Richard A. Champagne, Chief
Legal 608.504.5801 • Research 608.504.5802

One East Main Street, Suite 200
Madison, WI 53703 • http://legis.wisconsin.gov/lrb

MEMORANDUM

TO: Majority Leader Devin LeMahieu and Speaker Robin Vos

FROM: Legislative Reference Bureau

DATE: October 19, 2021

SUBJECT: LRB-5017/1 Data

You requested information related to LRB-5017/1 on state legislative redistricting. Specifically, you asked for data on the bill's population deviation, disenfranchised population, compactness, and split geographies.

The data provided in this memo is derived from the Legislative Technology Services Bureau's WISE-District Application unless otherwise stated.

Population Deviation

Ideal population represents the target population for each legislative district in a redistricting plan. This figure is calculated by dividing the total population of the state by the number of legislative districts. According to the 2020 U.S. Census, Wisconsin's total population is 5,893,718.

Because Wisconsin has 33 senate districts and 99 assembly districts, the ideal population for each senate district is 178,598 and the ideal population for each assembly district is 59,533.

The following table presents deviation scores for legislative districts. Federal courts will presume that a state legislative plan is constitutional if it has an overall range of 10 percent or less.[1]

	Deviation from Ideal Population	**Persons**	**Percent**
Assembly	Mean Deviation	112	0.19
	Largest Positive Deviation	231	0.39
	Largest Negative Deviation	−221	−0.37

[1] Brown v. Thomson, 462 U.S. 835, 842–3 (1983).

	Overall Range in Deviation	±452	± 0.76

	Deviation from Ideal Population	**Persons**	**Percent**
Senate	Mean Deviation	175	0.10
	Largest Positive Deviation	520	0.29
	Largest Negative Deviation	−506	−0.28
	Overall Range in Deviation	±1,026	± 0.57

Disenfranchisement

138,753 voters from odd-numbered senate districts were moved to even-numbered senate districts, and these voters will not have the opportunity to vote in a state senate election until the 2024 general election. This movement from one district to another involved 14 senate districts.

Compactness

Compactness, in the redistricting context, refers to the "tightness" of a district's geometric shape. Compactness is measured by comparing a district to the shape of a perfect circle, but no district is expected to be perfectly compact. While mathematical models exist for measuring compactness, the two most common ones are the Reock Degree of Compactness Score and the Polsby–Popper Test. A perfectly compact district would have a compactness score of 1.0 under either model.

The Reock Degree of Compactness Score is calculated by dividing the area of the voting district by the area of the smallest circle that would completely enclose it.

The Polsby–Popper Test is calculated by dividing the area of a circle with the same perimeter as the district by the square of the perimeter of the district.

Assembly	**Reock Degree of Compactness Score**	**Polsby–Popper Test**
Mean	0.363	0.234
Minimum	0.688	0.603
Maximum	0.152	0.048

Senate	**Reock Degree of Compactness Score**	**Polsby–Popper Test**
Mean	0.374	0.216
Minimum	0.647	0.409
Maximum	0.129	0.046

Split Geographies

The assembly map splits 53 counties and 48 municipalities, while the senate map splits 42 counties and 28 municipalities.

According to the Department of Administration's Demographic Services Center, there are 57 municipalities that are split between two or more counties.[2] Therefore, the data on split geographies may reflect the overall number of municipal splits rather than an indicator of a district not drawn according to traditional redistricting principles.

We hope you find this information useful. Please let us know if you have any questions or if we can provide any additional assistance.

[2] "Population and Housing Unit Estimates – Minor Civil Division Final Population Estimates," Department of Administration, Demographic Services Center, accessed October 19, 2021, https://doa.wi.gov/pages/home.aspx.