

# Response Report in Support of Governor Evers's Proposed District Plans

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## 1 Introduction

My qualifications were described in my first report [2].

I have been retained to evaluate the Governor's proposed district plans for the Wisconsin State Assembly, the Wisconsin State Senate, and the U.S. House of Representatives (a.k.a. "Congress"), regarding their statistical properties. This report will focus on comparisons between the Governor's plans and the plans recently passed by the Wisconsin State Legislature in Legislative Bills SB 621 and SB 622 (referred to throughout this report as the SB 621 and SB 622 plans) on some aspects not covered in the first report [2]. The Governor's plans will also be compared to the Black Leaders Organizing for Communities (BLOC) plans for the State Assembly and State Senate regarding majority-minority districts. For some measures, comparisons to the 2011 enacted districts will also be presented.

## 2 Executive Summary

My analysis in this report includes the following comparisons:

- In Section 3, I explore discrepancies between the U.S. Census Bureau's and the LTSB's descriptions of the 2011 enacted districts in terms of 2020 Census blocks. These discrepancies are significant for the analysis in subsequent sections.
- In Section 4, I compare the Governor's plans to the SB 621/622 plans with regard to core population movement, including a detailed analysis by district.
- In Section 5, I compare the Governor's plans to the BLOC plans with regard to majority-minority districts, including majority Non-White, majority Black, and majority Hispanic districts.
- In Section 6, I compare the Governor's plans to the 2011 enacted plans (Census Bureau version) with regard to all municipal splits and town splits in particular, including detailed lists

of exactly which towns are split in each plan and the percentages of each town's population that are contained in each district.

- In Section 7, I compare the Governor's plans to the BLOC plans with regard to various compactness measures.

This Executive Summary provides summaries of the analyses contained in the remainder of the report.

## 2.1 The 2011 Enacted Districts – LTSB vs. U.S. Census Bureau

Comparisons between proposed plans and the 2011 enacted plans are complicated by the fact that the 2011 enacted districts were based on 2010 Census geographies, while proposed plans for new districts are based on 2020 Census geographies. Specifically, all proposed new plans are constructed by assigning each 2020 Census block to a unique district in the plan. Direct comparisons require that the 2011 enacted plans also be described in terms of 2020 Census blocks, but unfortunately, 2020 Census blocks do not line up neatly with 2011 enacted districts. In cases where a 2020 Census block intersects more than one 2011 district, a choice must be made about which 2011 district to assign that block to in order to best approximate the “true” 2011 enacted districts.

Both the U.S. Census Bureau and the Legislative Technology Services Bureau (LTSB) of the State of Wisconsin have published assignments of 2020 Census blocks to 2011 enacted districts, and there are discrepancies between them. These discrepancies have minimal impact on the computation of some measures (e.g., core population movement between the 2011 enacted plans and proposed new district plans) and a substantial impact on others (e.g., municipal splits in the 2011 enacted plans).

In order to explore the accuracy of both sets of 2011 enacted district approximations, I compared them to the official Census Bureau shapefiles for Wisconsin's State Legislative and Congressional districts as of 2018. Details of this analysis may be found in Section 3.

Based on this analysis, it is evident that the Census Bureau's approximation of the 2011 enacted districts is substantially more accurate at all levels (Assembly, Senate, and Congress) than the LTSB's approximation. This finding is taken into account in subsequent sections where appropriate, most notably regarding municipal splits in Section 6.

## 2.2 Core Population Movement

**Core population movement** measures the number of persons who are moved to a different district when redistricting takes place, i.e., persons whose district number in the 2011 enacted plan is different from their district number in the new plan.

In my first report [2], I reported total core population movement for the Governor's plans and the SB 621/622 plans, with respect to both the Census Bureau's and the LTSB's versions of the 2011 enacted plans. The differences between the two versions were minimal, with discrepancies of

0.05% or less in all cases. In keeping with other submitted reports, here I will focus only on core population movement with respect to the LTSB's version of the 2011 enacted plans.

Based on the initial expert reports submitted to the Court, the Governor's plans had the highest core population retention—or equivalently, the lowest core population movement—of all submitted plans for the Assembly and Congress. This remains the case regardless of which version of the 2011 enacted plans is used for the computation; in fact, as Tables 4 and 5 in my first report indicate, the Governor's plans compare **more** favorably overall to the SB 621/622 plans by this measure with respect to the Census Bureau's version than with respect to the LTSB's version. (For the Senate, the Governor's plan has slightly higher core population retention than the SB 621 plan with respect to the Census Bureau's version and slightly lower core population retention than the SB 621 plan with respect to the LTSB's version.)

In Section 4, I give a detailed analysis of core population movement by district at all levels (Assembly, Senate, and Congress) for both the Governor's plans and the SB 621/622 plans. These analyses show that the comparisons showing that the Governor's plans have lower overall core population movement remain largely true at the district level as well:

- For the Assembly plan, while the districts with the greatest core population movement in the Governor's plan have higher core population movement than the districts with the greatest core population movement in the corresponding SB 621 plan, the core population movement in most districts is slightly lower in the Governor's plan than in the SB 621 plan, resulting in lower total core population movement in the Governor's plan.
- For the Senate plan, while the districts with the greatest core population movement in the Governor's plan have higher core population movement than the districts with the greatest core population movement in the corresponding SB 621 plan, the core population movement in most districts is slightly lower in the Governor's plan than in the SB 621 plan, resulting in similar total core population movement in the Governor's plan. (The total core population movement in the Senate plans is slightly higher than in the SB 621 plan with respect to the LTSB's version of the 2011 enacted plan and slightly lower than in the SB 621 plan with respect to the Census Bureau's version of the 2011 enacted plan.)
- For the Congressional plans, the core population movement in the majority of districts is lower in the Governor's plan than in the SB 622 plan, resulting in lower total core population movement in the Governor's plan.

### 2.3 Majority-Minority Districts

In this section I will compare the districts in the Governor's plans for the State Assembly and State Senate with majority total minority (i.e., Non-White) Voting Age Population (NWVAP), majority Black Voting Age Population (BVAP), and majority Hispanic Voting Age Population (HVAP) with the analogous districts in the BLOC plans for the State Assembly and State Senate.

In this report, Black Voting Age Population (BVAP) will refer to the population that I called “BVAP1” in my first report [2]; this is the more inclusive version that includes all Census categories involving Black alone or in combination with any number of other races, including Hispanic.

### 2.3.1 Majority-Minority Assembly Districts

**Majority NWVAP Assembly Districts:** In both the Governor’s and the BLOC Assembly plans, there are 10 majority NWVAP districts: Districts 8, 9, 10, 11, 12, 14, 16, 17, 18, and 66. District 66 is geographically separate from the other 9 districts, which are concentrated in the Milwaukee area. Here I will focus on the regions consisting of the 9 Milwaukee area districts in each plan.

While the internal lines between districts vary between the two plans, the regions spanned by these districts are similar in both plans.

- The combined Non-White Voting Age Population of these 9 districts is 254,230 in the Governor’s plan and 255,533 in the BLOC plan.
- 3.59% of the Non-White Voting Age Population contained in these districts in the Governor’s plan is not contained in these districts in the BLOC plan.
- 4.09% of the Non-White Voting Age Population contained in these districts in the BLOC plan is not contained in these districts in the Governor’s plan.

**Majority BVAP Assembly Districts:** In both the Governor’s and the BLOC Assembly plans, there are 7 majority BVAP districts: Districts 10, 11, 12, 14, 16, 17, and 18. While the internal lines between districts vary between the two plans, the regions spanned by these districts are similar in both plans.

- The combined Black Voting Age Population of these 7 districts is 156,580 in the Governor’s plan and 157,592 in the BLOC plan.
- 1.60% of the Black Voting Age Population contained in these districts in the Governor’s plan is not contained in these districts in the BLOC plan.
- 2.24% of the Black Voting Age Population contained in these districts in the BLOC plan is not contained in these districts in the Governor’s plan.

**Majority HVAP Assembly Districts:** In both the Governor’s and the BLOC Assembly plans, there are 2 majority HVAP districts: Districts 8 and 9. While the internal lines between districts vary between the two plans, the regions spanned by these districts are similar in both plans.

- The combined Hispanic Voting Age Population of these 2 districts is 48,769 in the Governor’s plan and 49,033 in the BLOC plan.
- 1.03% of the Hispanic Voting Age Population contained in these districts in the Governor’s plan is not contained in these districts in the BLOC plan.

- 1.56% of the Hispanic Voting Age Population contained in these districts in the BLOC plan is not contained in these districts in the Governor's plan.

### 2.3.2 Majority-Minority Senate Districts

**Majority NWVAP Assembly Districts:** In both the Governor's and the BLOC Senate plans, there are 3 majority NWVAP districts: Districts 3, 4, and 6. While the internal lines between districts vary between the two plans, the regions spanned by these districts are similar in both plans.

- The combined Non-White Voting Age Population of these 3 districts is 243,242 in the Governor's plan and 244,954 in the BLOC plan.
- 4.68% of the Non-White Voting Age Population contained in these districts in the Governor's plan is not contained in these districts in the BLOC plan.
- 5.35% of the Non-White Voting Age Population contained in these districts in the BLOC plan is not contained in these districts in the Governor's plan.

**Majority BVAP Assembly Districts:** In both the Governor's and the BLOC Senate plans, there are 2 majority BVAP districts: Districts 4 and 6. While the internal lines between districts vary between the two plans, the regions spanned by these districts are similar in both plans.

- The combined Black Voting Age Population of these 2 districts is 134,423 in the Governor's plan and 135,618 in the BLOC plan.
- 3.82% of the Black Voting Age Population contained in these districts in the Governor's plan is not contained in these districts in the BLOC plan.
- 4.67% of the Black Voting Age Population contained in these districts in the BLOC plan is not contained in these districts in the Governor's plan.

## 2.4 Municipal Splits

**Municipal splits** measure the number of municipalities (cities, towns, or villages) that are split between two or more districts. Section 6 contains a detailed comparison of the Governor's plans to the 2011 enacted plans regarding municipal splits, with a particular focus on town splits. According to the classification provided by the LTSB, Wisconsin contains 1,850 municipalities (cities, towns, and villages), of which 1,248 are towns.

The Census Bureau's and the LTSB's approximations of the 2011 enacted plans are strikingly different regarding the numbers of municipal splits in general and town splits in particular. Based on the analysis described in Section 3, I believe that comparison with the Census Bureau's approximation is more appropriate here.

The numbers of both town splits and total municipal splits in the Governor's plans at all levels (Assembly, Senate, and Congress) are either equal to or less than the corresponding numbers of

splits in the Census Bureau’s versions of the 2011 enacted plans. Detailed lists of exactly which towns are split in each plan, including the percentages of each town’s population that is contained in each district, may be found in Appendix B.

## 2.5 Compactness

District **compactness** refers to the idea that a district should not be too “spread out.” There is no single measure that adequately defines this concept, but the two most commonly reported measures are the **Polsby-Popper** score and the **Reock** score. It should be emphasized that both of these scores are very sensitive to differences in map projections and resolutions; see Section 7 for a fuller discussion of these issues.

A discrete alternative proposed by Duchin and Tenner in [3] is the **cut edges** score, which counts the number of adjacent pairs of Census blocks that lie in different districts. This number may be thought of as a discrete analog of the total perimeter of all district boundaries. Unlike the other two scores, it is not sensitive to map projections. It also has the additional feature that, since Census blocks tend to have shorter perimeter in more densely populated areas, it more closely models the number of **persons** who live near district boundaries rather than the physical lengths of the district boundaries.

In Section 7, I report the mean, maximum, and minimum of the Polsby-Popper and Reock scores for each of the Governor’s plans and the SB 621/622 plans, along with the cut edges score. Additionally, the full ranges of Polsby-Popper and Reock scores for each plan are depicted graphically in Figures 12, 13, and 14.

Overall, I do not detect any substantial meaningful differences between the Governor’s and the SB 621/622 plans with respect to compactness.

## 3 The 2011 Enacted Districts – LTSB vs. U.S. Census Bureau

Comparisons between proposed plans and the 2011 enacted plans are complicated by the fact that the 2011 enacted districts were based on 2010 Census geographies, while proposed plans for new districts are based on 2020 Census geographies. Specifically, all proposed new plans are constructed by assigning each 2020 Census block to a unique district in the plan. Direct comparisons require that the 2011 enacted plans also be described in terms of 2020 Census blocks, but unfortunately, 2020 Census blocks do not line up neatly with 2011 enacted districts. In cases where a 2020 Census block intersects more than one 2011 district, a choice must be made about which 2011 district to assign that block to in order to best approximate the “true” 2011 enacted districts.

Both the U.S. Census Bureau and the Legislative Technology Services Bureau (LTSB) of the State of Wisconsin have published assignments of 2020 Census blocks to 2011 enacted districts, and there are discrepancies between them. These discrepancies have minimal impact on the computation of some measures (e.g., core population movement between the 2011 enacted plans and proposed new

district plans) and a substantial impact on others (e.g., municipal splits in the 2011 enacted plans). For this reason, it seems worth exploring the differences between the Census Bureau’s and the LTSB’s assignments of 2020 Census blocks to 2011 enacted districts.

The Census Bureau’s 2020 Census block assignments are based on its “crosswalk” that is used to compare 2010 geographies to 2020 geographies. This crosswalk is available at <https://www.census.gov/geographies/reference-files/time-series/geo/relationship-files.html>. Since the 2011 enacted districts are based on 2010 Census blocks, this crosswalk provides a way to approximate 2011 enacted districts using 2020 Census blocks, and this is the method used by the Census Bureau to assign 2020 Census blocks to 2011 enacted districts.

Meanwhile, the LTSB’s 2020 Census block assignments to districts appear to have been created by assigning whole wards—which have been updated to reflect 2020 Census geography—to districts. I do not know what algorithm was used to create these assignments, but the assignments of 2020 Census blocks to 2011 districts in the LTSB block shapefiles available at <https://legis.wisconsin.gov/ltsb/gis/data/> create districts at all levels (Assembly, Senate, and Congress) that do not split any (updated) wards.

In order to explore the accuracy of both sets of 2011 enacted district approximations, I compared them to the official Census Bureau shapefiles for Wisconsin’s State Legislative and Congressional districts as of 2018, available from the Census Bureau at <https://www.census.gov/cgi-bin/geo/shapefiles/index.php>. I reprojected all shapefiles to the coordinate reference system (CRS) NAD\_1983\_Wisconsin\_TM\_US\_Ft (WKID 102219), which is the base CRS in the shapefiles provided by the LTSB at <https://legis.wisconsin.gov/ltsb/gis/data/>. (Units of measurement in this CRS are given in U.S. feet.) For both approximations of 2011 enacted districts by 2020 Census blocks, I merged the blocks assigned to each district to create a single geometry for each district that could be compared to the geometry for official district.

Then for each district, I computed the area of the symmetric difference of the official district geometry and each of its approximations by 2020 Census blocks. (The **symmetric difference** of two regions consists of all points contained in one region but not the other.) The mean, maximum, and minimum values of the areas of the symmetric differences for each of the Census Bureau and LTSB approximations of the 2011 enacted districts are shown in Table 1.

|                       | <b>Census Bureau Approx.</b> |            |        | <b>LTSB Approx.</b> |             |         |
|-----------------------|------------------------------|------------|--------|---------------------|-------------|---------|
|                       | Mean                         | Max        | Min    | Mean                | Max         | Min     |
| <b>State Assembly</b> | 3,160,547                    | 29,711,727 | 43     | 9,218,264           | 150,110,674 | 17,549  |
| <b>State Senate</b>   | 6,261,393                    | 33,288,602 | 312    | 20,372,917          | 166,227,032 | 422,901 |
| <b>Congress</b>       | 6,721,120                    | 32,634,400 | 56,570 | 243,586,551         | 926,971,192 | 87,438  |

Table 1: Areas (Sq. Ft.) of Symmetric Differences Between Official 2011 Enacted Districts and Approximations By 2020 Census Blocks

Additionally, the full ranges of the areas of the symmetric differences for each plan are depicted graphically in Figures 1, 2, and 3 as follows: Districts in the Census Bureau's and the LTSB's approximations were each sorted from lowest to highest area, and the resulting sorted lists of areas for each district are plotted. (Note that the sorted ordering of the districts is not the same in both plans.)

Based on this analysis, it is evident that the Census Bureau's approximation of the 2011 enacted districts is substantially more accurate at all levels (Assembly, Senate, and Congress) than the LTSB's approximation.

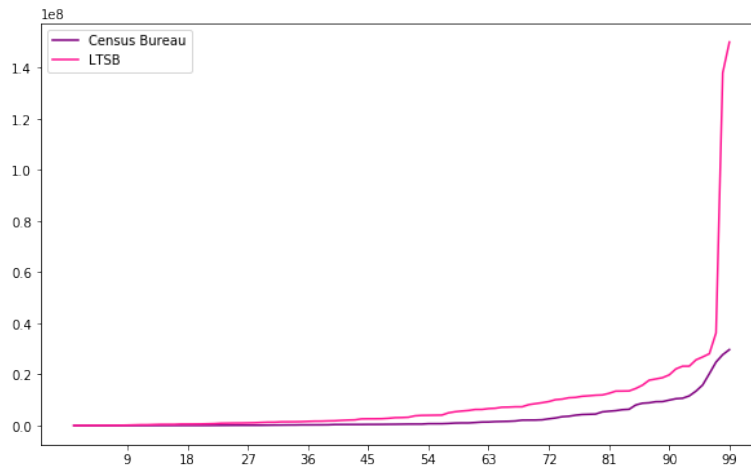


Figure 1: Areas of Symmetric Differences by District, State Assembly

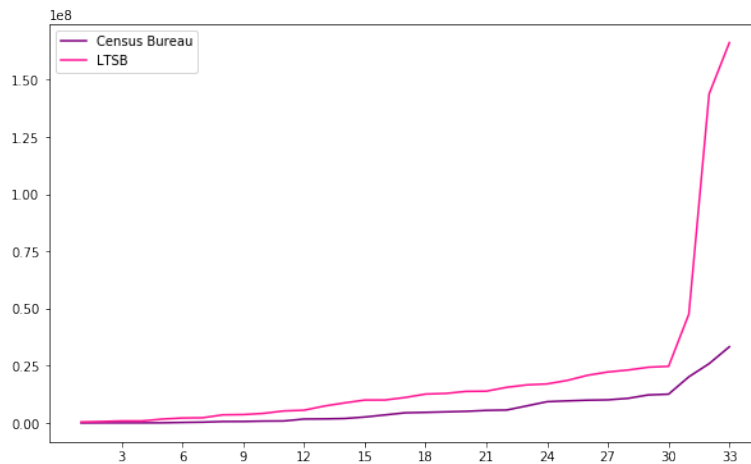


Figure 2: Areas of Symmetric Differences by District, State Senate



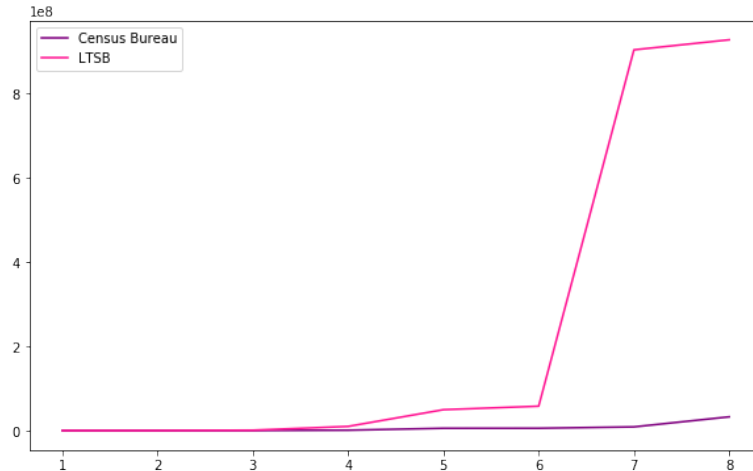


Figure 3: Areas of Symmetric Differences by District, Congress

## 4 Core Population Movement

**Core population movement** measures the number of persons who are moved to a different district when redistricting takes place, i.e., persons whose district number in the 2011 enacted plan is different from their district number in the new plan.

In my first report [2], I reported total core population movement for the Governor’s plans and the SB 621/622 plans, with respect to both the Census Bureau’s and the LTSB’s versions of the 2011 enacted plans. The differences between the two versions were minimal, with discrepancies of 0.05% or less in all cases. In keeping with other submitted reports, here I will focus only on core population movement with respect to the LTSB’s version of the 2011 enacted plans.

Based on the initial expert reports submitted to the Court, the Governor’s plans had the highest core population retention—or equivalently, the lowest core population movement—of all submitted plans for the Assembly and Congress. This remains the case regardless of which version of the 2011 enacted plans is used for the computation; in fact, as Tables 4 and 5 in my first report indicate, the Governor’s plans compare **more** favorably overall to the SB 621/622 plans by this measure with respect to the Census Bureau’s version than with respect to the LTSB’s version. (For the Senate, the Governor’s plan has slightly higher core population retention than the SB 621 plan with respect to the Census Bureau’s version and slightly lower core population retention than the SB 621 plan with respect to the LTSB’s version.)

Table 2 (repeated from Table 5 in my first report) shows the total core population movement for the Governor’s plans and the SB 621/622 plans for the State Assembly, State Senate, and Congress with respect to the LTSB’s version of the 2011 enacted plans. In this section, I will give a more detailed analysis by district.

|                                 | Governor's Plan |            | SB 621/622 Plans |            |
|---------------------------------|-----------------|------------|------------------|------------|
| <b>Core Population Movement</b> | Persons         | Percentage | Persons          | Percentage |
| State Assembly Plans            | 837,659         | 14.21%     | 933,604          | 15.84%     |
| State Senate Plans              | 461,228         | 7.83%      | 459,061          | 7.79%      |
| Congressional Plans             | 324,415         | 5.50%      | 384,456          | 6.52%      |

Table 2: Core Population Movement for Governor's and SB 621/622 District Plans

#### 4.1 Assembly plans

Tables 12, 13, and 14 in Appendix A show, for each Assembly district, how many persons were moved out of or into that district between the 2011 enacted plan and either the Governor's or the SB 621 plan. This data is also depicted graphically in Figure 4, as follows: Districts in the Governor's and the SB 621 plans were each sorted from lowest to highest movement either out of or into the district, and the resulting sorted lists of numbers of persons moved in each district are plotted. (Note that the sorted ordering of the districts is not the same in both plans.)

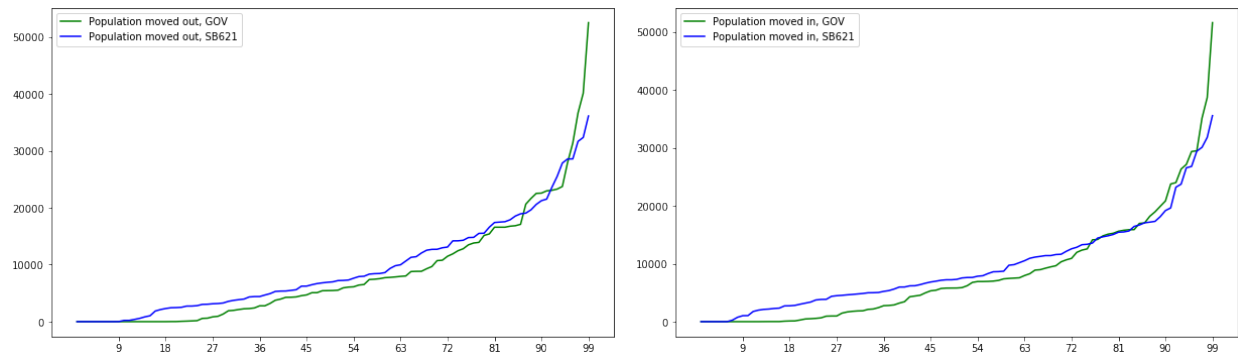


Figure 4: Sorted core population movement by district, State Assembly

These plots illustrate that, while the districts with the greatest movement in the Governor's plan have higher movement than the districts with the greatest movement in the SB 621 plan, the movement in most districts is slightly lower in the Governor's plan than in the SB 621 plan, resulting in lower total core population movement in the Governor's plan.

#### 4.2 Senate plans

Table 15 in Appendix A shows, for each Senate district, how many persons were moved out of or into that district between the 2011 enacted plan and either the Governor's or the SB 621 plan. This data is also depicted graphically in Figure 5, as follows: Districts in the Governor's and the SB 621 plans were each sorted from lowest to highest movement either out of or into the district, and the resulting sorted lists of numbers of persons moved in each district are plotted. (Note that the sorted ordering of the districts is not the same in both plans.)

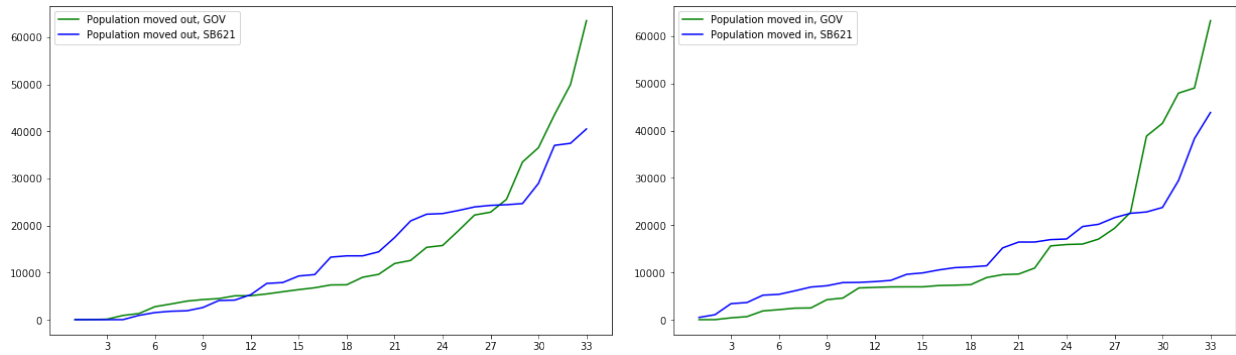


Figure 5: Sorted core population movement by district, State Senate

These plots illustrate that, while the districts with the greatest movement in the Governor's plan have higher movement than the districts with the greatest movement in the SB 621 plan, the movement in most districts is slightly lower in the Governor's plan than in the SB 621 plan, resulting in lower total core population movement in the Governor's plan.

### 4.3 Congressional plans

Table 16 in Appendix A shows, for each Congressional district, how many persons were moved out of or into that district between the 2011 enacted plan and either the Governor's or the SB 622 plan. This data is also depicted graphically in Figure 6, as follows: Districts in the Governor's and the SB 622 plans were each sorted from lowest to highest movement either out of or into the district, and the resulting sorted lists of numbers of persons moved in each district are plotted. (Note that the sorted ordering of the districts is not the same in both plans.)

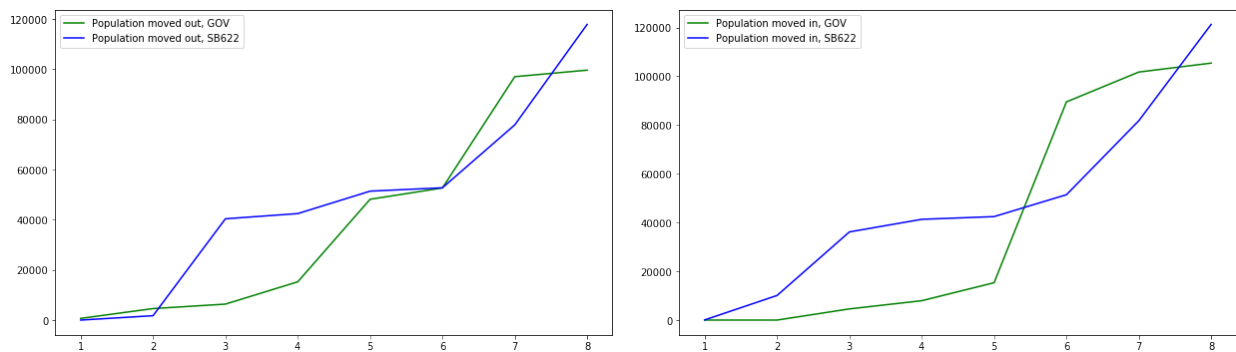


Figure 6: Sorted core population movement by district, Congress

These plots illustrate that the movement in the majority of districts is lower in the Governor's plan than in the SB 622 plan, resulting in lower total core population movement in the Governor's plan.

## 5 Majority-Minority Districts

In this section, I will compare the districts in the Governor's plans for the State Assembly and State Senate with majority total minority (i.e., Non-White) Voting Age Population (NWVAP), majority Black Voting Age Population (BVAP), and majority Hispanic Voting Age Population (HVAP) with the analogous districts in the BLOC plans for the State Assembly and State Senate.

In this report, Black Voting Age Population (BVAP) will refer to the population that I called "BVAP1" in my first report [2]; this is the more inclusive version that includes all Census categories involving Black alone or in combination with any number of other races, including Hispanic.

### 5.1 Majority-Minority Assembly Districts

#### 5.1.1 Majority NWVAP Assembly Districts

In both the Governor's and the BLOC Assembly plans, there are 10 majority NWVAP districts: Districts 8, 9, 10, 11, 12, 14, 16, 17, 18, and 66. District 66 is geographically separate from the other 9 districts, which are concentrated in the Milwaukee area. Here I will focus on the regions consisting of the 9 Milwaukee area districts in each plan.

Maps of these regions are shown in Figure 7; while the internal lines between districts vary between the two plans, the regions spanned by these districts are similar in both plans.

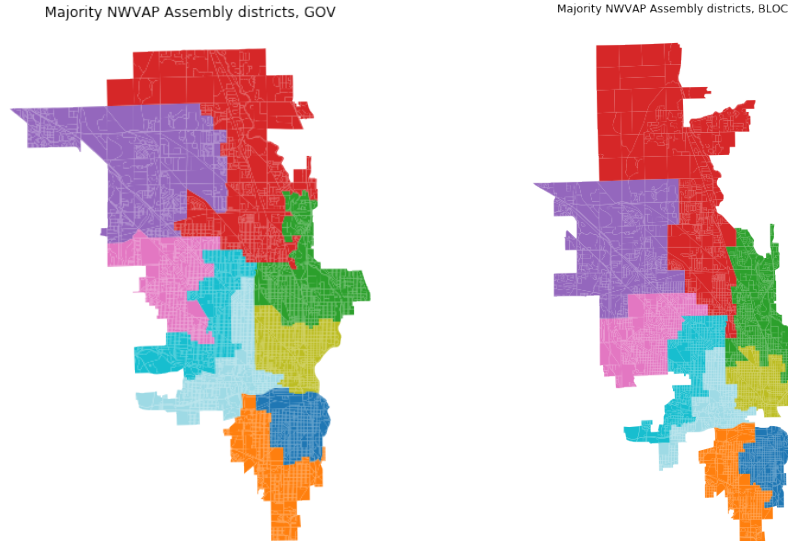


Figure 7: Majority NWVAP Assembly districts in GOV and BLOC plans

The combined Non-White Voting Age Population of these 9 districts is 254,230 in the Governor's plan and 255,533 in the BLOC plan. Table 3 shows the Non-White Voting Age Population (both total persons and percentage) contained in the region spanned by these districts in the Governor's plan but not in the BLOC plan, and vice-versa.

| <b>NWVAP Assembly Movement</b> | Persons moved out | Percentage moved out |
|--------------------------------|-------------------|----------------------|
| In GOV plan, not in BLOC plan  | 9,139             | 3.59%                |
| In BLOC plan, not in GOV plan  | 10,442            | 4.09%                |

Table 3: NWVAP movement between Governor's and BLOC majority NWVAP Assembly districts

### 5.1.2 Majority BVAP Assembly Districts

In both the Governor's and the BLOC Assembly plans, there are 7 majority BVAP districts: Districts 10, 11, 12, 14, 16, 17, and 18. Maps of these regions are shown in Figure 8; while the internal lines between districts vary between the two plans, the regions spanned by these districts are similar in both plans.

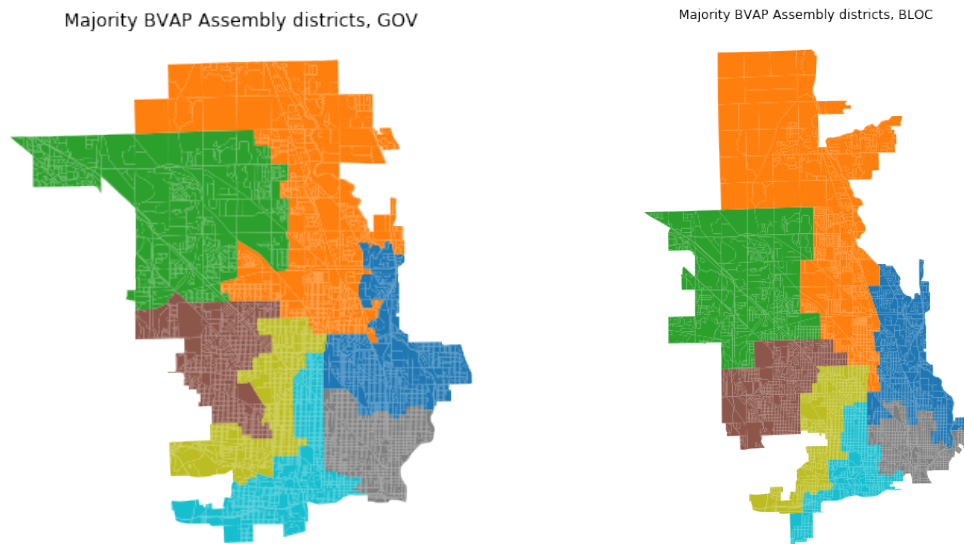


Figure 8: Majority BVAP Assembly districts in GOV and BLOC plans

The combined Black Voting Age Population of these 7 districts is 156,580 in the Governor's plan and 157,592 in the BLOC plan. Table 4 shows the Black Voting Age Population (both total persons and percentage) contained in the region spanned by these districts in the Governor's plan but not in the BLOC plan, and vice-versa.

| <b>BVAP Assembly Movement</b> | Persons moved out | Percentage moved out |
|-------------------------------|-------------------|----------------------|
| In GOV plan, not in BLOC plan | 2,511             | 1.60%                |
| In BLOC plan, not in GOV plan | 3,523             | 2.24%                |

Table 4: BVAP movement between Governor's and BLOC majority BVAP Assembly districts

### 5.1.3 Majority HVAP Assembly Districts

In both the Governor's and the BLOC Assembly plans, there are 2 majority HVAP districts: Districts 8 and 9. Maps of these regions are shown in Figure 9; while the internal lines between districts vary between the two plans, the regions spanned by these districts are similar in both plans.

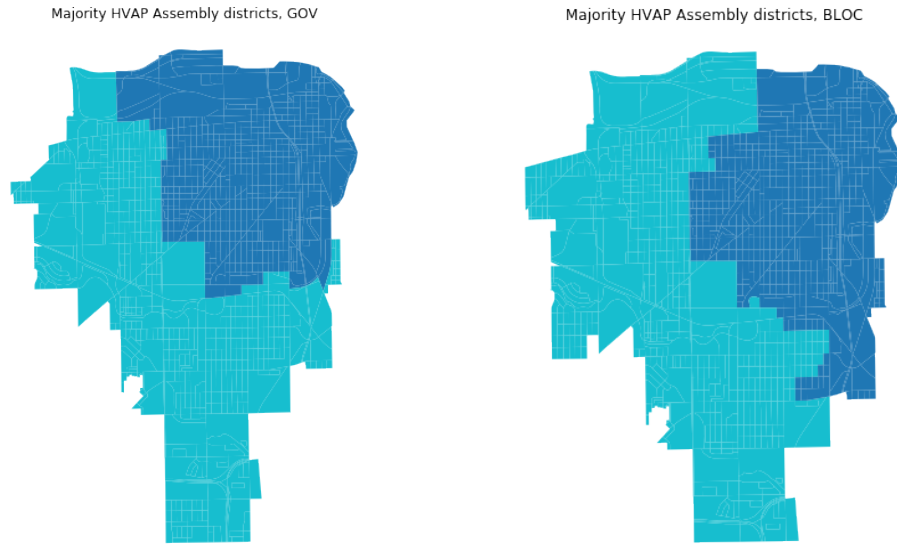


Figure 9: Majority HVAP Assembly districts in GOV and BLOC plans

The combined Hispanic Age Population of these 2 districts is 48,769 in the Governor's plan and 49,033 in the BLOC plan. Table 5 shows the Hispanic Voting Age Population (both total persons and percentage) contained in the region spanned by these districts in the Governor's plan but not in the BLOC plan, and vice-versa.

| <b>HVAP Assembly Movement</b> | Persons moved out | Percentage moved out |
|-------------------------------|-------------------|----------------------|
| In GOV plan, not in BLOC plan | 500               | 1.03%                |
| In BLOC plan, not in GOV plan | 764               | 1.56%                |

Table 5: HVAP movement between Governor's and BLOC majority HVAP Assembly districts

## 5.2 Majority-Minority Senate Districts

### 5.2.1 Majority NWVAP Senate Districts

In both the Governor's and the BLOC Senate plans, there are 3 majority NWVAP districts: Districts 3, 4, and 6. Maps of these regions are shown in Figure 10; while the internal lines between districts vary between the two plans, the regions spanned by these districts are similar in both plans.

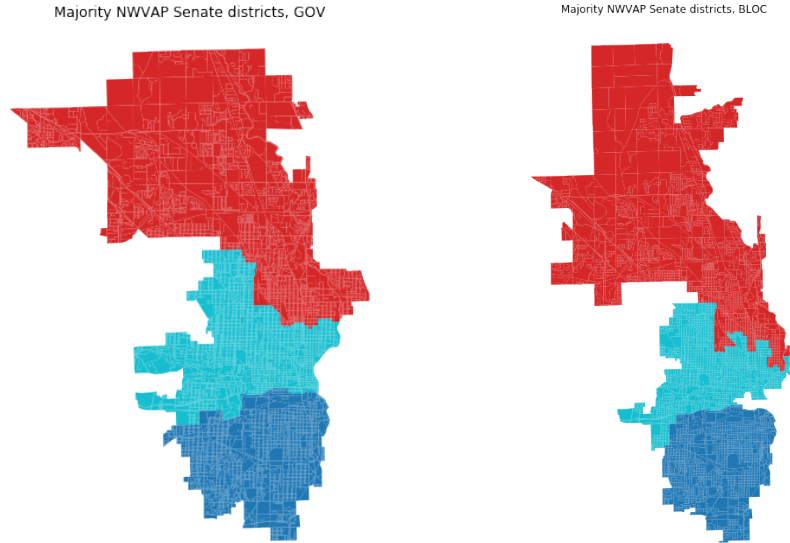


Figure 10: Majority NWVAP Senate districts in GOV and BLOC plans

The combined Non-White Voting Age Population of these 3 districts is 243,242 in the Governor's plan and 244,954 in the BLOC plan. Table 6 shows the Non-White Voting Age Population (both total persons and percentage) contained in the region spanned by these districts in the Governor's plan but not in the BLOC plan, and vice-versa.

| <b>NWVAP Senate Movement</b>  | Persons moved out | Percentage moved out |
|-------------------------------|-------------------|----------------------|
| In GOV plan, not in BLOC plan | 11,382            | 4.68%                |
| In BLOC plan, not in GOV plan | 13,094            | 5.35%                |

Table 6: NWVAP movement between Governor's and BLOC majority NWVAP Senate districts

### 5.2.2 Majority BVAP Senate Districts

In both the Governor's and the BLOC Senate plans, there are 2 majority BVAP districts: Districts 4 and 6. Maps of these regions are shown in Figure 11; while the internal lines between districts vary between the two plans, the regions spanned by these districts are similar in both plans.

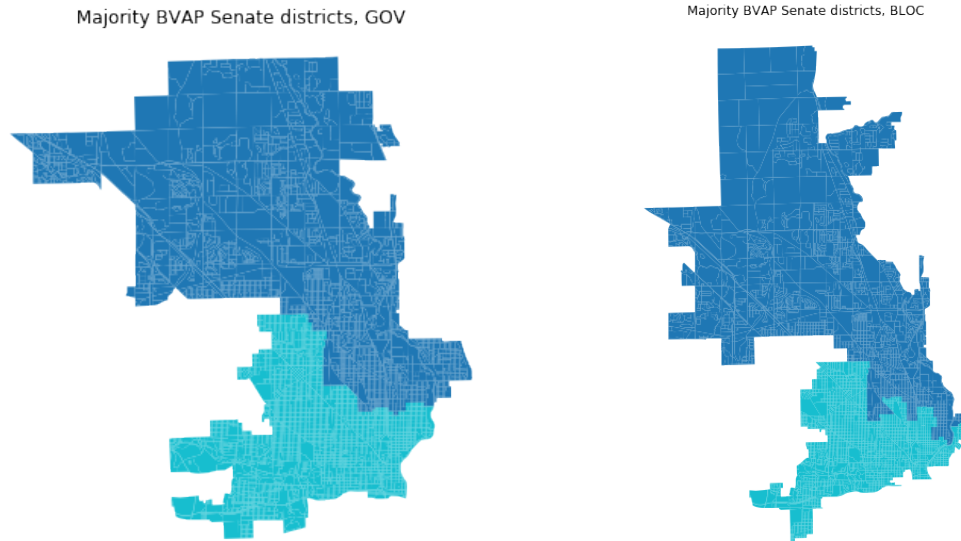


Figure 11: Majority BVAP Senate districts in GOV and BLOC plans

The combined Black Voting Age Population of these 2 districts is 134,423 in the Governor's plan and 135,618 in the BLOC plan. Table 7 shows the Black Voting Age Population (both total persons and percentage) contained in the region spanned by these districts in the Governor's plan but not in the BLOC plan, and vice-versa.

| <b>BVAP Senate Movement</b>   | Persons moved out | Percentage moved out |
|-------------------------------|-------------------|----------------------|
| In GOV plan, not in BLOC plan | 5,135             | 3.82%                |
| In BLOC plan, not in GOV plan | 6,330             | 4.67%                |

Table 7: BVAP movement between Governor's and BLOC majority BVAP Senate districts

## 6 Municipal Splits

**Municipal splits** measure the number of municipalities (cities, towns, or villages) that are split between two or more districts. In this section I will give a detailed comparison of the Governor's plans to the 2011 enacted plans regarding municipal splits, with a particular focus on town splits. According to the classification provided by the LTSB, Wisconsin contains 1,850 municipalities (cities, towns, and villages), of which 1,248 are towns.

The Census Bureau's and the LTSB's approximations of the 2011 enacted plans are strikingly different regarding the numbers of municipal splits in general and town splits in particular. Based on the analysis described above in Section 3, I believe that comparison with the Census Bureau's approximation is more appropriate here, and it will be used throughout this section.

The numbers of towns split and all municipalities split for each of the Governor's plans and the 2011 enacted plans are shown in Table 8. Detailed lists of exactly which towns are split in each



plan, including the percentages of each town’s population that are contained in each district, may be found in Appendix B.

|                       | Town Splits     |           | All Municipal Splits |           |
|-----------------------|-----------------|-----------|----------------------|-----------|
| Town/Municipal Splits | Governor’s Plan | 2011 Plan | Governor’s Plan      | 2011 Plan |
| State Assembly        | 80              | 89        | 174                  | 188       |
| State Senate          | 55              | 55        | 118                  | 123       |
| U.S. Congress         | 22              | 29        | 47                   | 57        |

Table 8: Town and Municipal Splits

## 7 Compactness

District **compactness** refers to the idea that a district should not be too “spread out.” There is no single measure that adequately defines this concept, but the two most commonly reported measures are the **Polsby-Popper** score and the **Reock** score.

The Polsby-Popper score measures the ratio of a district’s area to the square of its perimeter, multiplied by  $4\pi$ . The possible values for this score range from 0 to 1, with a “perfect” compactness score of 1 achieved exactly when the district’s boundary is a perfect circle.

The Reock score measures the ratio of a district’s area to the area of the smallest circle that completely contains the district. As for Polsby-Popper, the possible values for this score range from 0 to 1, with a “perfect” compactness score of 1 achieved exactly when a district’s boundary is a perfect circle.

It should be emphasized that both of these scores are extremely sensitive to differences in map projections and resolutions. This issue is explored at some length in [1], where it is shown that not only can these scores vary significantly based on the choice of map projection, but the relative ordering of districts with respect to these scores (i.e., which districts appear more compact than others) may not even be consistent across different map projections.

For these reasons, one must interpret these scores cautiously. The raw score for any particular district is of limited value, and is impossible to verify without additional information such as the map projection used for the computation. **Relative** scores—provided that they are computed with respect to the same map projection—may be useful for comparisons across districts and district plans, but small differences between district scores still may not be particularly meaningful.

The scores that I report here for the SB 621/622 plans are somewhat different than those reported by the Legislature, but without additional information, such as the map projection used to perform the computation, I cannot determine the source of the discrepancies. For my computations, I have used the map projection NAD\_1983\_Wisconsin\_TM\_US\_Ft (WKID 102219), which is the base projection in the shapefiles provided by the LTSB at <https://legis.wisconsin.gov/ltsb/gis/data/>.

A discrete alternative to these scores, proposed by Duchin and Tenner in [3], is the **cut edges** score, which counts the number of adjacent pairs of Census blocks that lie in different districts. This number may be thought of as a discrete analog of the total perimeter of all district boundaries. Unlike the other two scores, it is not sensitive to map projections. It also has the additional feature that, since Census blocks tend to have shorter perimeter in more densely populated areas, it more closely models the number of **persons** who live near district boundaries rather than the physical lengths of the district boundaries.

The mean, maximum, and minimum of the Polsby-Popper and Reock scores for each of the Governor's plans and the SB 621/622 plans are shown in Tables 9, 10, and 11, along with the cut edges score. (Note that Polsby-Popper and Reock scores are computed for each individual district, while the cut edges score is a single score for an entire district plan.)

| <b>State Assembly</b>     | Governor's Plan |       |       | SB 621 Plan |       |       |
|---------------------------|-----------------|-------|-------|-------------|-------|-------|
| <b>Compactness Scores</b> | Mean            | Max   | Min   | Mean        | Max   | Min   |
| Polsby-Popper             | 0.251           | 0.523 | 0.056 | 0.243       | 0.566 | 0.050 |
| Reock                     | 0.397           | 0.652 | 0.147 | 0.379       | 0.651 | 0.148 |
| Cut Edges                 | 18,441          |       |       | 19,196      |       |       |

Table 9: Compactness Scores for State Assembly District Plans

| <b>State Senate</b>       | Governor's Plan |       |       | SB 621 Plan |       |       |
|---------------------------|-----------------|-------|-------|-------------|-------|-------|
| <b>Compactness Scores</b> | Mean            | Max   | Min   | Mean        | Max   | Min   |
| Polsby-Popper             | 0.217           | 0.433 | 0.053 | 0.224       | 0.392 | 0.048 |
| Reock                     | 0.392           | 0.607 | 0.135 | 0.395       | 0.593 | 0.133 |
| Cut Edges                 | 11,147          |       |       | 10,785      |       |       |

Table 10: Compactness Scores for State Senate District Plans

| <b>Congress</b>           | Governor's Plan |       |       | SB 621 Plan |       |       |
|---------------------------|-----------------|-------|-------|-------------|-------|-------|
| <b>Compactness Scores</b> | Mean            | Max   | Min   | Mean        | Max   | Min   |
| Polsby-Popper             | 0.243           | 0.397 | 0.127 | 0.280       | 0.498 | 0.125 |
| Reock                     | 0.458           | 0.599 | 0.334 | 0.458       | 0.635 | 0.337 |
| Cut Edges                 | 3,774           |       |       | 3,410       |       |       |

Table 11: Compactness Scores for Congressional District Plans

Additionally, the full ranges of Polsby-Popper and Reock scores for each plan are depicted graphically in Figures 12, 13, and 14 as follows: Districts in the Governor's and the SB 621/622 plans were each sorted from lowest to highest score, and the resulting lists of scores for each district are plotted. (Note that the sorted ordering of the districts is not the same in both plans.) Overall, I do not detect any substantial meaningful differences between the Governor's and the SB 621/622 plans with respect to compactness.

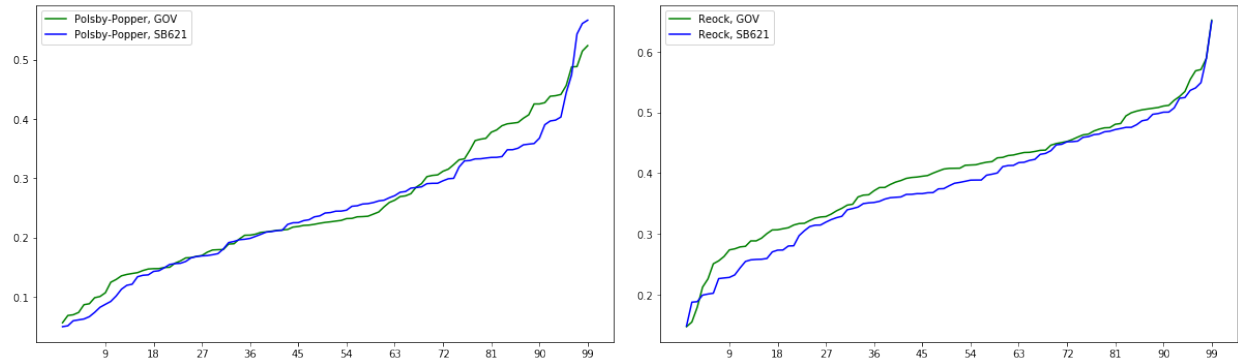


Figure 12: Compactness measures by district, State Assembly

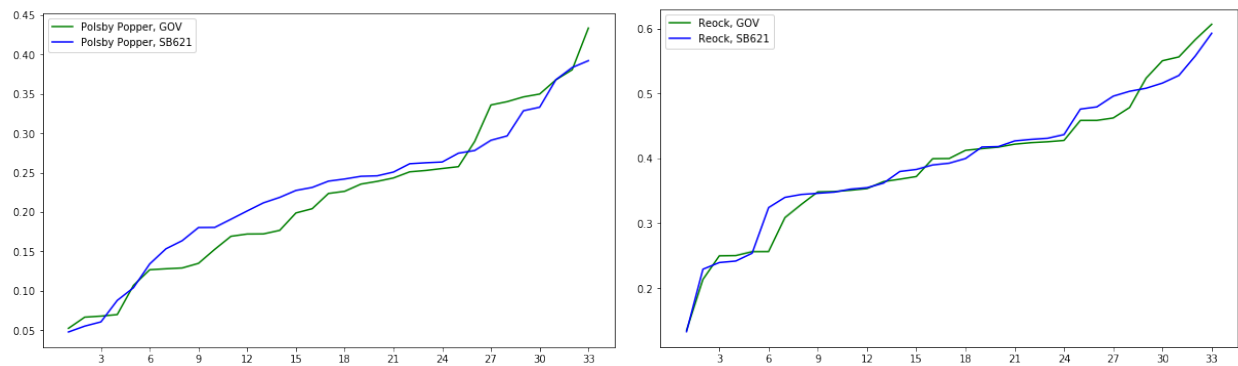


Figure 13: Compactness measures by district, State Senate

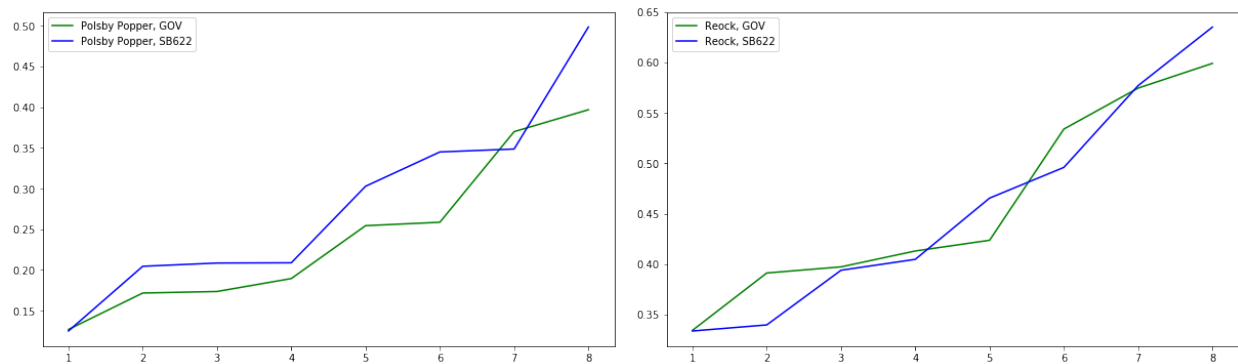


Figure 14: Compactness measures by district, Congress

## 8 Previous Expert Testimony and Compensation

This information remains the same as in my initial report [2]. I have not served as an expert witness in any other case in the past 4 years. I am being compensated at the rate of \$250 per hour for my work on this case.

## References

- [1] Assaf Bar-Natan, Lorenzo Najt, and Zachary Schutzman, *The gerrymandering jumble: Map projections permute districts' compactness scores*, Cartography and Geographic Information Science **47** (2021), 321–335.
- [2] Jeanne Clelland, *Expert Report in Support of Governor Evers's Proposed District Plans*, Expert report to Wisconsin Supreme Court for Johnson v. Wisconsin Election Commission, 2021, available at <https://www.wicourts.gov/courts/supreme/origact/2021ap1450.htm>.
- [3] Moon Duchin and Bridget Tenner, *Discrete geometry for electoral geography*, arXiv e-prints (2018), arXiv:1808.05860.

## A Core Population Movement by District

This Appendix contains tables that describe the core population movement by district in the Governor's and SB 621/622 plans.

- Tables 12, 13, and 14 show the core population movement by district in the Governor's and SB 621 Assembly plans.
- Table 15 shows the core population movement by district in the Governor's and SB 621 Senate plans.
- Table 16 shows the core population movement by district in the Governor's and SB 622 Congressional plans.

| <b>District</b> | <b>Governor's Plan</b> |          |             | <b>SB 621 Plan</b> |          |             |
|-----------------|------------------------|----------|-------------|--------------------|----------|-------------|
|                 | Moved out              | Moved in | Total moved | Moved out          | Moved in | Total moved |
| 1               | 0                      | 0        | 0           | 390                | 0        | 390         |
| 2               | 6,522                  | 2,754    | 9,276       | 14,189             | 11,145   | 25,334      |
| 3               | 8,836                  | 6,774    | 15,610      | 8,340              | 6,184    | 14,524      |
| 4               | 0                      | 946      | 946         | 6,227              | 7,147    | 13,374      |
| 5               | 7,717                  | 287      | 8,004       | 19,051             | 11,270   | 30,321      |
| 6               | 0                      | 2,185    | 2,185       | 9,348              | 11,405   | 20,753      |
| 7               | 16,578                 | 17,053   | 33,631      | 7,622              | 7,843    | 15,465      |
| 8               | 0                      | 5,425    | 5,425       | 0                  | 5,363    | 5,363       |
| 9               | 5,425                  | 7,572    | 12,997      | 5,363              | 7,622    | 12,985      |
| 10              | 7,447                  | 14,134   | 21,581      | 6,482              | 13,357   | 19,839      |
| 11              | 23,724                 | 29,495   | 53,219      | 7,911              | 13,291   | 21,202      |
| 12              | 23,267                 | 26,356   | 49,623      | 6,809              | 9,741    | 16,550      |
| 13              | 22,512                 | 20,848   | 43,360      | 32,334             | 30,106   | 62,440      |
| 14              | 52,488                 | 51,636   | 10,4124     | 36,104             | 35,577   | 71,681      |
| 15              | 13,483                 | 15,781   | 29,264      | 21,514             | 23,745   | 45,259      |
| 16              | 4,694                  | 10,333   | 15,027      | 0                  | 5,975    | 5,975       |
| 17              | 22,960                 | 27,151   | 50,111      | 3,139              | 7,231    | 10,370      |
| 18              | 12,794                 | 18,967   | 31,761      | 7,208              | 13,567   | 20,775      |
| 19              | 5,462                  | 2,422    | 7,884       | 2,736              | 0        | 2,736       |
| 20              | 20,626                 | 23,773   | 44,399      | 0                  | 2,736    | 2,736       |
| 21              | 16,843                 | 18,204   | 35,047      | 0                  | 1,045    | 1,045       |
| 22              | 21,632                 | 19,914   | 41,546      | 18,544             | 17,070   | 35,614      |
| 23              | 1,983                  | 506      | 2,489       | 20,580             | 19,187   | 39,767      |
| 24              | 36,628                 | 35,150   | 71,778      | 27,839             | 26,805   | 54,644      |
| 25              | 4,267                  | 5,874    | 10,141      | 4,921              | 6,395    | 11,316      |
| 26              | 0                      | 973      | 973         | 1,864              | 2,811    | 4,675       |
| 27              | 17                     | 0        | 17          | 2,306              | 2,722    | 5,028       |
| 28              | 0                      | 0        | 0           | 14,182             | 14,651   | 288,33      |
| 29              | 5,086                  | 3,203    | 8,289       | 18,933             | 16,691   | 35,624      |
| 30              | 3,203                  | 0        | 3,203       | 14,761             | 11,589   | 26,350      |
| 31              | 610                    | 9        | 619         | 23,583             | 23,222   | 46,805      |
| 32              | 0                      | 0        | 0           | 12,685             | 12,844   | 25,529      |
| 33              | 15,138                 | 15,892   | 31,030      | 25,488             | 26,570   | 52,058      |

Table 12: Persons Moved in State Assembly Districts (Districts 1-33)

|                 | <b>Governor's Plan</b> |          |             | <b>SB 621 Plan</b> |          |             |
|-----------------|------------------------|----------|-------------|--------------------|----------|-------------|
| <b>District</b> | Moved out              | Moved in | Total moved | Moved out          | Moved in | Total moved |
| 34              | 4,558                  | 3,448    | 8,006       | 6,911              | 5,628    | 12,539      |
| 35              | 4,343                  | 7,002    | 11,345      | 3,859              | 6,986    | 10,845      |
| 36              | 2,778                  | 4,558    | 7,336       | 6,986              | 8,714    | 15,700      |
| 37              | 40,112                 | 38,715   | 78,827      | 8,612              | 6,843    | 15,455      |
| 38              | 31,354                 | 29,390   | 60,744      | 10,639             | 8,612    | 19,251      |
| 39              | 7,851                  | 9,229    | 17,080      | 6,683              | 7,930    | 14,613      |
| 40              | 2,296                  | 4,977    | 7,273       | 5,377              | 7,545    | 12,922      |
| 41              | 3,756                  | 5,806    | 9,562       | 15,493             | 17,186   | 32,679      |
| 42              | 10,713                 | 11,967   | 22,680      | 14,283             | 15,493   | 29,776      |
| 43              | 129                    | 117      | 246         | 31,642             | 31,823   | 63,465      |
| 44              | 91                     | 658      | 749         | 3,561              | 4,697    | 8,258       |
| 45              | 0                      | 1,466    | 1,466       | 5,605              | 7,633    | 13,238      |
| 46              | 23,057                 | 16,967   | 40,024      | 17,403             | 11,636   | 29,039      |
| 47              | 3,958                  | 128      | 4,086       | 6,237              | 2,175    | 8,412       |
| 48              | 27,918                 | 24,013   | 51,931      | 11,292             | 7,231    | 18,523      |
| 49              | 2,779                  | 4,429    | 7,208       | 0                  | 1,756    | 1,756       |
| 50              | 5,445                  | 6,203    | 11,648      | 3,738              | 4,481    | 8,219       |
| 51              | 8,795                  | 10,924   | 19,719      | 1,037              | 3,835    | 4,872       |
| 52              | 0                      | 0        | 0           | 5,305              | 5,036    | 10,341      |
| 53              | 6,117                  | 7,118    | 13,235      | 5,487              | 6,643    | 12,130      |
| 54              | 172                    | 2,796    | 2,968       | 220                | 2,335    | 2,555       |
| 55              | 9,676                  | 7,517    | 17,193      | 7,236              | 4,781    | 12,017      |
| 56              | 11,895                 | 6,928    | 18,823      | 14,794             | 9,846    | 24,640      |
| 57              | 7,546                  | 9,458    | 17,004      | 3,179              | 4,630    | 7,809       |
| 58              | 0                      | 1        | 1           | 4,673              | 5,227    | 9,900       |
| 59              | 5,929                  | 6,929    | 12,858      | 9,817              | 11,406   | 21,223      |
| 60              | 1                      | 15       | 16          | 10                 | 0        | 10          |
| 61              | 15                     | 0        | 15          | 578                | 0        | 578         |
| 62              | 7,390                  | 8,898    | 16,288      | 7,304              | 8,307    | 15,611      |
| 63              | 0                      | 16       | 16          | 3,273              | 3,015    | 6,288       |
| 64              | 2,133                  | 4,297    | 6,430       | 3,027              | 4,543    | 7,570       |
| 65              | 0                      | 2,117    | 2,117       | 0                  | 2,117    | 2,117       |
| 66              | 4,282                  | 7,390    | 11,672      | 3,965              | 7,304    | 11,269      |

Table 13: Persons Moved in State Assembly Districts (Districts 34-66)

|                 | <b>Governor's Plan</b> |          |             | <b>SB 621 Plan</b> |          |             |
|-----------------|------------------------|----------|-------------|--------------------|----------|-------------|
| <b>District</b> | Moved out              | Moved in | Total moved | Moved out          | Moved in | Total moved |
| 67              | 16,580                 | 15,618   | 32,198      | 16,578             | 15,657   | 32,235      |
| 68              | 16,756                 | 14,813   | 31,569      | 17,886             | 15,445   | 33,331      |
| 69              | 5,522                  | 8,276    | 13,798      | 7,970              | 10,184   | 18,154      |
| 70              | 8,017                  | 9,654    | 17,671      | 2,730              | 3,853    | 6,583       |
| 71              | 0                      | 1,673    | 1,673       | 2,123              | 3,743    | 5,866       |
| 72              | 0                      | 1,874    | 1,874       | 2,516              | 4,371    | 6,887       |
| 73              | 0                      | 566      | 566         | 9,984              | 10,944   | 20,928      |
| 74              | 0                      | 0        | 0           | 4,408              | 4,985    | 9,393       |
| 75              | 566                    | 1,849    | 2,415       | 4,335              | 4,999    | 9,334       |
| 76              | 22,565                 | 10,676   | 33,241      | 12,052             | 0        | 12,052      |
| 77              | 10,778                 | 7,963    | 18,741      | 8,420              | 4,863    | 13,283      |
| 78              | 7,947                  | 464      | 8,411       | 13,094             | 5,980    | 19,074      |
| 79              | 15,395                 | 5,323    | 20,718      | 28,556             | 18,132   | 46,688      |
| 80              | 12,448                 | 5,800    | 18,248      | 21,238             | 15,058   | 36,296      |
| 81              | 1,907                  | 976      | 2,883       | 17,546             | 17,320   | 34,866      |
| 82              | 2,256                  | 1,782    | 4,038       | 12,966             | 12,581   | 25,547      |
| 83              | 13,912                 | 15,112   | 29,024      | 28,567             | 29,434   | 58,001      |
| 84              | 7,772                  | 7,465    | 15,237      | 19,634             | 19,641   | 39,275      |
| 85              | 11,478                 | 12,355   | 23,833      | 0                  | 1,027    | 1,027       |
| 86              | 16,579                 | 15,878   | 32,457      | 3,056              | 2,276    | 5,332       |
| 87              | 840                    | 2,890    | 3,730       | 841                | 3,200    | 4,041       |
| 88              | 17,084                 | 14,185   | 31,269      | 15,524             | 12,150   | 27,674      |
| 89              | 939                    | 0        | 939         | 2,803              | 1,988    | 4,791       |
| 90              | 13,803                 | 15,269   | 29,072      | 4,400              | 6,201    | 10,601      |
| 91              | 60                     | 83       | 143         | 216                | 255      | 471         |
| 92              | 2                      | 0        | 2           | 8,452              | 8,640    | 17,092      |
| 93              | 1,333                  | 16       | 1,349       | 17,478             | 16,448   | 33,926      |
| 94              | 8,832                  | 5,793    | 14,625      | 2,466              | 0        | 2,466       |
| 95              | 6,062                  | 6,950    | 13,012      | 0                  | 755      | 755         |
| 96              | 5,081                  | 5,727    | 10,808      | 2,443              | 3,383    | 5,826       |
| 97              | 9,287                  | 12,561   | 21,848      | 11,403             | 14,441   | 25,844      |
| 98              | 2,407                  | 0        | 2,407       | 12,541             | 10,524   | 23,065      |
| 99              | 6,420                  | 8,974    | 15,394      | 12,699             | 14,825   | 27,524      |

Table 14: Persons Moved in State Assembly Districts (Districts 67-99)

| <b>District</b> | <b>Governor's Plan</b> |          |             | <b>SB 621 Plan</b> |          |             |
|-----------------|------------------------|----------|-------------|--------------------|----------|-------------|
|                 | Moved out              | Moved in | Total moved | Moved out          | Moved in | Total moved |
| 1               | 15,358                 | 9,528    | 24,886      | 22,529             | 16,939   | 39,468      |
| 2               | 6,771                  | 2,472    | 9,243       | 14,402             | 9,598    | 24,000      |
| 3               | 9,006                  | 17,053   | 26,059      | 0                  | 7,843    | 7,843       |
| 4               | 33,474                 | 49,021   | 82,495      | 0                  | 15,187   | 15,187      |
| 5               | 63,501                 | 63,283   | 126,784     | 24,269             | 23,745   | 48,014      |
| 6               | 25,558                 | 41,561   | 67,119      | 0                  | 16,426   | 16,426      |
| 7               | 5,462                  | 6,930    | 12,392      | 0                  | 1,045    | 1,045       |
| 8               | 43,517                 | 38,844   | 82,361      | 20,971             | 17,070   | 38,041      |
| 9               | 4,267                  | 6,830    | 11,097      | 4,064              | 6,901    | 10,965      |
| 10              | 5,086                  | 0        | 5,086       | 24,652             | 19,707   | 44,359      |
| 11              | 15,748                 | 15,901   | 31,649      | 37,447             | 38,327   | 75,774      |
| 12              | 895                    | 4,224    | 5,119       | 1,783              | 5,355    | 7,138       |
| 13              | 49,927                 | 47,944   | 97,871      | 13,550             | 11,001   | 24,551      |
| 14              | 9,627                  | 15,612   | 25,239      | 17,438             | 22,509   | 39,947      |
| 15              | 90                     | 2,111    | 2,201       | 40,498             | 43,843   | 84,341      |
| 16              | 36,530                 | 22,705   | 59,235      | 24,410             | 10,520   | 34,930      |
| 17              | 6,376                  | 10,913   | 17,289      | 1,880              | 7,177    | 9,057       |
| 18              | 3,321                  | 6,946    | 10,267      | 5,305              | 8,307    | 13,612      |
| 19              | 11,924                 | 6,710    | 18,634      | 9,574              | 3,622    | 13,196      |
| 20              | 5,929                  | 6,944    | 12,873      | 9,273              | 11,406   | 20,679      |
| 21              | 7,405                  | 8,914    | 16,319      | 7,882              | 8,049    | 15,931      |
| 22              | 16                     | 7,405    | 7,421       | 910                | 7,882    | 8,792       |
| 23              | 7,371                  | 7,220    | 14,591      | 23,937             | 22,789   | 46,726      |
| 24              | 4,470                  | 9,654    | 14,124      | 1,503              | 6,101    | 7,604       |
| 25              | 0                      | 1,849    | 1,849       | 7,690              | 9,891    | 17,581      |
| 26              | 22,827                 | 640      | 23,467      | 23,194             | 471      | 23,665      |
| 27              | 22,219                 | 4,568    | 26,787      | 37,013             | 20,183   | 57,196      |
| 28              | 18,926                 | 19,345   | 38,271      | 28,945             | 29,434   | 58,379      |
| 29              | 5,064                  | 7,290    | 12,354      | 2,572              | 5,178    | 7,750       |
| 30              | 2,754                  | 382      | 3,136       | 13,547             | 11,159   | 24,706      |
| 31              | 1,296                  | 0        | 1,296       | 22,393             | 21,590   | 43,983      |
| 32              | 3,937                  | 2,432    | 6,369       | 4,154              | 3,383    | 7,537       |
| 33              | 12,576                 | 15,997   | 28,573      | 13,276             | 16,423   | 29,699      |

Table 15: Persons Moved in State Senate Districts



|                 | <b>Governor's Plan</b> |          |             | <b>SB 622 Plan</b> |          |             |
|-----------------|------------------------|----------|-------------|--------------------|----------|-------------|
| <b>District</b> | Moved out              | Moved in | Total moved | Moved out          | Moved in | Total moved |
| 1               | 97,047                 | 105,387  | 202,434     | 1,743              | 10,082   | 11,825      |
| 2               | 52,681                 | 0        | 52,681      | 52,751             | 70       | 52,821      |
| 3               | 4,579                  | 7,940    | 12,519      | 117,891            | 121,251  | 239,142     |
| 4               | 48,160                 | 89,479   | 137,639     | 0                  | 41,319   | 41,319      |
| 5               | 99,659                 | 101,716  | 201,375     | 40,378             | 42,435   | 82,813      |
| 6               | 6,361                  | 15,314   | 21,675      | 42,454             | 51,408   | 93,862      |
| 7               | 675                    | 4,579    | 5,254       | 77,835             | 81,739   | 159,574     |
| 8               | 15,253                 | 0        | 15,253      | 51,404             | 36,152   | 87,556      |

Table 16: Persons Moved in Congressional Districts

## B Town Splits

This Appendix contains tables that list the towns split between districts in the Governor's plans and in the 2011 enacted plans (Census Bureau version), along with the percentages of each town's population contained in each district. Note that in some cases, 100% of the town's population is contained in a single district even though the town is technically split.

- Tables 17, 18, and 19 contain a list of all towns that are split between Assembly districts in the Governor's plan.
- Tables 20, 21, and 22 contain a list of all towns that are split between Assembly districts in the 2011 enacted plan.
- Tables 23 and 24 contain a list of all towns that are split between Senate districts in the Governor's plan.
- Tables 25 and 26 contain a list of all towns that are split between Senate districts in the 2011 enacted plan.
- Table 27 contains a list of all towns that are split between Congressional districts in the Governor's plan.
- Table 28 contains a list of all towns that are split between Congressional districts in the 2011 enacted plan.

| <b>Town Name</b> | <b>County</b> | <b>Districts With % Town Population</b>             |
|------------------|---------------|---|
| Algoma           | Winnebago     | (53, 93.39%), (54, 6.61%)                           |
| Aztalan          | Jefferson     | (33, 38.42%), (38, 61.58%)                          |
| Beloit           | Rock          | (31, 34.17%), (45, 65.83%)                          |
| Berry            | Dane          | (79, 100.0%), (80, 0.0%)                            |
| Black Wolf       | Winnebago     | (53, 98.72%), (54, 1.28%)                           |
| Blooming Grove   | Dane          | (46, 16.58%), (47, 35.2%), (48, 48.21%), (77, 0.0%) |
| Brockway         | Jackson       | (70, 0.07%), (92, 99.93%)                           |
| Brookfield       | Waukesha      | (13, 69.6%), (15, 23.56%), (98, 0.0%), (22, 6.84%)  |
| Buchanan         | Outagamie     | (3, 100.0%), (57, 0.0%)                             |
| Burke            | Dane          | (37, 99.63%), (48, 0.37%)                           |
| Burlington       | Racine        | (32, 32.56%), (63, 67.44%)                          |
| Calumet          | Fond du Lac   | (52, 53.19%), (59, 46.81%)                          |
| Cameron          | Wood          | (69, 100.0%), (86, 0.0%)                            |
| Columbus         | Columbia      | (37, 1.44%), (42, 98.56%)                           |
| Cottage Grove    | Dane          | (46, 64.55%), (47, 35.45%)                          |
| Dale             | Outagamie     | (40, 25.06%), (56, 74.94%)                          |
| Delton           | Sauk          | (41, 1.02%), (81, 98.98%)                           |
| Dunkirk          | Dane          | (43, 35.94%), (46, 64.06%)                          |
| Dunn             | Dane          | (46, 41.17%), (47, 58.83%), (80, 0.0%)              |
| East Troy        | Walworth      | (32, 43.36%), (83, 56.64%)                          |
| Emmet            | Dodge         | (33, 74.96%), (38, 25.04%)                          |
| Fond du Lac      | Fond du Lac   | (52, 99.84%), (53, 0.16%)                           |
| Fort Winnebago   | Columbia      | (42, 99.51%), (81, 0.49%)                           |
| Franklin         | Sauk          | (50, 72.75%), (81, 27.25%)                          |
| Freedom          | Outagamie     | (5, 99.58%), (56, 0.42%)                            |

Table 17: Towns Split, Governor's Assembly Plan, A-F

| <b>Town Name</b>  | <b>County</b> | <b>Districts With % Town Population</b>               |
|-------------------|---------------|---|
| Genesee           | Waukesha      | (97, 54.72%), (99, 45.28%)                            |
| Germantown        | Washington    | (24, 100.0%), (58, 0.0%)                              |
| Grafton           | Ozaukee       | (23, 100.0%), (60, 0.0%),                             |
| Grand Chute       | Outagamie     | (55, 41.23%), (56, 51.23%), (57, 7.54%)               |
| Grant             | Portage       | (71, 20.36%), (72, 79.64%)                            |
| Harmony           | Rock          | (31, 99.53%), (44, 0.47%)                             |
| Hartford          | Washington    | (24, 46.74%), (58, 0.0%), (59, 53.26%)                |
| Hull              | Portage       | (70, 69.4%), (71, 30.6%)                              |
| Hustisford        | Dodge         | (33, 32.79%), (39, 67.21%)                            |
| Irving            | Jackson       | (70, 0.0%), (92, 100.0%)                              |
| Janesville        | Rock          | (43, 99.29%), (44, 0.71%)                             |
| Koshkonong        | Jefferson     | (33, 11.29%), (43, 88.71%)                            |
| La Prairie        | Rock          | (31, 27.68%), (44, 72.32%)                            |
| Ledgeview         | Brown         | (2, 64.4%), (88, 35.6%)                               |
| Lisbon            | Waukesha      | (22, 70.22%), (24, 18.37%), (98, 10.78%), (99, 0.63%) |
| Lowell            | Dodge         | (37, 37.99%), (38, 62.01%)                            |
| Lyndon            | Sheboygan     | (26, 32.04%), (59, 67.96%)                            |
| Madison           | Dane          | (47, 88.23%), (48, 10.49%), (77, 1.28%), (78, 0.0%)   |
| Manitowish Waters | Vilas         | (34, 100.0%), (74, 0.0%)                              |
| Medary            | La Crosse     | (94, 25.31%), (95, 74.69%)                            |
| Meeme             | Manitowoc     | (25, 59.51%), (27, 40.49%)                            |
| Merton            | Waukesha      | (22, 0.0%), (24, 10.37%), (99, 89.63%)                |
| Middleton         | Dane          | (78, 0.06%), (79, 99.94%)                             |
| Mukwonago         | Waukesha      | (83, 69.34%), (97, 30.66%)                            |
| Nashville         | Forest        | (35, 26.75%), (36, 73.25%)                            |
| New Holstein      | Calumet       | (27, 0.0%), (59, 100.0%)                              |
| Newport           | Columbia      | (41, 0.0%), (81, 100.0%)                              |

Table 18: Towns Split, Governor's Assembly Plan, G-N

| <b>Town Name</b> | <b>County</b> | <b>Districts With % Town Population</b> |
|------------------|---------------|---|
| Oconomowoc       | Waukesha      | (24, 48.7%), (99, 51.3%)                |
| Oregon           | Dane          | (43, 0.0%), (80, 100.0%)                |
| Oshkosh          | Winnebago     | (53, 98.03%), (54, 1.97%)               |
| Ottawa           | Waukesha      | (97, 58.34%), (99, 41.66%)              |
| Packwaukeee      | Marquette     | (41, 22.74%), (42, 77.26%)              |
| Plymouth         | Rock          | (43, 100.0%), (45, 0.0%)                |
| Randall          | Kenosha       | (32, 0.0%), (61, 100.0%)                |
| Rib Mountain     | Marathon      | (85, 0.0%), (86, 100.0%)                |
| Rock             | Rock          | (43, 99.63%), (44, 0.37%)               |
| Rubicon          | Dodge         | (33, 41.99%), (39, 58.01%)              |
| Rutland          | Dane          | (43, 99.85%), (80, 0.15%)               |
| Seymour          | Eau Claire    | (68, 100.0%), (91, 0.0%)                |
| Sheboygan        | Sheboygan     | (26, 0.0%), (27, 100.0%)                |
| Somers           | Kenosha       | (61, 17.54%), (64, 82.46%)              |
| St. Joseph       | St. Croix     | (29, 17.98%), (30, 82.02%)              |
| Stettin          | Marathon      | (85, 22.29%), (86, 77.71%)              |
| Sun Prairie      | Dane          | (37, 0.0%), (46, 100.0%)                |
| Sylvester        | Green         | (45, 100.0%), (51, 0.0%)                |
| Trenton          | Washington    | (58, 22.81%), (60, 77.19%)              |
| Union            | Eau Claire    | (67, 43.69%), (91, 0.56%), (93, 55.75%) |
| Verona           | Dane          | (47, 0.26%), (78, 0.36%), (80, 99.38%)  |
| Vienna           | Dane          | (42, 0.0%), (79, 100.0%)                |
| Warren           | St. Croix     | (29, 29.2%), (30, 70.8%)                |
| Washington       | Eau Claire    | (68, 0.05%), (91, 0.03%), (93, 99.92%)  |
| Waterford        | Racine        | (62, 51.52%), (83, 48.48%)              |
| Waukesha         | Waukesha      | (15, 9.08%), (84, 38.58%), (97, 52.34%) |
| Wheaton          | Chippewa      | (67, 100.0%), (91, 0.0%)                |
| Whitewater       | Walworth      | (31, 0.0%), (43, 100.0%)                |

Table 19: Towns Split, Governor's Assembly Plan, O-W

| <b>Town Name</b> | <b>County</b> | <b>Districts With % Town Population</b>  |
|------------------|---------------|--|
| Algoma           | Winnebago     | (53, 100.0%), (54, 0.0%)                 |
| Alto             | Fond du Lac   | (42, 100.0%), (53, 0.0%)                 |
| Beaver Brook     | Washburn      | (73, 0.0%), (75, 100.0%)                 |
| Beloit           | Rock          | (31, 34.17%), (45, 65.83%)               |
| Benton           | Lafayette     | (49, 100.0%), (51, 0.0%)                 |
| Blooming Grove   | Dane          | (47, 99.45%), (48, 0.55%), (77, 0.0%)    |
| Brockway         | Jackson       | (70, 0.07%), (92, 99.93%)                |
| Brookfield       | Waukesha      | (13, 93.16%), (14, 6.84%)                |
| Buchanan         | Outagamie     | (3, 100.0%), (57, 0.0%)                  |
| Burke            | Dane          | (46, 0.0%), (48, 1.75%), (79, 98.25%)    |
| Burlington       | Racine        | (32, 32.56%), (63, 67.44%)               |
| Calumet          | Fond du Lac   | (52, 53.19%), (59, 46.81%)               |
| Cameron          | Wood          | (69, 100.0%), (86, 0.0%)                 |
| Columbus         | Columbia      | (37, 1.44%), (42, 98.56%)                |
| Cottage Grove    | Dane          | (46, 64.55%), (47, 35.45%), (48, 0.0%)   |
| Cross Plains     | Dane          | (79, 0.74%), (80, 99.26%)                |
| Crystal          | Washburn      | (73, 0.0%), (75, 100.0%)                 |
| Delton           | Sauk          | (41, 1.42%), (81, 98.58%)                |
| Dunkirk          | Dane          | (43, 35.94%), (46, 64.06%)               |
| Dunn             | Dane          | (47, 100.0%), (80, 0.0%)                 |
| Eagle Point      | Chippewa      | (67, 100.0%), (68, 0.0%)                 |
| East Troy        | Walworth      | (32, 43.36%), (33, 36.45%), (83, 20.19%) |
| Fond du Lac      | Fond du Lac   | (52, 99.84%), (53, 0.16%)                |
| Fort Winnebago   | Columbia      | (42, 99.51%), (81, 0.49%)                |
| Genesee          | Waukesha      | (97, 37.94%), (99, 62.06%)               |
| Germantown       | Washington    | (24, 100.0%), (58, 0.0%)                 |
| Glenmore         | Brown         | (2, 0.0%), (88, 100.0%)                  |
| Goetz            | Chippewa      | (67, 100.0%), (68, 0.0%)                 |
| Grafton          | Ozaukee       | (23, 100.0%), (60, 0.0%)                 |
| Grand Chute      | Outagamie     | (55, 48.77%), (56, 51.23%)               |

Table 20: Towns Split, 2011 Assembly Plan, A-Grand

| <b>Town Name</b>  | <b>County</b> | <b>Districts With % Town Population</b>            |
|-------------------|---------------|--|
| Grant             | Shawano       | (6, 100.0%), (40, 0.0%)                            |
| Grant             | Portage       | (71, 20.36%), (72, 79.64%)                         |
| Greenville        | Outagamie     | (55, 20.28%), (56, 79.72%)                         |
| Grover            | Marinette     | (36, 0.0%), (89, 100.0%)                           |
| Harmony           | Rock          | (31, 99.53%), (44, 0.47%)                          |
| Hartford          | Washington    | (58, 0.0%), (59, 100.0%)                           |
| Hull              | Portage       | (70, 99.87%), (71, 0.13%)                          |
| Irving            | Jackson       | (70, 0.0%), (92, 100.0%)                           |
| Janesville        | Rock          | (43, 99.29%), (44, 0.71%)                          |
| Koshkonong        | Jefferson     | (33, 11.29%), (43, 88.71%)                         |
| La Prairie        | Rock          | (31, 100.0%), (44, 0.0%)                           |
| Larrabee          | Waupaca       | (6, 0.0%), (40, 100.0%)                            |
| Ledgeview         | Brown         | (2, 45.27%), (88, 54.73%)                          |
| Lisbon            | Waukesha      | (22, 88.59%), (98, 10.78%), (99, 0.63%)            |
| Little Rice       | Oneida        | (34, 0.0%), (35, 100.0%)                           |
| Lowell            | Dodge         | (37, 55.23%), (39, 44.77%)                         |
| Madison           | Dane          | (47, 98.38%), (76, 0.34%), (77, 1.28%), (78, 0.0%) |
| Manitowish Waters | Vilas         | (34, 100.0%), (74, 0.0%)                           |
| Martell           | Pierce        | (30, 0.0%), (93, 100.0%)                           |
| Meeme             | Manitowoc     | (25, 59.51%), (27, 40.49%)                         |
| Merton            | Waukesha      | (22, 0.0%), (99, 100.0%)                           |
| Middleton         | Dane          | (78, 0.06%), (79, 99.94%)                          |
| Mount Pleasant    | Green         | (45, 55.74%), (80, 44.26%)                         |
| Mukwonago         | Waukesha      | (33, 69.3%), (97, 30.6%), (99, 0.1%)               |
| Nashville         | Forest        | (34, 0.0%), (36, 100.0%)                           |
| New Holstein      | Calumet       | (27, 0.0%), (59, 100.0%)                           |
| Newport           | Columbia      | (41, 0.0%), (81, 100.0%)                           |
| Oconomowoc        | Waukesha      | (38, 99.2%), (99, 0.8%)                            |
| Oregon            | Dane          | (43, 0.0%), (80, 100.0%)                           |
| Oshkosh           | Winnebago     | (53, 100.0%), (54, 0.0%)                           |

Table 21: Towns Split, 2011 Assembly Plan, Grant-O

| <b>Town Name</b> | <b>County</b> | <b>Districts With % Town Population</b>              |
|------------------|---------------|--|
| Plymouth         | Rock          | (43, 100.0%), (45, 0.0%)                             |
| Port Edwards     | Wood          | (70, 100.0%), (72, 0.0%)                             |
| Randall          | Kenosha       | (32, 0.0%), (61, 100.0%)                             |
| Richfield        | Adams         | (41, 0.0%), (72, 100.0%)                             |
| Richmond         | St. Croix     | (29, 52.23%), (30, 47.77%)                           |
| Rock             | Rock          | (43, 99.63%), (44, 0.37%)                            |
| Rudolph          | Wood          | (70, 100.0%), (72, 0.0%)                             |
| Rutland          | Dane          | (43, 99.85%), (80, 0.15%)                            |
| Seymour          | Eau Claire    | (68, 100.0%), (91, 0.0%)                             |
| Sheboygan        | Sheboygan     | (26, 0.0%), (27, 100.0%)                             |
| Shelby           | La Crosse     | (94, 62.99%), (95, 37.01%)                           |
| Somers           | Kenosha       | (61, 17.54%), (64, 82.46%)                           |
| Stettin          | Marathon      | (85, 0.35%), (86, 99.65%)                            |
| Tomah            | Monroe        | (70, 0.0%), (96, 100.0%)                             |
| Trenton          | Washington    | (58, 22.81%), (60, 77.19%)                           |
| Union            | Eau Claire    | (91, 0.56%), (93, 99.44%)                            |
| Verona           | Dane          | (47, 0.26%), (78, 0.36%), (79, 32.51%), (80, 66.87%) |
| Vienna           | Dane          | (37, 0.0%), (79, 100.0%)                             |
| Washington       | Eau Claire    | (68, 0.05%), (91, 0.03%), (93, 99.92%)               |
| Washington       | Green         | (45, 0.0%), (80, 100.0%)                             |
| Waterloo         | Jefferson     | (37, 0.0%), (38, 100.0%)                             |
| Watertown        | Jefferson     | (37, 0.0%), (38, 100.0%)                             |
| Waukesha         | Waukesha      | (83, 38.58%), (97, 61.42%)                           |
| Wellington       | Monroe        | (50, 0.0%), (96, 100.0%)                             |
| Westford         | Dodge         | (39, 1.37%), (42, 98.63%)                            |
| Westport         | Dane          | (48, 0.0%), (79, 100.0%)                             |
| Wheaton          | Chippewa      | (67, 100.0%), (91, 0.0%)                             |
| Whitewater       | Walworth      | (31, 0.0%), (43, 100.0%)                             |
| Woodville        | Calumet       | (3, 100.0%), (25, 0.0%)                              |

Table 22: Towns Split, 2011 Assembly Plan, P-W

| <b>Town Name</b> | <b>County</b> | <b>Districts With % Town Population</b> |
|------------------|---------------|---|
| Aztalan          | Jefferson     | (11, 38.42%), (13, 61.58%)              |
| Beloit           | Rock          | (11, 34.17%), (15, 65.83%)              |
| Blooming Grove   | Dane          | (16, 100.0%), (26, 0.0%)                |
| Brockway         | Jackson       | (24, 0.07%), (31, 99.93%)               |
| Brookfield       | Waukesha      | (5, 93.16%), (8, 6.84%), (33, 0.0%)     |
| Buchanan         | Outagamie     | (1, 100.0%), (19, 0.0%)                 |
| Burke            | Dane          | (13, 99.63%), (16, 0.37%)               |
| Burlington       | Racine        | (11, 32.56%), (21, 67.44%)              |
| Calumet          | Fond du Lac   | (18, 53.19%), (20, 46.81%)              |
| Cameron          | Wood          | (23, 100.0%), (29, 0.0%)                |
| Columbus         | Columbia      | (13, 1.44%), (14, 98.56%)               |
| Dale             | Outagamie     | (14, 25.06%), (19, 74.94%)              |
| Delton           | Sauk          | (14, 1.02%), (27, 98.98%)               |
| Dunkirk          | Dane          | (15, 35.94%), (16, 64.06%)              |
| Dunn             | Dane          | (16, 100.0%), (27, 0.0%)                |
| East Troy        | Walworth      | (11, 43.36%), (28, 56.64%)              |
| Emmet            | Dodge         | (11, 74.96%), (13, 25.04%)              |
| Fort Winnebago   | Columbia      | (14, 99.51%), (27, 0.49%)               |
| Franklin         | Sauk          | (17, 72.75%), (27, 27.25%)              |
| Freedom          | Outagamie     | (2, 99.58%), (19, 0.42%)                |
| Germantown       | Washington    | (8, 100.0%), (20, 0.0%)                 |
| Grafton          | Ozaukee       | (8, 100.0%), (20, 0.0%)                 |
| Harmony          | Rock          | (11, 99.53%), (15, 0.47%)               |
| Hartford         | Washington    | (8, 46.74%), (20, 53.26%)               |
| Hustisford       | Dodge         | (11, 32.79%), (13, 67.21%)              |
| Irving           | Jackson       | (24, 0.0%), (31, 100.0%)                |
| Koshkonong       | Jefferson     | (11, 11.29%), (15, 88.71%)              |

Table 23: Towns Split, Governor's Senate Plan, A-K



| <b>Town Name</b>  | <b>County</b> | <b>Districts With % Town Population</b> |
|-------------------|---------------|---|
| La Prairie        | Rock          | (11, 27.68%), (15, 72.32%)              |
| Ledgeview         | Brown         | (1, 64.4%), (30, 35.6%)                 |
| Lisbon            | Waukesha      | (8, 88.59%), (33, 11.41%)               |
| Lyndon            | Sheboygan     | (9, 32.04%), (20, 67.96%)               |
| Madison           | Dane          | (16, 98.72%), (26, 1.28%)               |
| Manitowish Waters | Vilas         | (12, 100.0%), (25, 0.0%)                |
| Merton            | Waukesha      | (8, 10.37%), (33, 89.63%)               |
| Middleton         | Dane          | (26, 0.06%), (27, 99.94%)               |
| Mukwonago         | Waukesha      | (28, 69.34%), (33, 30.66%)              |
| New Holstein      | Calumet       | (9, 0.0%), (20, 100.0%)                 |
| Newport           | Columbia      | (14, 0.0%), (27, 100.0%)                |
| Oconomowoc        | Waukesha      | (8, 48.7%), (33, 51.3%)                 |
| Oregon            | Dane          | (15, 0.0%), (27, 100.0%)                |
| Randall           | Kenosha       | (11, 0.0%), (21, 100.0%)                |
| Rubicon           | Dodge         | (11, 41.99%), (13, 58.01%)              |
| Rutland           | Dane          | (15, 99.85%), (27, 0.15%)               |
| Seymour           | Eau Claire    | (23, 100.0%), (31, 0.0%)                |
| Somers            | Kenosha       | (21, 17.54%), (22, 82.46%)              |
| Sun Prairie       | Dane          | (13, 0.0%), (16, 100.0%)                |
| Sylvester         | Green         | (15, 100.0%), (17, 0.0%)                |
| Union             | Eau Claire    | (23, 43.69%), (31, 56.31%)              |
| Verona            | Dane          | (16, 0.26%), (26, 0.36%), (27, 99.38%)  |
| Vienna            | Dane          | (14, 0.0%), (27, 100.0%)                |
| Washington        | Eau Claire    | (23, 0.05%), (31, 99.95%)               |
| Waterford         | Racine        | (21, 51.52%), (28, 48.48%)              |
| Waukesha          | Waukesha      | (5, 9.08%), (28, 38.58%), (33, 52.34%)  |
| Wheaton           | Chippewa      | (23, 100.0%), (31, 0.0%)                |
| Whitewater        | Walworth      | (11, 0.0%), (15, 100.0%)                |

Table 24: Towns Split, Governor's Senate Plan, L-W

| <b>Town Name</b> | <b>County</b> | <b>Districts With % Town Population</b> |
|------------------|---------------|---|
| Alto             | Fond du Lac   | (14, 100.0%), (18, 0.0%)                |
| Beloit           | Rock          | (11, 34.17%), (15, 65.83%)              |
| Blooming Grove   | Dane          | (16, 100.0%), (26, 0.0%)                |
| Brockway         | Jackson       | (24, 0.07%), (31, 99.93%)               |
| Buchanan         | Outagamie     | (1, 100.0%), (19, 0.0%)                 |
| Burke            | Dane          | (16, 1.75%), (27, 98.25%)               |
| Burlington       | Racine        | (11, 32.56%), (21, 67.44%)              |
| Calumet          | Fond du Lac   | (18, 53.19%), (20, 46.81%)              |
| Cameron          | Wood          | (23, 100.0%), (29, 0.0%)                |
| Columbus         | Columbia      | (13, 1.44%), (14, 98.56%)               |
| Delton           | Sauk          | (14, 1.42%), (27, 98.58%)               |
| Dunkirk          | Dane          | (15, 35.94%), (16, 64.06%)              |
| Dunn             | Dane          | (16, 100.0%), (27, 0.0%)                |
| East Troy        | Walworth      | (11, 79.81%), (28, 20.19%)              |
| Fort Winnebago   | Columbia      | (14, 99.51%), (27, 0.49%)               |
| Germantown       | Washington    | (8, 100.0%), (20, 0.0%)                 |
| Glenmore         | Brown         | (1, 0.0%), (30, 100.0%)                 |
| Grafton          | Ozaukee       | (8, 100.0%), (20, 0.0%)                 |
| Grant            | Shawano       | (2, 100.0%), (14, 0.0%)                 |
| Grover           | Marinette     | (12, 0.0%), (30, 100.0%)                |
| Harmony          | Rock          | (11, 99.53%), (15, 0.47%)               |
| Irving           | Jackson       | (24, 0.0%), (31, 100.0%)                |
| Koshkonong       | Jefferson     | (11, 11.29%), (15, 88.71%)              |
| La Prairie       | Rock          | (11, 100.0%), (15, 0.0%)                |
| Larrabee         | Waupaca       | (2, 0.0%), (14, 100.0%)                 |
| Ledgeview        | Brown         | (1, 45.27%), (30, 54.73%)               |
| Lisbon           | Waukesha      | (8, 88.59%), (33, 11.41%)               |

Table 25: Towns Split, 2011 Senate Plan, A-L

| <b>Town Name</b>  | <b>County</b> | <b>Districts With % Town Population</b> |
|-------------------|---------------|---|
| Madison           | Dane          | (16, 98.38%), (26, 1.62%)               |
| Manitowish Waters | Vilas         | (12, 100.0%), (25, 0.0%)                |
| Martell           | Pierce        | (10, 0.0%), (31, 100.0%)                |
| Merton            | Waukesha      | (8, 0.0%), (33, 100.0%)                 |
| Middleton         | Dane          | (26, 0.06%), (27, 99.94%)               |
| Mount Pleasant    | Green         | (15, 55.74%), (27, 44.26%)              |
| Mukwonago         | Waukesha      | (11, 69.3%), (33, 30.7%)                |
| New Holstein      | Calumet       | (9, 0.0%), (20, 100.0%)                 |
| Newport           | Columbia      | (14, 0.0%), (27, 100.0%)                |
| Oconomowoc        | Waukesha      | (13, 99.2%), (33, 0.8%)                 |
| Oregon            | Dane          | (15, 0.0%), (27, 100.0%)                |
| Randall           | Kenosha       | (11, 0.0%), (21, 100.0%)                |
| Richfield         | Adams         | (14, 0.0%), (24, 100.0%)                |
| Rutland           | Dane          | (15, 99.85%), (27, 0.15%)               |
| Seymour           | Eau Claire    | (23, 100.0%), (31, 0.0%)                |
| Somers            | Kenosha       | (21, 17.54%), (22, 82.46%)              |
| Tomah             | Monroe        | (24, 0.0%), (32, 100.0%)                |
| Verona            | Dane          | (16, 0.26%), (26, 0.36%), (27, 99.38%)  |
| Vienna            | Dane          | (13, 0.0%), (27, 100.0%)                |
| Washington        | Eau Claire    | (23, 0.05%), (31, 99.95%)               |
| Washington        | Green         | (15, 0.0%), (27, 100.0%)                |
| Waukesha          | Waukesha      | (28, 38.58%), (33, 61.42%)              |
| Wellington        | Monroe        | (17, 0.0%), (32, 100.0%)                |
| Westford          | Dodge         | (13, 1.37%), (14, 98.63%)               |
| Westport          | Dane          | (16, 0.0%), (27, 100.0%)                |
| Wheaton           | Chippewa      | (23, 100.0%), (31, 0.0%)                |
| Whitewater        | Walworth      | (11, 0.0%), (15, 100.0%)                |
| Woodville         | Calumet       | (1, 100.0%), (9, 0.0%)                  |

Table 26: Towns Split, 2011 Senate Plan, M-W

| <b>Town Name</b> | <b>County</b> | <b>Districts With % Town Population</b> |
|------------------|---------------|---|
| Alma             | Jackson       | (3, 60.31%), (7, 39.69%)                |
| Beaver Dam       | Dodge         | (5, 66.74%), (6, 33.26%)                |
| Beloit           | Rock          | (1, 31.67%), (2, 68.33%)                |
| Clayton          | Winnebago     | (6, 73.83%), (8, 26.17%)                |
| Clearfield       | Juneau        | (3, 22.08%), (7, 77.92%)                |
| Eagle Point      | Chippewa      | (3, 0.0%), (7, 100.0%)                  |
| East Troy        | Walworth      | (1, 0.08%), (5, 99.92%)                 |
| Garfield         | Jackson       | (3, 100.0%), (7, 0.0%)                  |
| Germantown       | Juneau        | (3, 49.02%), (7, 50.98%)                |
| Ironton          | Sauk          | (2, 15.11%), (3, 84.89%)                |
| Janesville       | Rock          | (1, 82.89%), (2, 17.11%)                |
| Knapp            | Jackson       | (3, 0.0%), (7, 100.0%)                  |
| La Grange        | Monroe        | (3, 6.26%), (7, 93.74%)                 |
| La Prairie       | Rock          | (1, 72.32%), (2, 27.68%)                |
| Lisbon           | Juneau        | (3, 99.26%), (7, 0.74%)                 |
| Lomira           | Dodge         | (5, 0.36%), (6, 99.64%)                 |
| Rock             | Rock          | (1, 12.68%), (2, 87.32%)                |
| Theresa          | Dodge         | (5, 60.61%), (6, 39.39%)                |
| Turtle           | Rock          | (1, 73.67%), (2, 26.33%)                |
| Westford         | Dodge         | (5, 1.37%), (6, 98.63%)                 |
| Winchester       | Winnebago     | (6, 6.63%), (8, 93.37%)                 |
| Wolf River       | Winnebago     | (6, 99.25%), (8, 0.75%)                 |

Table 27: Towns Split, Governor's Congressional Plan

| <b>Town Name</b> | <b>County</b> | <b>Districts With % Town Population</b> |
|------------------|---------------|---|
| Alma             | Jackson       | (3, 60.21%), (7, 39.79%)                |
| Anson            | Chippewa      | (3, 0.74%), (7, 99.26%)                 |
| Beaver Dam       | Dodge         | (5, 46.04%), (6, 53.96%)                |
| Buena Vista      | Richland      | (2, 99.56%), (3, 0.44%)                 |
| Clearfield       | Juneau        | (3, 22.08%), (7, 77.92%)                |
| Eagle Point      | Chippewa      | (3, 0.0%), (7, 100.0%)                  |
| Garfield         | Jackson       | (3, 100.0%), (7, 0.0%)                  |
| Germantown       | Juneau        | (3, 49.02%), (7, 50.98%)                |
| Goetz            | Chippewa      | (3, 97.79%), (7, 2.21%)                 |
| Harmony          | Rock          | (1, 69.13%), (2, 30.87%)                |
| Hubbard          | Dodge         | (5, 99.89%), (6, 0.11%)                 |
| Janesville       | Rock          | (1, 9.25%), (2, 90.75%)                 |
| Knapp            | Jackson       | (3, 0.0%), (7, 100.0%)                  |
| La Grange        | Monroe        | (3, 6.26%), (7, 93.74%)                 |
| La Prairie       | Rock          | (1, 72.32%), (2, 27.68%)                |
| Lisbon           | Juneau        | (3, 99.26%), (7, 0.74%)                 |
| Lomira           | Dodge         | (5, 0.36%), (6, 99.64%)                 |
| Milton           | Rock          | (1, 23.06%), (2, 76.94%)                |
| Oak Grove        | Dodge         | (5, 98.93%), (6, 1.07%)                 |
| Oshkosh          | Winnebago     | (6, 98.15%), (8, 1.85%)                 |
| Rock             | Rock          | (1, 12.68%), (2, 87.32%)                |
| Theresa          | Dodge         | (5, 60.61%), (6, 39.39%)                |
| Turtle           | Rock          | (1, 55.16%), (2, 44.84%)                |
| Vinland          | Winnebago     | (6, 98.59%), (8, 1.41%)                 |
| Waukesha         | Waukesha      | (1, 81.55%), (5, 18.45%)                |
| Westford         | Dodge         | (5, 1.37%), (6, 98.63%)                 |
| Whitewater       | Walworth      | (1, 93.72%), (5, 6.28%)                 |
| Winneconne       | Winnebago     | (6, 0.19%), (8, 99.81%)                 |
| Wolf River       | Winnebago     | (6, 71.74%), (8, 28.26%)                |

Table 28: Towns Split, 2011 Congressional Plan