From: applications.administrator@capitol.local
To: Senate Redistricting
Subject: INETMAIL: Redistricting Public Input
Date: Saturday, September 25, 2021 11:08:43 AM
Attachments: Statement-on-PLANS2101_Revised.pdf

Date: 2021-09-25
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Affirm public info: I agree

Regarding: Senate

Message:
Good morning. I am making these comments on behalf of Math For Unbiased Maps TX (MUM_TX), an interdisciplinary, nonpartisan coalition of Texas mathematicians, political scientists and philosophers working to ensure a fair and transparent redistricting process. We are affiliated with colleges and universities throughout Texas, but our statements here reflect our independent research and should not be interpreted as a statement on behalf of our employers. We speak today AGAINST SB4, which we believe harms all Texan voters by depriving them of a meaningful voice in choosing the people who represent them. We have attached a statement which contains figures to that illustrate our findings; we describe them here.

In testimony to the House Redistricting Committee on September 18, we urged legislators to ensure that any enacted map "best reflects both the demographics and political will of the citizens of Texas". Unfortunately, SB4 (PLANS2101), the proposed redistricting plan for the Texas Senate that was filed on September 18, does exactly the opposite. It is a highly gerrymandered plan that significantly reduces competitiveness of its districts. Instead of enabling voters to choose their legislators, therefore, it serves to protect those legislators from accountability to their voters.

The evidence of gerrymandering can be seen by comparing the proposed map against a collection – or ensemble – of 500,000 randomly-drawn maps. Mathematicians call this process ensemble sampling, and it provides baseline expectations to which proposed maps can be compared. One piece of evidence is given by vote share vectors, in which districts are ordered by the number of votes a Democratic candidate for Texas Senate would have received in the 2020 election, had voters used "straight ticket" voting. (See Figure 1 in our statement) On average, maps within our ensemble (blue dots) exhibit smoothly increasing vote shares as one moves from Republican-leaning to Democratic-leaning districts. This smooth increase is the hallmark of an unbiased map. But in the proposed map (red dots), the increase is highly disjointed, a clear sign of gerrymandering.

We note several specific features of the proposed plan (selected districts are identified in purple). First, Democratic voters are disproportionately removed from districts such as 2, 10, 9, 8 and 12 that would be competitive in an unbiased map (a process known as "cracking"), and placed into uncompetitive districts such as 22, 16, 15, 14 and 23 (a process known as "packing"). Second, the list of outcomes between Districts 22 and 12 is very nearly flat, which is a hallmark of maps created with the assistance of computer algorithms designed to automate the gerrymandering process. Finally, the predicted vote share between districts 12 and 27 changes abruptly by about 10 points -- this represents a "wall" designed to protect legislators from changing voter opinions over time.

We also compute two common numbers that political scientists use to "score" maps. The first such number is called

the “mean-median” score: the difference in statewide vote percentage each party would need to win the majority of the chamber. For the proposed map, the Republican Party would need to win only 44.2% of the vote to win 16 seats, while the Democratic Party would need to earn 55.8%; the difference of these numbers gives a “mean-median” score of 11.6. The second such score is called the “partisan bias” score: the difference in the number of seats each party wins if each were to earn 50% of the vote. For the proposed map, the Republican Party would win 19 seats with 50% of the vote, while the Democratic Party would win only 12 seats; the difference of these numbers gives a “partisan bias” score of –7.

Of course, no plan is going to be perfectly aligned with the ensemble, so just how gerrymandered is this plan? A little? A lot? An extreme amount? This question can be answered using statistics, by comparing each score above to the distribution of those scores within the 500,000-map ensemble. Unfortunately, the results are disappointing (See Figure 2 of our statement). Both the “mean-median” and “partisan bias” scores are very far from their typical values within an unbiased ensemble. In fact, the mean-median score for the proposed map is more extreme than 99.995% of ensemble values; that is fewer than 1 in 20,000 maps exhibit a similar score. The partisan bias score for the proposed map was the *most extreme score* we observed in our 500,000 ensemble; only 1 in 3,000 maps shared this score. Finally, not a single map in our 500,000-map ensemble exhibited this level of bias on *both* metrics!

This clear and extreme gerrymandering significantly reduces the competitiveness of our legislative races, depriving millions of Texans of the right to have a meaningful voice in who represents them. We urge the legislators to vote against SB4, and then go back to the drawing board and return with a map that does not harm Texas voters.

Math For Unbiased Maps TX (MUM_TX) is an interdisciplinary, nonpartisan coalition of Texas mathematicians, political scientists and philosophers working to ensure a fair and transparent redistricting process.

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Website: https://www.smu.edu/Dedman/Research/Institutes-and-Centers/DCII/Scholarship/Research-Cluster-on-Political-Decision-Making/MUM-TX

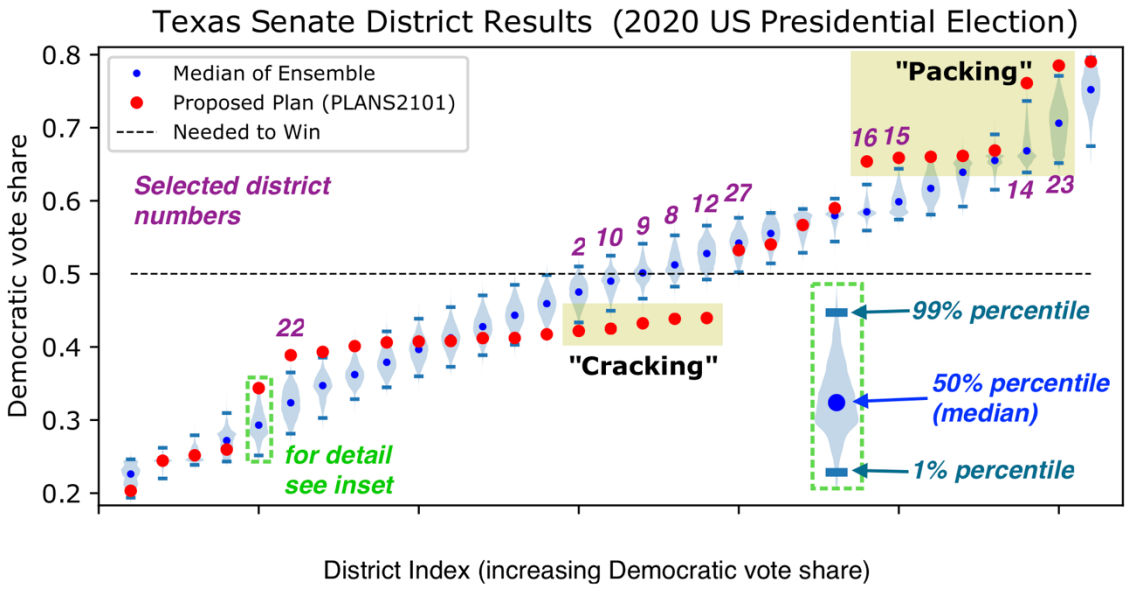
[redacted]

MUM_TX Statement on PLANS2101

Monday, September 20, 2021

In testimony to the House Redistricting Committee on Saturday, members of *Math For Unbiased Maps TX (MUM_TX)* urged legislators to ensure that any enacted map "best reflects both the demographics and political will of the citizens of Texas". Unfortunately, PLANS2101, the proposed redistricting plan for the Texas Senate that was filed on September 18, does exactly the opposite. It is a highly gerrymandered plan that significantly reduces competitiveness of its districts. Instead of enabling voters to choose their legislators, therefore, it serves to protect those legislators from accountability to their voters.

The evidence of gerrymandering can be seen in the following figure, which compares the proposed map against a collection – or *ensemble* – of 500,000 randomly-drawn maps. Mathematicians call this process *ensemble sampling*, and it provides baseline expectations to which proposed maps can be compared. In this figure, districts are ordered by the number of votes a Democratic candidate for Texas Senate would have received in the 2020 election, had voters used "straight ticket" voting. On average, maps within our ensemble (blue dots) exhibit smoothly increasing vote shares as one moves from Republican-leaning to Democratic-leaning districts. This smooth increase is the hallmark of an unbiased map. But in the proposed map (red dots), the increase is highly disjointed, a clear sign of gerrymandering.

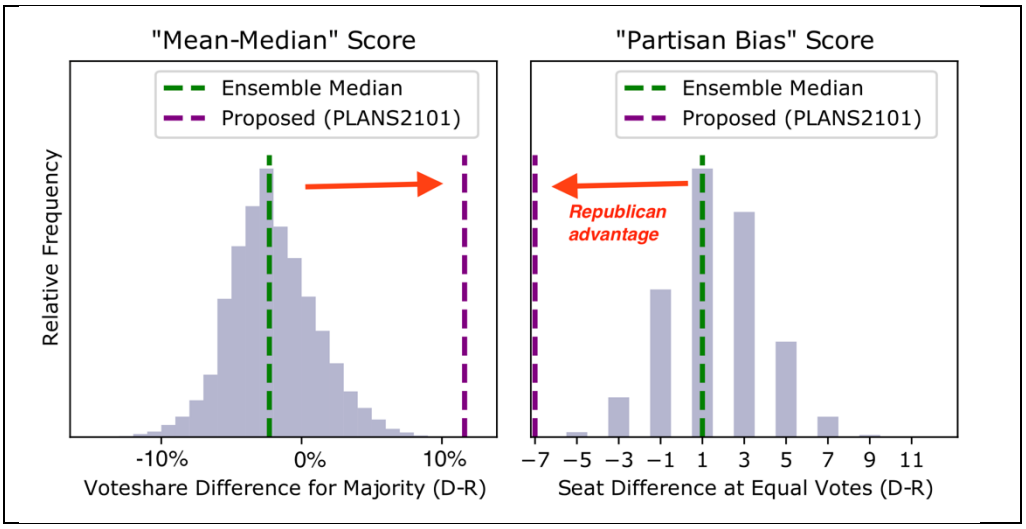


We note several specific features of the proposed plan (selected districts are identified in purple). First, Democratic voters are disproportionately removed from districts such as 2, 10, 9, 8 and 12 that would be competitive in an unbiased map (a process known as "cracking"), and placed into uncompetitive districts such as 22, 16, 15, 14 and 23 (a process known as "packing"). Second, the list of outcomes between Districts 22 and 12 is very nearly flat, which is a hallmark of maps created with the assistance of computer algorithms designed to automate the gerrymandering process. Finally, the predicted vote share between districts 12 and 27 changes abruptly by about 10 points -- this represents a "wall" designed to protect legislators from changing voter opinions over time.

We also compute two common numbers that political scientists use to "score" maps. The first such number is called the "mean-median" score: the difference in statewide vote percentage each party would need to win the majority of the chamber. For the proposed map, the Republican Party would

need to win only **44.2%** of the vote to win 16 seats, while the Democratic Party would need to earn **55.8%**; the difference of these numbers gives a "mean-median" score of **11.6**. The second such score is called the "partisan bias" score: the difference in the number of seats each party wins if each were to earn 50% of the vote. For the proposed map, the Republican Party would win **19 seats** with 50% of the vote, while the Democratic Party would win only **12 seats**; the difference of these numbers gives a "partisan bias" score of **–7**.

Of course, no plan is going to be perfectly aligned with the ensemble, so just how gerrymandered is this plan? A little? A lot? An extreme amount? This question can be answered using statistics, by comparing each score above to the *distribution* of those scores within the 500,000-map ensemble. This is done in the figure below, and the results are disappointing. As shown in the following figure, both the "mean-median" and "partisan bias" scores are very far from their typical values within an unbiased ensemble. In fact, the mean-median score for the proposed map is more extreme than 99.995% of ensemble values; that is fewer than **1 in 20,000** maps exhibit a similar score. The partisan bias score for the proposed map was the *most extreme score* we observed in our 500,000 ensemble; only **1 in 3,000** maps shared this score. Finally, **not a single map** in our 500,000-map ensemble exhibited this level of bias on *both* metrics!



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