 Legislative Reapportionment Commission*, No. 11 MM 2022 (Pa. 2022); *BVM (Black Voters Matter) Capacity Building Institute, Inc., et al. v. Cord Byrd, in his official capacity as Florida Secretary of State, et. al.*, No. 2022-ca-000666 (Fla. 2d Cir. 2023); and *Republican Party of New Mexico* v. *Oliver*, No. S-1-SC-40146 (N.M. 2023).

I also provided testimony to Pennsylvania's Bipartisan Reapportionment Commission about the partisan fairness of its proposed State House plan. In addition, I have provided

expert testimony and reports in several cases related to the U.S. Census: *State of New York et al. v. United States Department of Commerce*, No. 18-cv-2921 (S.D.N.Y. 2019); *New York v. Trump*, No. 20-CV-5770 (S.D.N.Y 2020); *Common Cause v. Trump*, No. 1:20-cv-02023 (D.D.C. 2020); and *La Union Del Pueblo Entero (LUPE) v. Ross*, No. GJH-19-2710 (D. Md. 2019).

I am being compensated at a rate of $400 per hour. The opinions in this report are my own, and do not represent the views of Georgetown University.

4 Assessing Partisan Favoritism in Redistricting Maps

Utah's Proposition 4 at Utah Code §20A-19-103 prohibits any redistricting plan "that purposefully or unduly favors or disfavors ... any political party." It requires use of "the best available data and scientific and statistical methods, including measures of partisan symmetry" to evaluate compliance. I begin by explaining how partisan favoritism[4] typically manifests in redistricting plans, then describe the various scientific methods political scientists use to detect and measure it. This provides context for why some measures are suited to Utah's circumstances whereas others (like the partisan bias and mean-median difference metrics codified in S.B. 1011) are not.

Partisan favoritism in a redistricting plan occurs when one party's voters are "packed" into a small number of districts in larger numbers than needed to elect their preferred candidates, or "cracked" across multiple districts so that they cannot elect a candidate of their choice anywhere (Stephanopoulos and McGhee 2015). In Utah, where the minority party's voters are concentrated in one geographic region (Salt Lake County) and often too few to form a majority in more than one district, cracking is the main way to disfavor them in congressional elections. This impairs the minority party's ability to translate its statewide support into representation, enabling the favored party to entrench its advantage by winning every seat (Caughey, Tausanovitch, and Warshaw 2017; Stephanopoulos and Warshaw 2020).

Political scientists have developed a variety of methods to determine whether a map unduly favors or disfavors a party. A guiding principle for some of these methods is partisan symmetry, or the idea that parties should be treated equally in how votes convert to seats. Scholars have proposed multiple measures of partisan symmetry. Different measures are more or less appropriate depending on a state's political conditions and the type of plan being assessed, and some measures do not yield reliable results in certain

4. I use the term partisan favoritism as a shorthand for what Proposition 4 prohibits, purposefully or unduly favoring or disfavoring a political party.

contexts. Courts and scholars recognize that no single measure or approach is perfect; best practice is to apply all measures appropriate to the given state and context to ensure robust conclusions (Stephanopoulos and McGhee 2018, 1556–1557; Stephanopoulos and Warshaw 2020, 619). In conjunction with these measures, political scientists may also compare the relevant redistricting maps being assessed with large computer-generated ensembles of neutrally drawn simulated maps, which can help show whether a map's partisan outcome could be explained by adherence to neutral criteria (Chen and Rodden 2015). As I discuss below, the type of ensemble analysis specified in SB 1011 is highly flawed in its application to Utah and operates to benefit the state's majority party.

- **Partisan Bias**. The earliest proposed symmetry measure, partisan bias, asks what share of seats each party would win if the statewide vote were tied (Niemi and Deegan 1978; Gelman and King 1994; McGhee 2014; Katz, King, and Rosenblatt 2020).[5] Because this measure relies on a hypothetical 50-50 statewide election, it is unreliable in states like Utah where competitive statewide elections are virtually never observed (Gelman and King 1994, 543; Grofman and King 2007, 19; Katz, King, and Rosenblatt 2020, 167; McGhee 2017, 425; Stephanopoulos and McGhee 2018, 1566; Warrington 2019, 276). A version of this metric is codified in S.B. 1011 as explained below.

- **Efficiency Gap**. Developed more recently, this measure calculates the asymmetry in the efficiency of each party's translation of votes to seats (McGhee 2014; Stephanopoulos and McGhee 2015). As explained below, it directly captures the effects of packing and cracking, is based on observed vote shares in recent statewide elections (rather than counterfactual scenarios) and can be applied even in uncompetitive states (McGhee 2017, 433; Stephanopoulos and McGhee 2018, 1566; Warrington 2019, 278).

- **Mean-Median Difference**. This measure compares a party's median district vote share and its mean district vote share (Krasno et al. 2018; Best et al. 2017; Wang 2016). Greater distance between the mean and median suggest the district distribution is skewed in favor of the other party, whereas closer values suggest the distribution is more symmetric. This measure yields unreliable results when applied to maps with fewer districts and in less competitive states, like Utah, where a single

5. As an early proposed partisan symmetry measure, partisan bias is sometimes itself called "partisan symmetry." But the measure's authors, Gelman and King (1994), refer to it as "partisan bias," and other measures also resting on notions of symmetry have since been proposed. So, I also refer to it here as "partisan bias."

party wins a large share of the statewide vote (McGhee 2017, 424; Stephanopoulos and McGhee 2018, 1566; Warrington 2019, 276; Katz, King, and Rosenblatt 2020, 173–174; DeFord et al. 2023, 316; King et al. 2022, 138). A version of this metric is codified in S.B. 1011, as explained below. Strangely, however, S.B. 1011's definition of the mean-median difference metric diverges from the definition in the academic literature, as I will explain below.[6]

- **Declination**. A newer statistic, declination captures asymmetries in the distribution of district-level vote shares, but it is only valid in states where both parties win at least one seat on a plan, which does not hold true for congressional plans in Utah that are configured contrary to the requirements of Proposition 4 (as enacted by the voters) (Warrington 2018). Declination may be applicable to assessing Utah's state senate, state house, or state school board district maps.

- **Least Republican Vote Share (LRVS) & Standard Deviation of Vote Shares (SDVS)**: These are related methods developed by scholars specifically for Utah given its unique political geography, discussed in greater detail below. They reveal when a congressional map in Utah cracks Democratic voters across multiple districts, preventing them from electing a candidate of their choice even where they are heavily concentrated in one geographic area (King et al. 2022).

5 The Best Available Methods to Assess Partisan Favoritism in a Utah Congressional Map

The appropriate and best available measures to evaluate whether a congressional plan "purposefully or unduly favors ... a political party" in Utah are the efficiency gap, the least Republican vote share (LRVS) and standard deviation of vote shares (SDVS) metrics. These measures capture how partisan favoritism operates in Utah's political environment, unlike other symmetry measures that are premised on the existence of competitive statewide elections.

6. S.B. 1011 also seems to limit the legal definition of "measures of partisan symmetry" to the partisan bias test and an ensemble analysis in which maps that fail the partisan bias test are culled. It separately requires use of the mean-median test in addition to the defined "measures of partisan symmetry." This definition does not accord with the common usage of these terms in the political science field. Mean-median difference is a measure of partisan symmetry. And maps that fall within the 95% range of an ensemble can and often do exhibit partisan favoritism or disfavoritism under applicable measures of partisan symmetry (Katz, King, and Rosenblatt 2020, 176). The Brammer Bill's definitions do not fit with how these terms are generally understood in the field.

5.1 Efficiency Gap

The efficiency gap is a partisan symmetry measure that evaluates whether each party's votes are translated into seats with equal efficiency (see Stephanopoulos and McGhee 2015, 831, 834, 838, 849, 899). It is defined as the difference between the parties' respective inefficient votes, divided by the total number of votes cast in the election (Stephanopoulos and McGhee 2015, 831; see also McGhee 2014, 2017). "Inefficient votes" means votes cast for the party's candidates in the districts where those candidates lost, plus all of the votes for the party's candidates in the districts where they won beyond the 50%+1 needed for victory.[7]

The efficiency gap's focus on the symmetry in inefficient votes across parties is designed to mathematically describe the practical effect of packing and/or cracking—the tactics at the heart of partisan gerrymandering (Buzas and Warrington 2021). In cracked districts, the disfavored party's voters are spread too thin to elect their preferred candidate, and in packed districts, they are concentrated in overwhelming majorities, wasting votes that could be translated into seats elsewhere. Both tactics produce more "inefficient votes," and the efficiency gap measures whether one party systematically wastes more votes than the other.

The efficiency gap can be written mathematically as:

$$EG = \frac{W_D}{n} - \frac{W_R}{n} \tag{1}$$

where W_R are inefficient votes for Republicans, W_D are inefficient votes for Democrats, and n is the total number of votes in each state.

The efficiency gap is well suited for assessing partisan favoritism in Utah because it is calculated based on observed election results, rather than hypothetical scenarios. Unlike partisan bias, it does not require assuming an imaginary 50-50 statewide election. Instead, it uses actual vote shares in recent statewide elections to evaluate whether a map allows both parties' supporters to convert their votes into seats on an equally efficient basis. Thus, the efficiency gap, unlike partisan bias, can be readily applied in states like Utah with uncompetitive statewide elections (Stephanopoulos and McGhee 2018, 1509).

Application to Utah congressional maps. As an illustration, Table 1 shows the efficiency gap of Utah's 2021 Enacted Map and the three maps proposed by the Utah Independent Redistricting Commission (the Commission), based on a composite index of recent statewide elections.[8] I assess Utah's 2021 Enacted Map for illustrative purposes,

7. The authors of the efficiency gap refer to inefficient votes as "wasted votes" (Stephanopoulos and McGhee 2015, 831; see also McGhee 2014, 2017).

8. To predict future elections, I use a weighted average of previous statewide election results between

as the identity of the 2025 Enacted Map is not known yet as of the time I am conducting this analysis.

Index	Democratic Vote Share	Democratic Seat Share	Efficiency Gap	> Biased than this % Elections	> Pro-Rep. than this % Elections
Enacted Plan					
2016-2024 Composite	36%	0%	21.7%	97%	99%
Orange Commission Plan					
2016-2024 Composite	36%	23%	-1.6%	17%	37%
Public SH2 Commission Plan					
2016-2024 Composite	36%	23%	-0.8%	11%	40%
Purple Commission Plan					
2016-2024 Composite	36%	23%	-0.8%	11%	40%

Table 1: Efficiency gap metrics for Utah Plans

According to Table 1, the 2021 Map has a 21.7% pro-Republican efficiency gap.[9] This is more biased than 97% of all prior congressional redistricting plans in all U.S. states with at least 4 districts over the last 50 years. It is more pro-Republican than 99% of all previous districting plans. It is also more biased than the 2011 map, which had a pro-Republican efficiency gap of 16.7% based on the composite index. By contrast, the Commission's maps had efficiency gaps close to zero. Unlike the 2021 Enacted Map, all three of the Commission's maps were very neutral compared to other historical plans around the country, as shown below in Figure 1.

2016-2024 re-aggregated to predict partisan lean of districts in each map. This is consistent with the usual practice of using the past few election cycles to estimate an election composite. It is also consistent with my expert reports in other states. In addition, precinct-level election data are not readily available from prior to 2016. The elections in the composite include the following sixteen elections where both major parties fielded a candidate or clearly backed a candidate: 2024 President, 2024 Governor, 2024 Attorney General, 2024 Auditor, 2024 Treasurer, 2024 Senate, 2022 Senate (I count Evan McMullin as a Democrat because he was endorsed by the state Democratic party), 2020 President, 2020 Governor, 2020 Attorney General, 2018 Senate, 2016 Treasurer, 2016 Attorney General (note that the Democrat dropped out in this race, so the Democratic vote share was unusually low), 2016 Governor, 2016 Auditor, 2016 President, and 2016 Senate. Due to the growing nationalization of elections, these statewide races are an excellent predictor of congressional races (Hopkins 2018; Holliday 2023; Jacobson 2021; Moskowitz 2021). However, I get similar results if I use the index in Senator Brammer's legislation (S.B. 1011) that omits Senate races and counts some third-party candidates as partisans. But it's important to note that I see no compelling, theoretical reason to exclude Senate races, especially since these are the only federal races in the index. The efficiency gap results for the 2021 map and Commission maps under S.B. 1011's index are reported in Appendix A.

9. Throughout this report, positive partisan advantage metrics indicate a Republican advantage, and negative ones indicate a Democratic advantage. But the polarity of these numbers is arbitrary. Also, note that I get a fractional 23% seat share for Democrats, rather than 25%, because I am averaging across elections to construct my index. In some statewide elections, Democrats fail to win any seats on the Commission's plans.

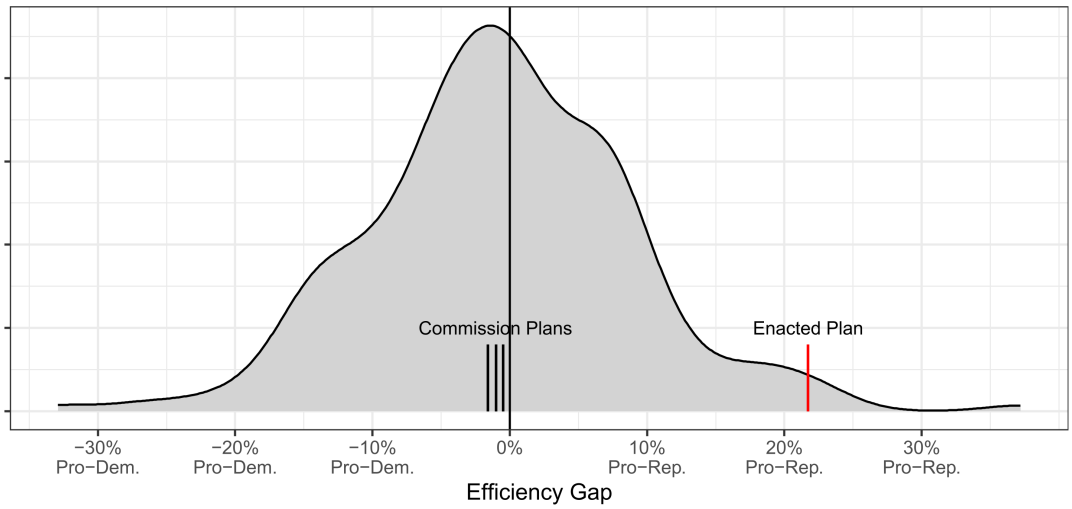


Figure 1: Comparison of efficiency gap on the enacted 2021-2031 plan and other potential plans in Utah based on composite of statewide elections with other congressional districting plans from 1972-2024 around the country.

It is important to note that efficiency gap results must be interpreted with care in states with relatively small congressional delegations, like Utah with four districts. In some such states, close races in one or two districts can cause large swings in the metric over time (Stephanopoulos and McGhee 2015). This concern does not arise with respect to maps such as Utah's 2021 congressional map because all four congressional districts have large Republican majorities, making the efficiency gap calculation stable. To reduce variance in assessing Utah maps regardless of the level of competition in the districts, the efficiency gap can be calculated using a composite of previous statewide elections, which provides a probabilistic estimate of two-party vote shares, seat shares, and the efficiency gap across election cycles. I do so in this report. The results also look similar using the results of Utah's 2024 congressional elections as a robustness check. Finally, I compare Utah's efficiency gap with other states that have only 4-5 congressional seats. As shown in Figure 2, the conclusion is the same as in Figure 1: the enacted 2021 map is more pro-Republican than nearly all prior plans in similar small states over the past 50 years, while the Commission's maps were virtually neutral.

In short, the efficiency gap is among the best available methods to assess partisan favoritism in Utah congressional maps, and it shows that the Legislature's 2021 map exhibited extreme pro-Republican advantage while the Commissions maps were neutral.

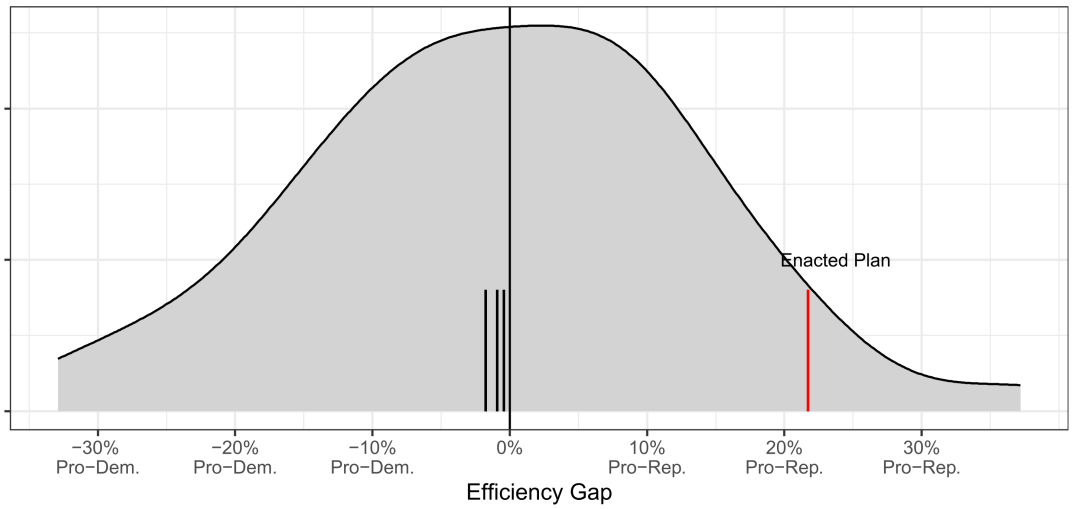


Figure 2: Comparison of efficiency gap in states with 4-5 congressional seats on the enacted 2021-2031 plan and other potential plans in Utah based on composite of statewide elections with other congressional districting plans from 1972-2024 around the country.

5.2 Least Republican Vote Share & Standard Deviation of Vote Shares Metrics

As noted above, because Utah's minority party is geographically concentrated and often not large enough to form a majority in more than one district, political scientists have also developed measures tailored to detect cracking in this type of partisan environment (King et al. 2022).

The least Republican vote share (LRVS) looks at the district in a given map that has the lowest Republican vote share and asks whether it is one where Democrats can elect a candidate of choice. If the least Republican district is still solidly Republican, the map likely reflects a cracking gerrymander that operates to lock out Democrats from any representation under the map.

The standard deviation of Republican vote shares (SDVS) is a complementary measure to LRVS. It captures how evenly the majority party's voters are spread across districts. According to King et al. (2022, 144), a low standard deviation of Republican vote shares in a map where Republicans are projected to win all four districts is a strong indication that Democratic-leaning areas were intentionally cracked. This is so because such an efficient maximization of Republican vote share across all four districts, with little variation among them, would be surprising to see without it being a purposeful result.

Put differently, the SDVS metric indicates that a low standard deviation is an indication of a plan that favors one party and a high SDVS across district is an indication of a

fair plan. So it is surprising that SB 1011 Section 1(A)(ii) and Section 1(A)(iii) appear to require mapmakers to use plans with a low SDVS and to cull plans with a high SDVS. Thus, SB 1011 requires maps that favor the Republican Party. This appears to be directly at odds with Proposition 4's prohibition on plans that "purposefully or unduly favors or disfavors ... any political party".

Application to Utah congressional maps. As an illustration, using the same composite of past statewide elections as above, I estimate each party's district vote shares and corresponding seat share under the 2021 Enacted Map and the three commission maps. Under the 2021 Map, the least Republican vote share is safely Republican; the Democratic vote share in the district is only 39%. Furthermore, the standard deviation of the Republican vote share (SDVS) in the 2021 Map is unusually low, reflecting a highly efficient allocation of Republican voters to all four districts to ensure a reliable 4-0 Republican sweep (Table 2).

In the Commission plans, by contrast, the expected Democratic vote share in the least Republican district is between 56% and 58%, providing Democratic voters an opportunity for representation in one district (Figure 3). Moreover, the SDVS metrics for the Commission plans are substantially higher than the enacted plan (Table 2). This suggests that they are more fair (King et al. 2022, 144).

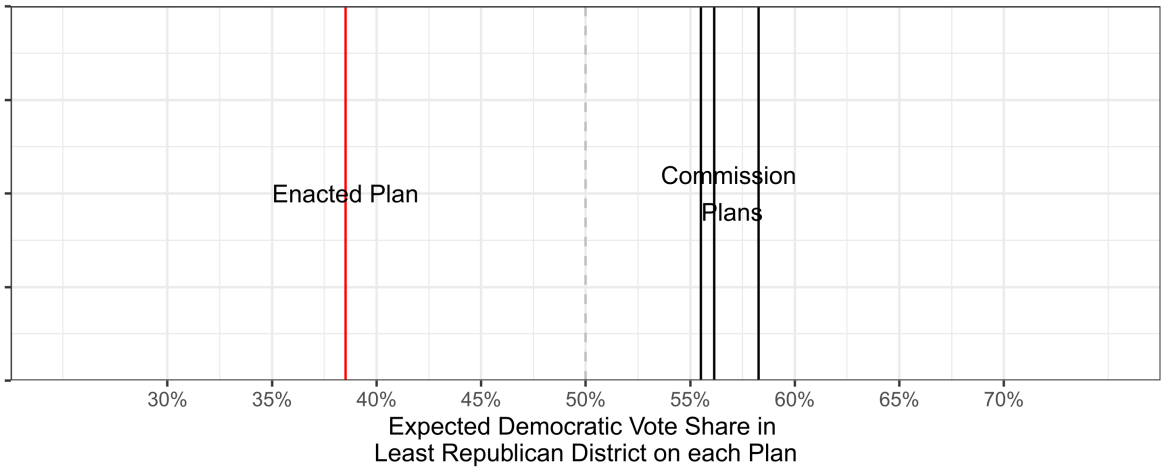


Figure 3: Comparison of Democratic vote share in the least Republican district in the enacted plan (red) and the Commission plans in Utah (black) based on composite of statewide elections.

So, as an illustration, the efficiency gap, LRVS, and SDVS, taken together, indicate that the 2021 map exhibited partisan favoritism for Republicans and disfavored Democrats. The Commission's proposed maps, by contrast, registered as neutral and would have allowed both parties' voters, including Democratic voters in one district, to

Index	Democratic Vote Share	Democratic Seat Share	SDVS
Enacted Plan			
2016-2024 Composite	36%	0%	0.0263
Orange Commission Plan			
2016-2024 Composite	36%	23%	0.148
Public SH2 Commission Plan			
2016-2024 Composite	36%	23%	0.139
Purple Commission Plan			
2016-2024 Composite	36%	23%	0.142

Table 2: SDVS metrics for Utah Plans

elect their preferred candidates in accordance with the state's political geography. Now I turn to the partisan bias and mean-median measures proposed in S.B. 1011.

6 The Partisan Bias and Mean-Median Measures are Inapplicable to Utah and the Worst Available Methods to Assess Redistricting Plans in Utah

S.B. 1011 does not contemplate consideration of any of the best methods for assessing partisan favoritism in Utah for congressional maps—neither the efficiency gap nor LRVS nor the SDVS metrics. The bill amends Proposition 4 to no longer require consideration of a variety of applicable methods and measures interpreted in context. Instead, the bill departs from best practice by establishing arbitrary bright line tests based on only two measures of partisan symmetry as the sole determinants of undue partisan favoritism in Utah's congressional maps: the partisan bias and mean-median difference metrics. These are the worst available measures for partisan favoritism in a state like Utah.

6.1 Utah's Uncompetitive Electoral Environment Defies a Condition Necessary to Validly Apply These Metrics in Utah

According to the academic literature, both the partisan bias and mean-median tests require competitive political environments to be applicable. Utah is not a political competitive state. Therefore, neither of these metrics are applicable in Utah. I will discuss the reasons why this is true for each metric in turn.

6.1.1 Partisan Bias

Recall that the partisan bias metric asks what share of seats each party would win in a hypothetical election where the statewide vote is exactly tied. And under S.B. 1011, a congressional plan is considered fair (i.e. not unduly favoring or disfavoring any political party) only if each party would win two seats (50%) in this counterfactual 50-50 scenario.

Under the S.B. 1011 (see Section 1(d)), a partisan bias score for a given congressional map is calculated in three steps. First, the bill requires calculation of each party's statewide support by creating a partisan index, defined as an average of the partisan vote share in the three immediately preceding elections for U.S. president, governor, attorney general, state treasurer, and state auditor.[10] Second, each party's vote share in each district is shifted by the same amount (the difference between that party's statewide vote share and 50%) until the statewide average across districts is exactly 50-50 for each party. Third, these adjusted district vote shares are used to determine how many seats each party would win under this hypothetical tied election. A plan is deemed fair (i.e., not unduly favoring or disfavoring any party) only if there is 0 difference between 50% and the percentage of seats each party would win in the hypothetical scenario (i.e., each party wins two of the four seats). See S.B. 1011, Section (1)(d)(ii).

This approach has both conceptual and empirical flaws. Conceptually, it is not how partisan gerrymanders are commonly understood. A gerrymander is a plan that systematically advantages one party in actual elections, not in a purely hypothetical tied or flipped statewide contest (Stephanopoulos and McGhee 2015, 857). Indeed, scholars have shown one party can redraw a map to gain additional seats without the partisan bias metric registering any change (McGhee 2014, 2017).

Empirically, the partisan bias test is fundamentally unworkable in states where statewide elections are not competitive and the 50-50 counterfactual bears no relation to reality. Its own authors have repeatedly cautioned against applying it in such contexts. In their original article, Gelman and King (1994, 543) limited their analysis to "competitive electoral systems," which they defined as states where each party won a majority of seats or votes in at least one election between 1968 to 1988. Later, Grofman and King (2007, 19) emphasized that partisan bias "is intended only for jurisdictions where the politics is competitive enough that it is empirically feasible to develop reliable expectations about what each party would receive in seats if it won a given sized majority of the votes."

10. As noted above, the elections that make up the bill's required index are more limited than my composite index, which considers a weighted average of a greater number of contested statewide elections that feature distinct Democratic- and Republican-backed candidates. For instance, the bill's required index excludes consideration of recent U.S. Senate races, which, as the only congressional elections conducted statewide, are relevant to estimating partisan vote shares for U.S. House candidates.

It "is only appropriate for competitive situations where there is a potential for change in partisan outcomes (majority control, in particular)" (31). See also Katz, King, and Rosenblatt (2020, 167). This point about the unsuitability of the partisan bias test in uncompetitive states has also been made by a variety of other authors (McGhee 2017, 425; Stephanopoulos and McGhee 2018, 1509–1510, 1566; Warrington 2019, 276).

6.1.2 Mean-Median Difference

The mean-median difference metrics compares a party's median district vote share and its mean district vote share (McDonald and Best 2015; Wang 2016; Krasno et al. 2018; Best et al. 2017). A greater distance between the mean and median suggests the district distribution is skewed in favor of the other party, whereas closer values suggest the distribution is more symmetric.

S.B. 1011 defines its mean-median metric differently from the prevailing literature. Whereas political scientists calculate the difference between a party's mean and median district vote shares, S.B. 1011 (at Section (1)(b)) defines the metric as the difference between a party's mean statewide vote share and its median district vote share.[11] Although there is no particular bright-line threshold at which the academic literature indicates that the mean-median difference score indicates undue partisan favor or disfavor, S.B. 1011 states that a redistricting plan "fails" the mean-median difference test if the score is greater than 2%.[12]

The mean-median measure is not suited to detecting a cracking gerrymander, which is the primary way a Utah congressional plan could operate to unduly disfavor the state's geographically concentrated Democratic-voting minority. As one of the authors of mean-median difference points out in Krasno et al. (2018, 1169), "[u]nlike the [efficiency gap] and [simulation approach], by itself the [mean-median difference] detects packing only or what McDonald and Best (2015) refer to as 'differential packing.'" To detect cracking, other measures, like the efficiency gap, for example, must be considered.

Like partisan bias, the mean-median metric also only tends to be probative in competitive states. Indeed, it is highly correlated with other metrics in those states. However, it breaks down in uncompetitive states, where a single party wins a large share of the

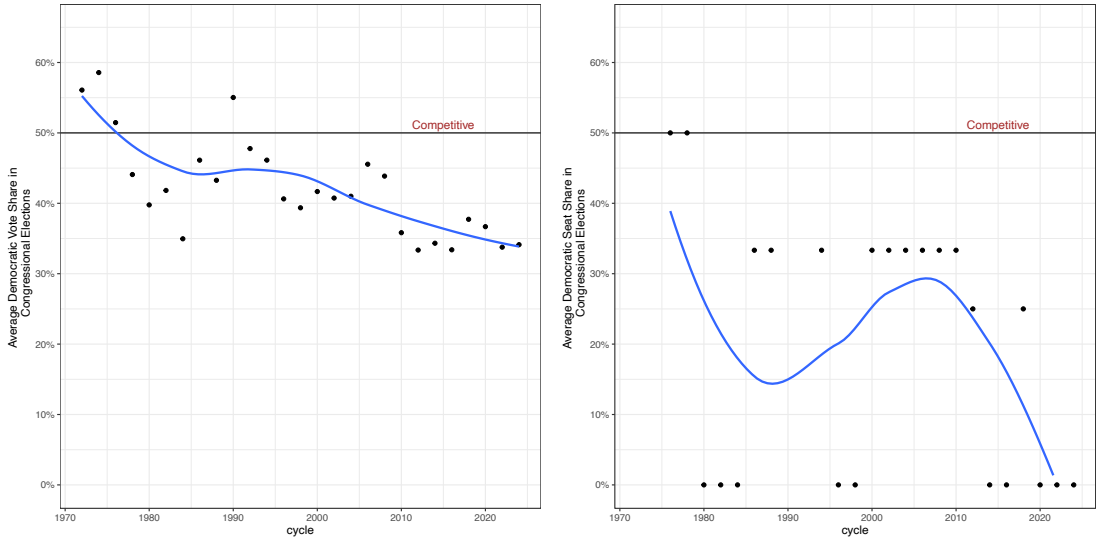
11. This difference in definitions is likely to matter most when there are large differences in turnout across districts.

12. The bill is confusingly worded on this point. It states at Section (1)(b)(ii) that a "difference . . . that is greater than a 2% deviation from the mean fails the mean-median difference test." The term "difference" already encompasses the notion of a deviation between the mean and median, but the bill further specifies a "2% deviation from the mean," without further explanation. I understand this to mean simply that the test is failed if the difference between a party's statewide mean vote share and district median vote share exceeds 2%.

statewide vote (McGhee 2017, 423–424; Stephanopoulos and McGhee 2018, 1566; Warrington 2019, 276; Katz, King, and Rosenblatt 2020, 173–174; DeFord et al. 2023, 316; King et al. 2022, 138). For example, the S.B. 1011 would flag a map as asymmetrical if the average vote share for a party is 30% but the point that is equidistant between the second and third ordered district (the median in an even-numbered list) is 33%. This is odd since, after all, winning extra seats is the main goal of a partisan gerrymander, not achieving a certain percentage of the vote in the second- and third-safest district. Moreover, one of the original creators of the symmetry approach notes in Katz, King, and Rosenblatt (2020, 173) that the mean–median measure will not "necessarily reflect overall partisan symmetry" in an uncompetitive state. For these reasons, Stephanopoulos and McGhee (2018, 1509–1510) argues that the mean-median difference "cannot be used in less competitive jurisdictions where one party wins more than about 55% of the statewide vote."

6.1.3 Utah's Statewide Elections are Not Competitive

So, are Utah's elections at all competitive at a statewide level? Not in the slightest. Figure 4 and Figure 5 show a variety of indicators of competitiveness in Utah statewide elections, all of which confirm that Utah's statewide elections are highly noncompetitive.



(a) Democratic vote share in Congressional Elections

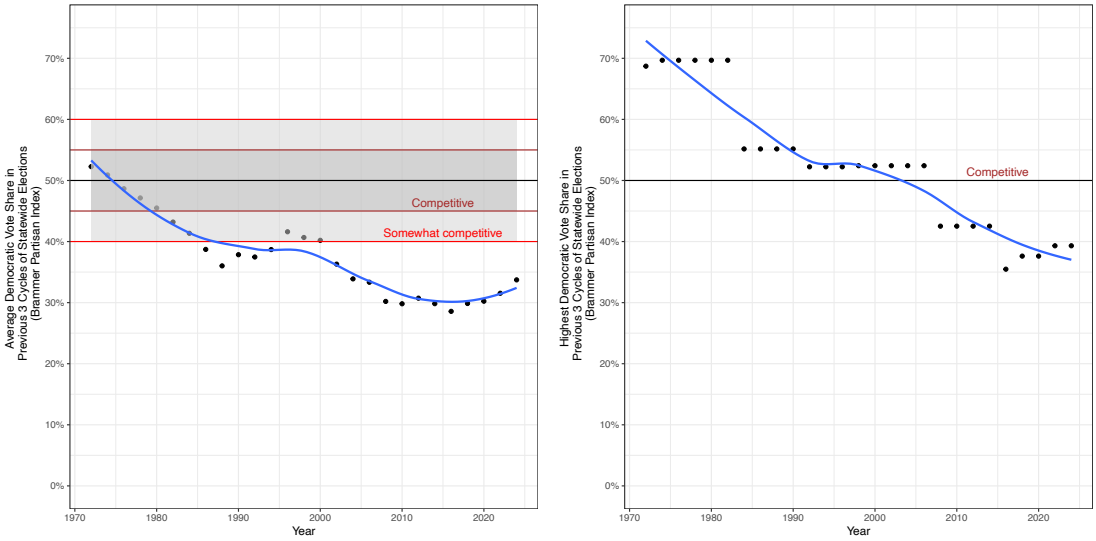
(b) Democratic seat share in Congressional Elections

Figure 4: Competitiveness of Utah's Congressional Elections

Gelman and King (1994, 543) said one indicator of competitiveness is whether a party wins a majority of the votes or seats in congressional elections in the state. As shown

in the top-left panel of Figure 4, the last time Democrats received a majority of the statewide congressional vote was 35 years ago. As shown in the top-right panel, the last time Democrats won even half the state's congressional seats was 47 years ago, in 1978, and they have not garnered a majority at any time since 1970. The lack of statewide competition in congressional elections renders partisan bias inapplicable in Utah.

Elections for statewide offices tell the same story (Figure 5). Over the last 25 years, Republicans have won every statewide election for president, governor, and other offices, almost always with margins of 20 percentage points or more. In the entire period, Democrats have never come close to achieving a statewide majority of the two-party vote. The partisan index defined in the BS.B. 1011 itself confirms this pattern: across the most recent three election cycles for president, governor, attorney general, treasurer, and auditor, Republicans have consistently averaged about 60-65% of the vote. This data shows no reasonable possibility of the statewide electorate approaching a 50-50 split.



(a) Average Democratic vote share in statewide Index

(b) Maximum Democratic vote share in statewide Index

Figure 5: Competitiveness of Utah's Statewide Elections

Electoral data thus confirms that Utah is not an electorally competitive state. As a result, "the vote share shifting that would have to be assumed to simulate a tied election (let alone the flipping of the parties' performances) is simply too implausible to be taken seriously" (Stephanopoulos and McGhee 2015, 860). The state's electoral environment falls squarely outside the conditions the authors of the partisan bias test identified as necessary for its valid application. It also fails outside the conditions that a variety of authors have identified for the mean-median difference to be applicable as a metric

for partisan favoritism in a map (McGhee 2017, 423–424; Stephanopoulos and McGhee 2018, 1566; Warrington 2019, 276; Katz, King, and Rosenblatt 2020, 173–174; DeFord et al. 2023, 316; King et al. 2022, 138).

6.2 The Partisan Bias and Mean-Median Metrics Yield Nonsensical, Paradoxical Results in Utah

Due to Utah's uncompetitive state elections, the partisan bias and mean-median metrics do not work well in Utah. Here, I show how both metrics yield nonsensical, paradoxical results in Utah, just as one would expect based on the review of the political science literature that I discussed in the previous section.

When applied to Utah's congressional maps, the partisan bias and the mean-median test produce absurd results that defy common sense. First, take the 2021 enacted map. Every applicable and reliable measure of partisan favoritism—including the efficiency gap, the LRVS, and standard deviation of vote share—shows it to be one of the most extreme pro-Republican gerrymanders in the country, guaranteeing Republicans all four seats. But applying S.B. 1011's partisan bias test, the 2021 map registers a score of almost exactly 0, unbiased, because in the imaginary world of a 50-50 statewide vote, the cracked Democratic population in Salt Lake County would win two districts under the map. The mean-median difference also comes close to zero (clearing S.B. 1011's arbitrary 2% passing threshold).

Index	Democratic Vote Share	Democratic Seat Share	Partisan Bias	Mean-Median Diff.
Enacted Plan				
2016-2024 Composite	36%	0%	-2.5%	0%
Orange Commission Plan				
2016-2024 Composite	36%	23%	25%	5.2%
Public SH2 Commission Plan				
2016-2024 Composite	36%	23%	25%	4.3%
Purple Commission Plan				
2016-2024 Composite	36%	23%	19%	3.9%

Table 3: Partisan Bias and Mean-Median metrics for Utah Plans

Next consider the Commission's three proposed maps, each of which provided Democrats with one district where they could reliably elect a candidate of choice. As shown in Table 3, the partisan bias and mean-median tests report all three maps as unfair to Democrats.

Because Democrats would only win one district instead of two in the implausible counterfactual 50-50 world, the metric paradoxically reports a pro-Republican bias in plans that actually provide Democratic voters representation. Meanwhile, the 2021 map, which provides Democrats zero representation, is deemed fair to Democrats.

Stated differently, the partisan bias test in Utah deems a gerrymandered 4-0 Republican map that provides Democrats no representation as fair to all parties but deems a 3-1 map that provides Democrats representation as unfair to Democrats because in an imaginary world where elections were tied Democrats would not get 2 seats. Put differently still, the partisan bias test lacks sensitivity in Utah—it yields a false negative for bias in the enacted congressional plan and a false positive for bias in the commission plans. So too for the mean-median difference metric (see below for more details).

In a series of articles, scholars have confirmed this paradoxical phenomenon in Utah, dubbing it the "Utah paradox" (DeFord et al. 2023; King et al. 2022). As DeFord et al. (2023, 315–316) explain, plans that happen to guarantee a Democratic opportunity district are consistently flagged as pro-Republican-biased, while plans guaranteeing a Republican sweep appear "unbiased." They conclude that these metrics "are eminently gameable by partisan actors and do not have reliable interpretations" (306). King et al. (2022, 142–143) found the same result looking at a million simulated plans in Utah and concluded that partisan bias, the mean-median difference, and related measures cannot provide reliable information about whether plans in Utah favor a particular political party.

Finally, I note that S.B. 1011 applies the partisan bias test only to assessing the state's congressional maps (see S.B. 1011 at Section (1)(c)). It is easy to see why the authors of S.B. 1011 only want it to be applicable to the state's congressional plans. S.B. 1011 appears to require zero partisan bias (Section (1)(d)(ii)). As shown in Table 4, the state House, state Senate, and state School Board would not satisfy this strict partisan bias test. Moreover, S.B. 1011, Section (1)(b)(iii), states that a mean-median difference greater than 2% would indicate undue partisan favoritism. The state House, state Senate, and state School Board plans would all fail this test.

Overall, both the academic literature and Utah-specific data show that partisan bias and mean-median metrics are neither reliable nor appropriate measures to determine whether Utah's congressional or legislative plans exhibit partisan favoritism.

Metric	Value	Compared to other states: > Biased than this % Plans	Compared to other states: > Pro-Rep. than this % Plans
Utah State House			
Republican Seat Share	81%		
Efficiency Gap	2.7%	34%	73%
Partisan Bias	7.9%	77%	85%
Mean-Median Diff	3.1%	60%	75%
Declination	68.3%	90%	95%
Utah State Senate			
Republican Seat Share	81%		
Efficiency Gap	2.6%	28%	62%
Partisan Bias	9.9%	83%	86%
Mean-Median Diff	5.0%	86%	88%
Declination	46.8%	81%	88%
Utah School Board			
Republican Seat Share	83%		
Efficiency Gap	5.1%	50%	74%
Partisan Bias	15.3%	99%	99%
Mean-Median Diff	3.0%	66%	74%
Declination	47.2%	81%	88%

Table 4: Composite bias metrics for state legislative and school 2021-2031 plans based on statewide elections compared to other congressional plans from 1972-2024.

6.3 The Partisan Bias, Mean-Median, and Ensemble Analysis Tests in SB 1011 Yield Biased Results in Utah that Favor Republicans and Disfavor Democrats

All three of the tests in SB 1011 systematically favor maps that enable Republicans to win all four seats in Utah's congressional elections and disfavor maps that enable Democrats to win a seat. In this section, I will walk explain the logic for why this is true for all three tests.

6.3.1 Partisan Bias Metric

In order to illustrate that the partisan bias metric systematically favors Republicans and disfavors Democrats in Utah, I have constructed two plausible congressional plans in Utah in Table 5. For each plan, the average Democratic vote share across districts is 36%. This number is closely aligned with Democrats' average vote share in actual statewide races between 2016-2024.

On Map 1, Democrats have a majority in district 4, while Republicans have a majority

in the other 3 districts. Thus, this map gives Democrats a reasonable chance to win one district in real-world Utah elections. But the partisan bias metric requires us to imagine a tied statewide election on this map. In order to reach a 50-50 tie statewide, we need to shift each district 14 percentage points in Democrats' favor. In this hypothetical map, Republicans still win 3 seats. So the partisan bias metric indicates it is biased in favor of Republicans.

	Democratic Vote Share			
	Map 1		**Map 2**	
District	Real World Potential Map	Hypothetical 50-50 Statewide Tie	Real World Potential Map	Hypothetical 50-50 Statewide Tie
1	28%	42%	33%	47%
2	30%	44%	35%	49%
3	34%	48%	37%	51%
4	53%	67%	39%	53%
Mean	36%	50%	36%	50%
Dem Seats	1	1	0	2
Partisan Bias	25% (pro. Rep)		0%	

Table 5: Partisan Bias on Two Hypothetical Utah Plans

On Map 2, all four districts have large Republican majorities. So, in real-world Utah elections, Republicans are likely to win all four seats. Again, though, the partisan bias metric requires us to imagine an implausible, tied statewide election on this map. On this hypothetical, tied map, Republicans win 2 seats. So, despite the fact that in the real-world Democrats are unlikely to ever win a seat on this plan, the partisan bias metric indicates it is a neutral map that does not favor either political party.

These examples indicate the perversity of the partisan bias metric in Utah. This metric indicates that a map that enables Democrats to win a seat is biased in favor of Republicans. In contrast, a map that makes it nearly impossible for Democrats to win a seat in real-world Utah elections is somehow politically neutral.

The reason for this dynamic lies in how partisan bias operate in a state like Utah where the minority party (Democrats) are concentrated in a single region and cannot realistically expect to win more than one seat. A plan like Map 1, which happens to include a district where Democrats form an even modestly comfortable majority (as Utah's political geography dictates), will tend to fail partisan bias. This is because to pass partisan bias, the metric requires that Democrats have sufficiently high vote share in the second-most Democratic district, so that they would win two seats in the counterfactual 50-50 situation. This dilutes Democratic vote share in the most Democratic vote share where the only opportunity to translate vote share to representation actually exists.

The simulation ensembles of millions of possible Utah maps in King et al. (2022) and DeFord et al. (2023) confirm these facts. The ensembles show that, perversely, maps where Democrats could never win a seat invariably achieve neutral partisan-bias scores. But "a D seat never occurs in plans with good symmetry scores" (DeFord et al. (2023, 315). This means that SB 1011's requirement to "include only redistricting plans that pass the partisan bias test" would cull out any maps where Democrats could actually win a seat.

6.3.2 Mean-Median Difference Metric

We can use the same set of plausible statewide plans in Utah to see how the mean-median difference metric also systematically favors Republicans and disfavors Democrats in Utah (see Table 6). Recall that Map 1 enables Democrats to win a seat in real-world elections. But the median district on this map is 4% more Republican than the mean vote share across districts. So the mean-median difference metric indicates that this map favors Republicans, and it would fail S.B. 1011's test. In contrast, the median and mean are identical on Map 2, so it achieves a perfectly neutral mean-median difference of 0% even though Democrats could never win a real-world election on this map.

	Democratic Vote Share	
District	Map 1	Map 2
1	28%	33%
2	30%	35%
3	34%	37%
4	53%	39%
Mean	36%	36%
Median	32%	36%
MM Diff	4% (pro. Rep)	0% (Neutral)

Table 6: Mean-Median Difference on Two Hypothetical Utah Plans

The explanation for these problems with the mean-median difference is that the minority party (Democrats) in Utah are concentrated in a single region and cannot realistically expect to win more than one seat. As defined in S.B. 1011, the metric focuses entirely on the Democratic vote share in the median district (in a four-district plan, this is the average of the middle two districts). In Utah, those median districts are always safely Republican. Because Democrats are highly concentrated in Salt Lake County, their high vote share there will tend to inflate the difference between the statewide average vote share and the median district's vote share. So, for a plan to satisfy the mean-median difference and close the gap between the statewide vote share and the median district, it

must have enough Democrats in the middle two districts. But doing so gains Democrats no electoral opportunity, as those are safe Republican seats, and tends to destroy the possibility of a Democratic representation in the one and only district where it could be possible, the most Democratic district.

The simulation ensembles of millions of possible Utah maps in King et al. (2022) and DeFord et al. (2023) confirm the inapplicability of the mean-median metric in Utah. The ensembles show that, perversely, maps where Democrats could never win a seat nearly always achieve neutral mean-median scores. Moreover, plans where Democrats could actually win a seat achieve a poor mean-median score. As a result, the mean-median score makes what DeFord et al. (2023, 316) calls a sign-error: it reports all plans with Democratic representation to be significant pro-Republican gerrymanders.

6.3.3 Ensemble Analysis

The final version of SB 1011 (SB1011S01) adds a new "ranked marginal deviation" test to determine partisan favoritism based on the ensemble of simulated congressional maps. This test is fairly complicated. My interpretation of this test is that, for each simulated and proposed map, it requires the calculation of the squared deviation of each district from the average vote share across all districts. It then sums these squared deviations, divided by the number of districts, and takes the squared root of this number (Section 1(a)(ii)). For illustrative purposes, I call this number the Square Root of the Average Squared Devisions of Vote Shares, or SRVS. A proposed map must have a SRVS that is below the 95th percentile of the SRVS from the ensemble of simulated maps (Section 1(a)(iii)(A)). It also must be below the 95th percentile of the culled set of maps after removing ones that fail SB 1011's flawed partisan bias test (Section 1(a)(iii)(B)).

We can use the same hypothetical maps I described above to see how SB 1011's requirement to cull maps with high variance (SRVS) across districts further removes plans where Democrats could win a seat under S.B. 1011's ensemble analysis (see Table 7). Recall that Map 1 enables Democrats to win a seat in real-world elections. But the "ranked marginal deviation" test in SB 1011 gets confused and thinks that this plan should be culled due to its high average deviations from the statewide average vote share across districts. In contrast, the Republican-favoring Map 2 has a low deviation and thus is kept.

SB 1011's SRVS test has a similar setup as the SDVS approach developed by King et al. (2022) that I described earlier. Both tests are based on the variance in vote shares across districts. Recall that King et al. (2022) showed that plans with a lower variance (SDVS) across districts tend to favor Republicans - maps with low deviations across dis-

tricts nearly always lead to the election of four Republicans (King et al. 2022, 145). Plans where Democrats can win a seat will invariably have higher deviations across districts from the statewide mean. So it is puzzling that SB 1011's SRVS test requires plans to have a low variance across districts. This seems to be mandating the exact type of favoritism toward Republicans that Proposition 4 seeks to ban.

	Democratic Vote Share	
District	Map 1	Map 2
1	28%	33%
2	30%	35%
3	34%	37%
4	53%	39%
Dem. Seats	1	0
Mean	36%	36%
Ave. Abs. Deviations	8%	2%
SRVS	20%	5%

Table 7: Deviations from Statewide Mean on Two Hypothetical Utah Plans

S.B. 1011 states that ensemble analysis also must be used to evaluate whether a plan was drawn with the purpose of favoring or disfavoring a political party, but in that case without culling the ensemble to filter out maps that fail the partisan bias test. In this application, the "ranked marginal deviation" approach has the same Republican-favoring effect. If the map is within the 95th percentile of the ensemble map with the lowest deviation among districts (e.g., the most evenly Republican across districts), it is deemed to not have partisan purpose. A map with high variability among districts (e.g., a map with one more Democratic district and three more Republican districts as Utah's political geography typically requires) may be deemed to have partisan purpose.

7 Summary

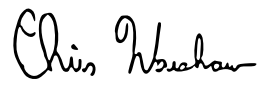
In conclusion, this report has described the metrics that scholars use to evaluate partisan advantage in a districting plan. The efficiency gap, least-Republican vote share (LRVS), and standard deviation of vote shares (SDVS) metrics are all probative in Utah. The partisan bias and mean-median metrics, however, are not probative in Utah. They both require competitive statewide elections to be applicable in a state. Utah is not a competitive state. As a result, these metrics tend to yield paradoxical and nonsensical results in Utah that often systematically favor Republican-leaning maps. Moreover, SB 1011 application of the standard deviation of vote shares approach in its ensemble analysis is

used in the opposite manner to how its authors intended. They argue that a low standard deviation in vote shares (SRVS) indicates a partisan gerrymander in Utah. Perversely, SB 1011 requires plans to have a low standard deviation in vote shares. That is, it requires the usage of plans that favor Republicans.

Overall, the tests required by SB 1011 appear to undermine the mandate of Proposition 4 to use "the best available data and scientific and statistical methods" to determine whether a districting plan "purposefully or unduly favors or disfavors ... any political party".

What do the proponents of the partisan bias metric say should be done in uncompetitive states such as Utah? In Appendix B of their article, Katz, King, and Rosenblatt (2020)—an author of partisan bias among them—argue that "we could require redistricters to follow a strategy opposite to that of a partisan gerrymanderer confident of a statewide majority.... Thus, instead of creating each district as a microcosm of the state, and giving the majority a winner-take-all victory, we would pack minority party voters into a small number districts and thus ensure them at least some seats." Or as I have shown above, we should simply apply the scientific and statistical methods and measures that are appropriate in Utah, namely the efficiency gap, LRVS, and the standard deviation of vote shares.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.



October 7, 2025

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Metric	Value
Enacted Congressional Plan	
Democratic Seat Share	0%
Efficiency Gap	17%
Partisan Bias	0%
Mean-Median Diff	0%
Declination	NA
Orange Commission Plan	
Democratic Seat Share	25%
Efficiency Gap	-8%
Partisan Bias	25%
Mean-Median Diff	5%
Declination	- 6%
Public SH2 Commission Plan	
Democratic Seat Share	25%
Efficiency Gap	-8%
Partisan Bias	25%
Mean-Median Diff	5%
Declination	-13%
Purple Commission Plan	
Democratic Seat Share	25%
Efficiency Gap	-8%
Partisan Bias	25%
Mean-Median Diff	4%
Declination	-12%
Utah State House	
Democratic Seat Share	16%
Efficiency Gap	0%
Partisan Bias	10%
Mean-Median Diff	3%
Declination	72%
Utah State Senate	
Democratic Seat Share	17%
Efficiency Gap	0%
Partisan Bias	12%
Mean-Median Diff	6%
Declination	41%
Utah School Board	
Democratic Seat Share	13%
Efficiency Gap	4%
Partisan Bias	17%
Mean-Median Diff	4%
Declination	56%

Table A1: Composite bias metrics for state legislative and school 2021-2031 plans based on S.B. 1011's index of statewide elections