



## MEMORANDUM

**TO:** Minority Leader Janet Bewley  
**FROM:** Legislative Reference Bureau  
**DATE:** November 5, 2021  
**SUBJECT:** 2021 LRB-s0263/2, 2021 Assembly Bill 624/Senate Bill 621, and 2011 Wisconsin Act 43 State Legislative Data

You requested information related to 2021 LRB-s0263/2, companion proposals 2021 Assembly Bill 624/Senate Bill 621 (AB 624/SB 621), and 2011 Wisconsin Act 43 on state legislative redistricting. Specifically, you asked for data on the bills' population deviation, core retention, disenfranchised population, compactness, split geographies, and incumbent pairings.

The data provided in this memorandum is derived from the Legislative Technology Services Bureau's WISE-District Application, except for largest constituency core retention.

### 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 was 5,893,718. Because Wisconsin has 33 senate districts and 99 assembly districts, the ideal population for each senate district was 178,598 and the ideal population for each assembly district was 59,533.

The following table presents deviation scores for legislative districts in each map. Courts will presume that a state legislative plan is constitutional if it has an overall range in deviation of 10 percent or less.<sup>1</sup>

<sup>1</sup> [Brown v. Thomson](#), 462 U.S. 835, 842-3 (1983).

*Population Deviation in 2021 LRB-s0263/2*

	<b>Deviation from Ideal Population</b>	<b>Persons</b>	<b>Percent</b>
<b>Assembly</b>	Mean Deviation	283	0.48
	Largest Positive Deviation	591	0.99
	Largest Negative Deviation	-590	-0.99
	Overall Range in Deviation	±1181	± 1.98
	<b>Deviation from Ideal Population</b>	<b>Persons</b>	<b>Percent</b>
<b>Senate</b>	Mean Deviation	453	0.25
	Largest Positive Deviation	1,178	0.66
	Largest Negative Deviation	-1,384	-0.77
	Overall Range in Deviation	±2,562	± 1.43

*Population Deviation in Assembly Bill 624/Senate Bill 621*

	<b>Deviation from Ideal Population</b>	<b>Persons</b>	<b>Percent</b>
<b>Assembly</b>	Mean Deviation	112	0.19
	Largest Positive Deviation	231	0.39
	Largest Negative Deviation	-221	-0.37
	Overall Range in Deviation	±452	± 0.76
	<b>Deviation from Ideal Population</b>	<b>Persons</b>	<b>Percent</b>
<b>Senate</b>	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

According to the 2010 U.S. Census, Wisconsin's total population was 5,686,986. So in 2011, the ideal population for each senate district was 172,333 and the ideal population for each assembly district was 57,444.

*Population Deviation in 2011 Wisconsin Act 43*

	<b>Deviation from Ideal Population</b>	<b>Persons</b>	<b>Percent</b>
<b>Assembly</b>	Mean Deviation	93	0.16
	Largest Positive Deviation	214	0.37
	Largest Negative Deviation	-248	-0.43
	Overall Range in Deviation	±62	± 0.80
	<b>Deviation from Ideal Population</b>	<b>Persons</b>	<b>Percent</b>
<b>Senate</b>	Mean Deviation	149	0.09
	Largest Positive Deviation	465	0.27
	Largest Negative Deviation	-611	-0.35
	Overall Range in Deviation	±1,076	± 0.62

## **Largest constituency core retention**

“Largest constituency core retention” is a measure of the proportion of a district that was previously together in one particular, previous district. Please note that this measure is different than “simple core constituency retention,” used in previous LRB memos on the topic of redistricting plans.

In LRB-s0263/2, the average largest constituency core retention rate for assembly districts is 60.00 percent and the average largest constituency core retention rate for senate districts is 65.03 percent. For AB 624/SB 621, the average largest constituency core retention rate for assembly districts is 84.17 percent and the average largest constituency core retention rate for senate districts is 92.21 percent. For 2011 Act 43, the average largest constituency core retention rate for assembly districts was 66.86 percent and the average largest constituency core retention rate for senate districts is 78.76 percent.

## **Disenfranchisement**

In LRB-s0263/2, 533,201 individuals from odd-numbered senate districts were moved to even-numbered senate districts. This movement from one district to another involved 15 senate districts. The eligible voters among this group, had they not been moved, would have voted in the state senate election at the 2022 general election, but did not have the opportunity to vote in a state senate election until the 2024 general election.

In AB 624/SB 621, 138,753 individuals from odd-numbered senate districts were moved to even-numbered senate districts. This movement from one district to another involved 14 senate districts.

In 2011 Act 43, 300,102 individuals from even-numbered senate districts were moved to odd-numbered senate districts. The eligible voters among this group, had they not been moved, would have voted in the state senate election at the 2012 general election, but did not have the opportunity to vote in a state senate election until the 2014 general election. This movement from one district to another involved 17 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. The two most common mathematical models to measure compactness 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.

*Compactness in 2021 LRB-s0263/2*

<b>Assembly</b>	<b>Reock Degree of Compactness Score</b>	<b>Polsby–Popper Test</b>
Mean	0.404	0.289
Maximum	0.641	0.524
Minimum	0.138	0.073
<b>Senate</b>	<b>Reock Degree of Compactness Score</b>	<b>Polsby–Popper Test</b>
Mean	0.409	0.286
Maximum	0.605	0.488
Minimum	0.156	0.093

*Compactness in Assembly Bill 624/Senate Bill 621*

<b>Assembly</b>	<b>Reock Degree of Compactness Score</b>	<b>Polsby–Popper Test</b>
Mean	0.363	0.234
Maximum	0.688	0.603
Minimum	0.152	0.048
<b>Senate</b>	<b>Reock Degree of Compactness Score</b>	<b>Polsby–Popper Test</b>
Mean	0.374	0.216
Maximum	0.647	0.409
Minimum	0.129	0.046

*Compactness in 2011 Wisconsin Act 43*

<b>Assembly</b>	<b>Reock Degree of Compactness Score</b>	<b>Polsby–Popper Test</b>
Mean	0.378	0.245
Maximum	0.670	0.574
Minimum	0.158	0.050
<b>Senate</b>	<b>Reock Degree of Compactness Score</b>	<b>Polsby–Popper Test</b>
Mean	0.397	0.202
Maximum	0.655	0.440
Minimum	0.130	0.052

## Split geographies

In LRB-s0263/2, the assembly map splits 50 counties and 124 municipalities, while the senate map splits 40 counties and 62 municipalities. In AB 624/SB 621, the assembly map splits 53 counties and 48 municipalities, while the senate map splits 42 counties and 28 municipalities. The 2011 Act 43 assembly map splits 58 counties and 78 municipalities, while the senate map splits 46 counties and 48 municipalities.

According to the Department of Administration’s Demographic Services Center, there currently are 57 municipalities that are split between two or more counties as of January 2021.<sup>2</sup> Therefore, the data on split geographies may reflect the overall number of municipal splits rather than being an indicator of a district not drawn according to traditional redistricting principles.

## Incumbent pairings

Under LRB-s0263/2, there are 15 incumbent pairings in the assembly.

<b>2021 LRB-s0263/2</b>	<b>Elected District</b>	<b>Name</b>	<b>Party</b>
Assembly District 4	Assembly District 40	Rep. Kevin Petersen	Republican
	Assembly District 72	Rep. Scott Krug	Republican
Assembly District 14	Assembly District 13	Rep. Sara Rodriguez	Democrat
	Assembly District 22	Rep. Janet Brandtjen	Republican
Assembly District 27	Assembly District 3	Rep. Ron Tusler	Republican
	Assembly District 27	Rep. Tyler Vorpapel	Republican
Assembly District 32	Assembly District 32	Rep. Tyler August	Republican
	Assembly District 63	Rep. Robin Vos	Republican
Assembly District 34	Assembly District 4	Rep. David Steffen	Republican
	Assembly District 89	Rep. Elijah Behnke	Republican
Assembly District 40	Assembly District 50	Rep. Tony Kurtz	Republican
	Assembly District 70	Rep. Nancy VanderMeer	Republican
Assembly District 47	Assembly District 46	Rep. William Penterman	Republican
	Assembly District 37	Rep. Gary Hebl	Democrat
Assembly District 59	Assembly District 26	Rep. Terry Katsma	Republican
	Assembly District 59	Rep. Timothy Ramthun	Republican
Assembly District 62	Assembly District 62	Rep. Robert Wittke	Republican
	Assembly District 82	Rep. Ken Skowronski	Republican
Assembly District 67	Assembly District 69	Rep. Donna Rozar	Republican
	Assembly District 86	Rep. John Spiros	Republican
Assembly District 78	Assembly District 47	Rep. Jimmy Anderson	Democrat
	Assembly District 77	Rep. Shelia Stubbs	Democrat
Assembly District 83	Assembly District 15	Rep. Joe Sanfelippo	Republican
	Assembly District 84	Rep. Mike Kiglitsch	Republican

<sup>2</sup> “[Population and Housing Unit Estimates – Minor Civil Division Final Population Estimates](https://doa.wi.gov/pages/home.aspx),” Department of Administration, Demographic Services Center, accessed October 19, 2021, <https://doa.wi.gov/pages/home.aspx>. We assume that the number of split geographies reported by DOA in 2021 is substantially similar to 2011.

Assembly District 87	Assembly District 67	Rep. Rob Summerfield	Republican
	Assembly District 87	Rep. James Edming	Republican
Assembly District 93	Assembly District 30	Rep. Shannon Zimmerman	Republican
	Assembly District 92	Rep. Treig Pronschinske	Republican
Assembly District 99	Assembly District 33	Rep. Cody Horlacher	Republican
	Assembly District 99	Rep. Cindi Duchow	Republican

LRB-s0263/2 has four incumbent pairings in the senate.

<b>2021 LRB-s0263/2</b>	<b>Elected District</b>	<b>Name</b>	<b>Party</b>
Senate District 8	Senate District 8	Sen. Alberta Darling	Republican
	Senate District 20	Sen. Duey Stroebel	Republican
Senate District 21	Senate District 21	Sen. Van Wanggaard	Republican
	Senate District 28	Sen. Julian Bradley	Republican
Senate District 23	Senate District 12	Sen. Mary Felzkowski	Republican
	Senate District 29	Sen. Jerry Petrowski	Republican
Senate District 30	Senate District 2	Sen. Robert Cowles	Republican
	Senate District 30	Sen. Jon Eric Wimberger	Republican

Under AB 624/SB 621, there are three incumbent pairings in the assembly and none in the senate.

<b>AB 624/SB 621 District</b>	<b>Current Elected District</b>	<b>Name</b>	<b>Party</b>
Assembly District 15	Assembly District 15	Rep. Joe Sanfelippo	Republican
	Assembly District 84	Rep. Mike Kuglitsch	Republican
Assembly District 82	Assembly District 82	Rep. Ken Skowronski	Republican
	Assembly District 83	Rep. Chuck Wichgers	Republican
Assembly District 93	Assembly District 30	Rep. Shannon Zimmerman	Republican
	Assembly District 93	Rep. Warren Petryk	Republican

In 2011 Act 43, there were 11 incumbent pairings in the assembly.<sup>3</sup>

<b>2011 Wis. Act 43</b>	<b>Elected District</b>	<b>Name</b>	<b>Party</b>
Assembly District 7	Assembly District 7	Rep. Margaret Krusick	Democrat
	Assembly District 9	Rep. Josh Zepnick	Democrat
Assembly District 14	Assembly District 13	Rep. David Cullen	Democrat
	Assembly District 14	Rep. Dale Kooyenga	Republican
Assembly District 22	Assembly District 12	Rep. Fred Kessler	Democrat
	Assembly District 99	Rep. Don Pridemore	Republican
Assembly District 23	Assembly District 22	Rep. Sandy Pasch	Democrat
	Assembly District 23	Rep. Jim Ott	Republican

<sup>3</sup> Please note that the memo counts 2011 incumbency pairings as of the date of passage of Act 43.

Assembly District 31	Assembly District 32	Rep. Tyler August	Republican
	Assembly District 45	Rep. Amy Loudenbeck	Republican
Assembly District 33	Assembly District 31	Rep. Steve Nass	Republican
	Assembly District 37	Rep. Andy Jorgensen	Democrat
Assembly District 48	Assembly District 48	Rep. Joe Parisi	Democrat
	Assembly District 81	Rep. Kelda Helen Roys	Democrat
Assembly District 61	Assembly District 65	Rep. John Steinbrink	Democrat
	Assembly District 66	Rep. Samantha Kerkman	Republican
Assembly District 88	Assembly District 2	Rep. Andre Jacque	Republican
	Assembly District 88	Rep. John Klenke	Republican
Assembly District 89	Assembly District 89	Rep. John Nygren	Republican
	Assembly District 90	Rep. Karl Van Roy	Republican
Assembly District 92	Assembly District 91	Rep. Chris Danou	Democrat
	Assembly District 92	Rep. Mark Radcliffe	Democrat

2011 Act 43 had one incumbent pairing in the senate.

<b>2011 Wis. Act 43</b>	<b>Elected District</b>	<b>Name</b>	<b>Party</b>
Senate District 21	Senate District 21	Rep. Van Wanggaard	Republican
	Senate District 22	Rep. Robert Wirch	Democrat

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