WISE-LR

Wisconsin's Local Redistricting Software

Legislative Technology Services Bureau

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GIS Manager

What is WISE-LR?

- In the State of Wisconsin, the Legislative Technology Services Bureau (LTSB) is responsible for providing technology and making the census data available for local redistricting.

- The local redistricting application, called **WISE-LR** (**Wi**sconsin **S**hape **E**ditor for **L**ocal **R**edistricting) is developed in-house by LTSB.
  - WISE-LR is a custom designed **web application** developed specifically for the state statutes of Wisconsin and local redistricting laws in 2021.
  - WISE-LR allows local officials, or their delegates, to create, analyze, and share **county supervisory plans**, **municipal ward plans**, and **aldermanic plans** with accurate demographic data.

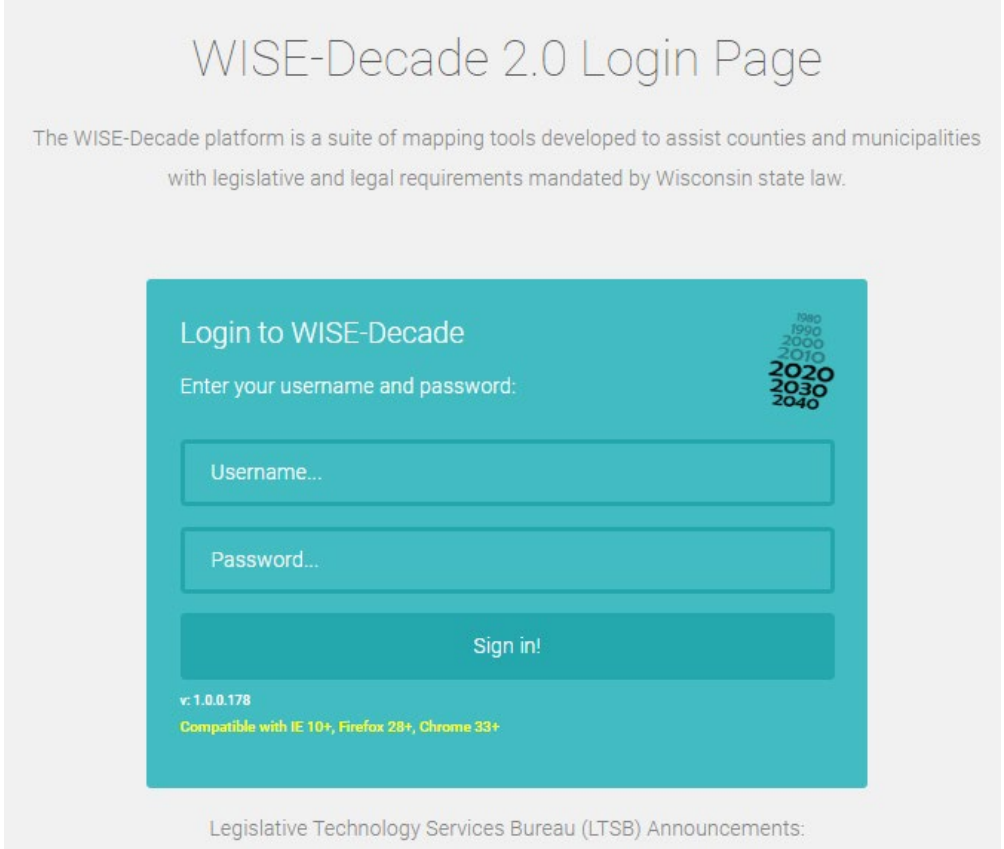
- WISE-LR is built within the WISE-Decade suite of tools that has been utilized by all 72 Wisconsin counties for several years through varying data collection processes.
  - It does not require any downloaded data or purchased software.
  - All that is needed is a computer with internet access.

WISE-LR Overview

- WISE-LR Administrator
  - Guides you through the stages and timeline of local redistricting and oversee the processes that require input from various jurisdictions.
  - Confirm Block Lines and create Supervisory Districts, Municipal Wards, and Aldermanic Districts.
- WISE-LR Editor
  - Map-portion that is accessed through each plan phase and is used to geographically create the new plan boundaries.
- The WISE-LR user interface is where both the WISE-LR Administrator and WISE-LR Editor are accessed.

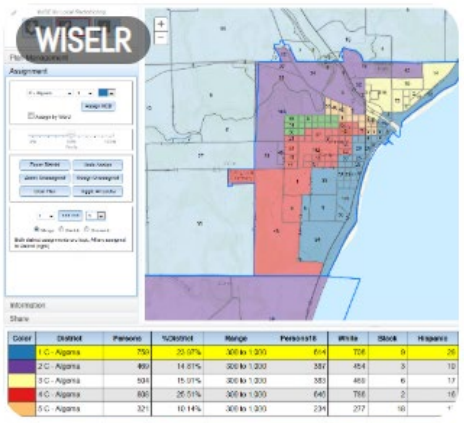
Logging into WISE-LR

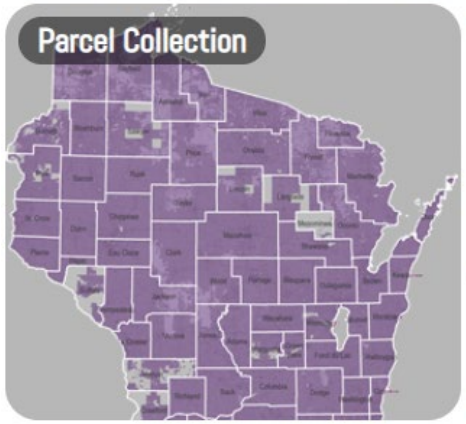
- Username for every user is your county name
  - e.g. “Dane”, “Iowa”, “Eau_Claire”
- Normal WISE-Decade Password
  - Allows access to entire WISE-Decade platform
  - Sent to County Clerk, LIO, & their designees twice a year for BAS/Ward, Parcel, Foundational layer collections.
- WISE-LR Only Password
  - Only allows access to the WISE-LR system
  - Send to Municipal users, or any County user outside of the County Clerk and LIO. This is to ensure that only designated county officials may change or submit to unrelated programs.

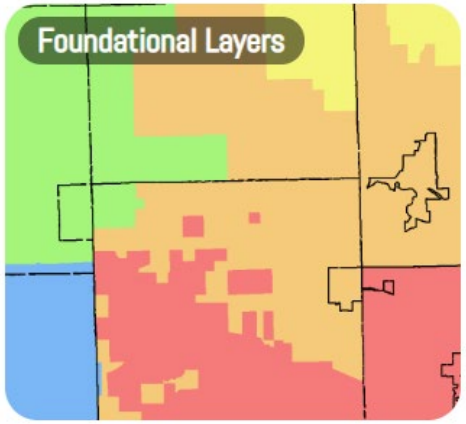


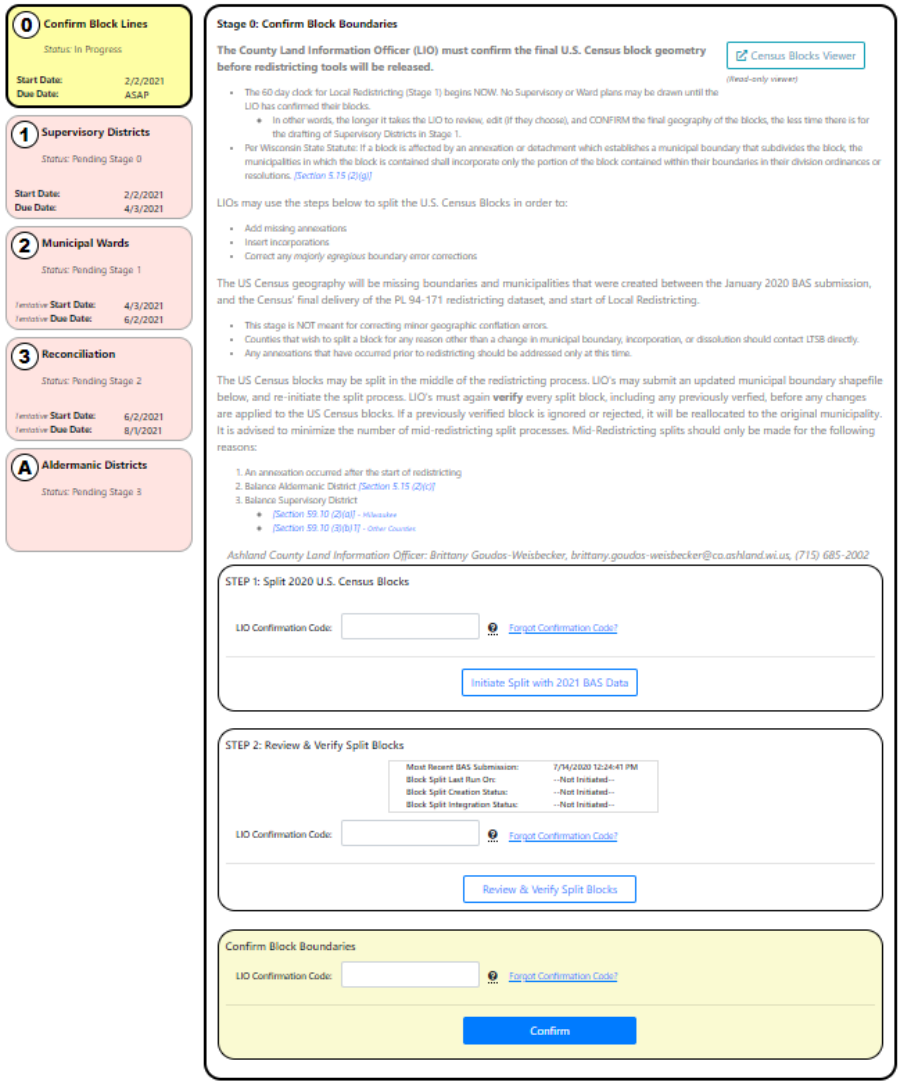
WISE-Decade and WISE-LR URL

https://wisedecade.legis.wisconsin.gov









WISE-LR Administrator

0 Confirm Block Lines

Status: In Progress

Start Date: 2/2/2021
Due Date: ASAP

1 Supervisory Districts

Status: Pending Stage 0

Start Date: 2/2/2021
Due Date: 4/3/2021

2 Municipal Wards

Status: Pending Stage 1

Tentative **Start Date:** 4/3/2021
Tentative **Due Date:** 6/2/2021

3 Reconciliation

Status: Pending Stage 2

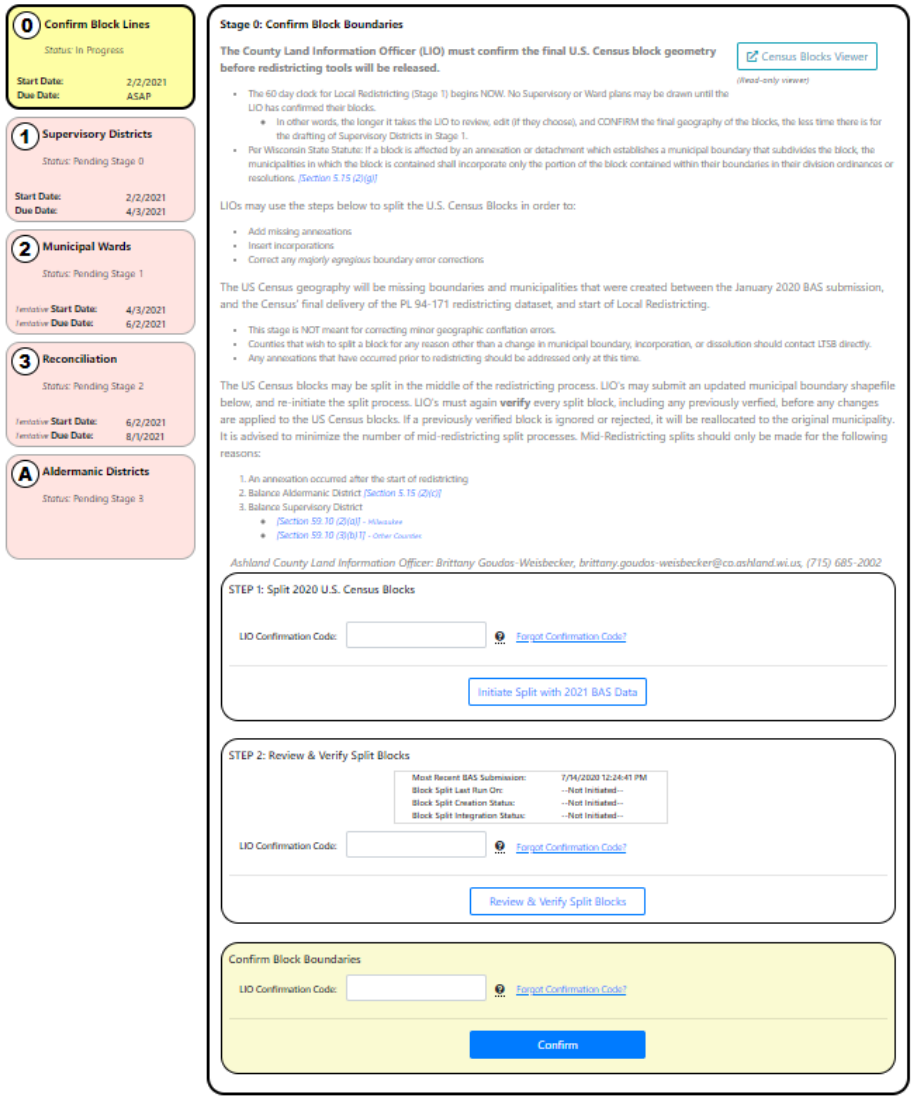
Tentative **Start Date:** 6/2/2021
Tentative **Due Date:** 8/1/2021

A Aldermanic Districts

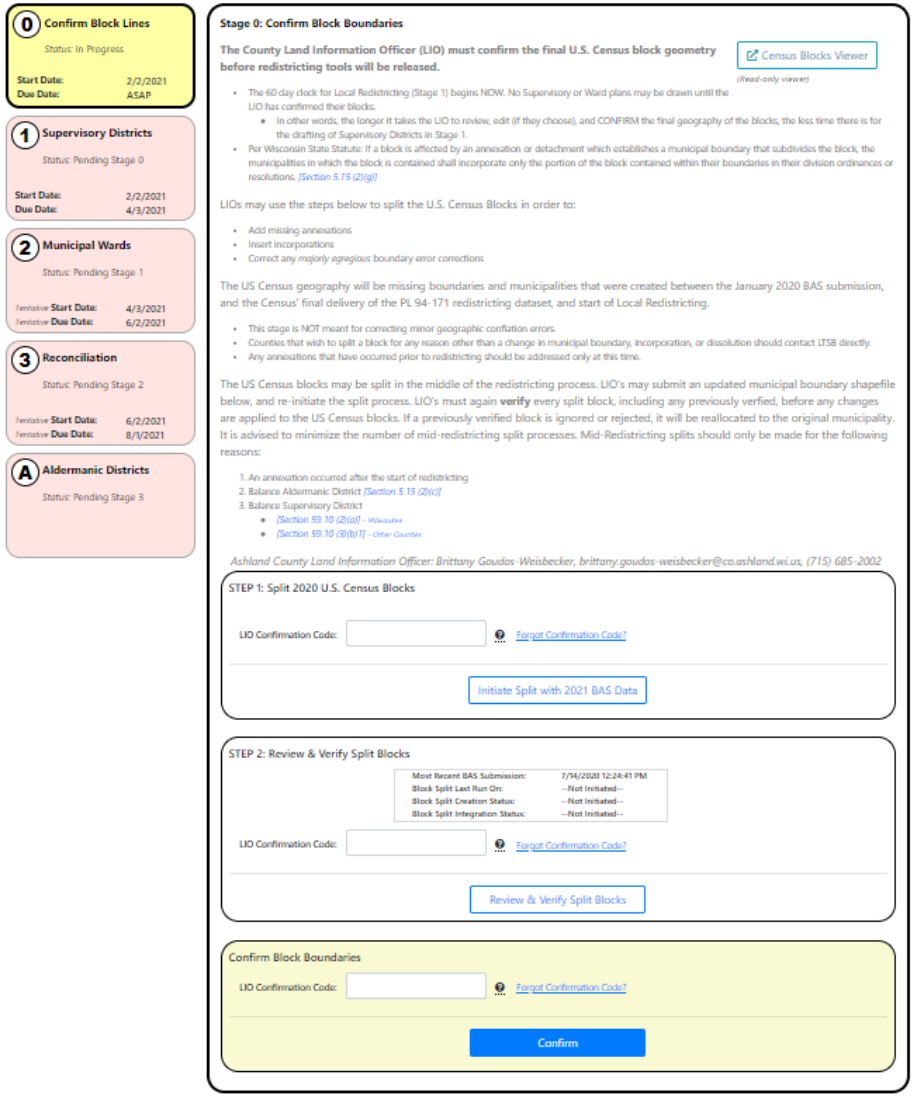
Status: Pending Stage 3

Admin Console:

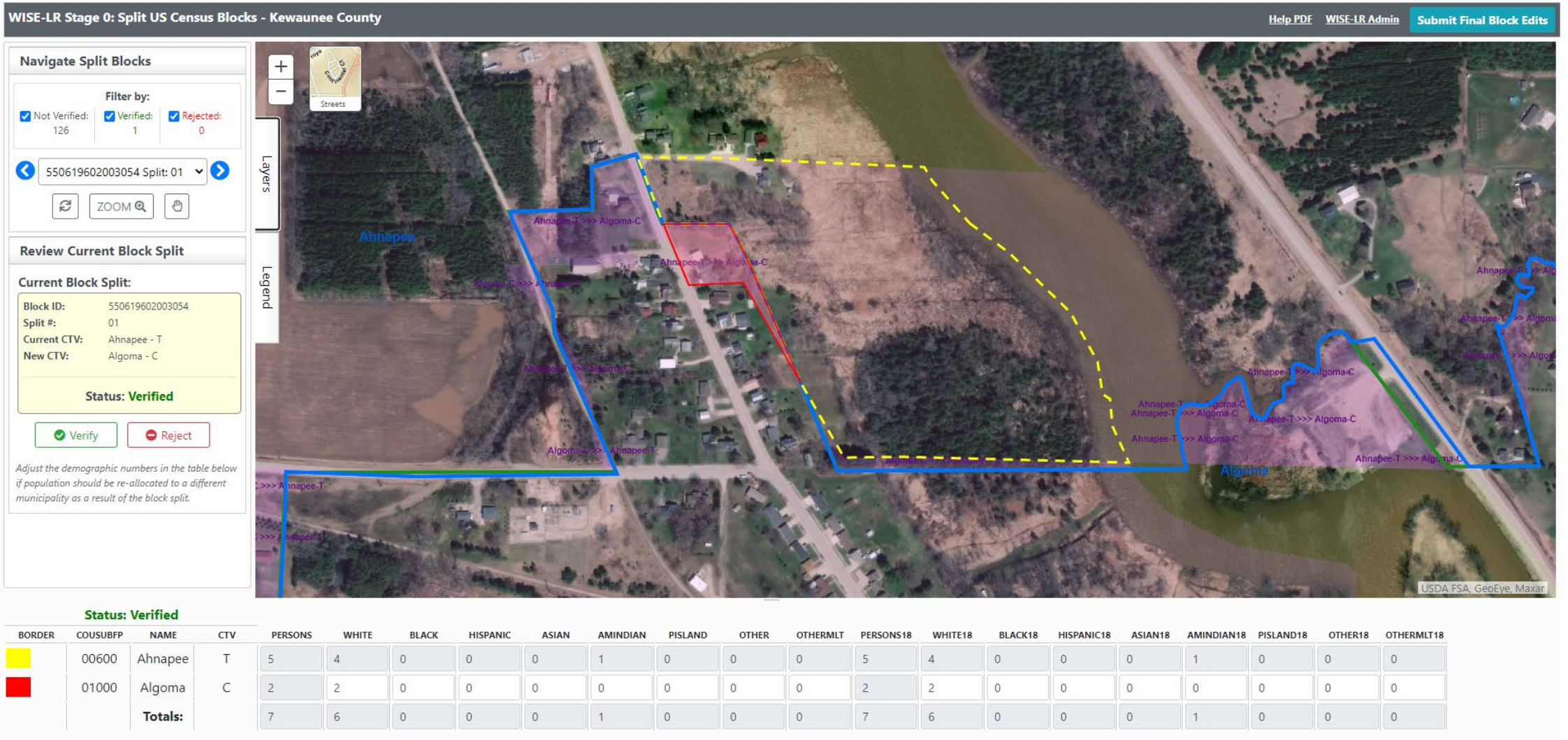
- Five potential stages of local redistricting
- Includes status and specific deadline for each stage



Stage 0: Confirm Block Boundaries



Stage 0: Confirm Block Boundaries

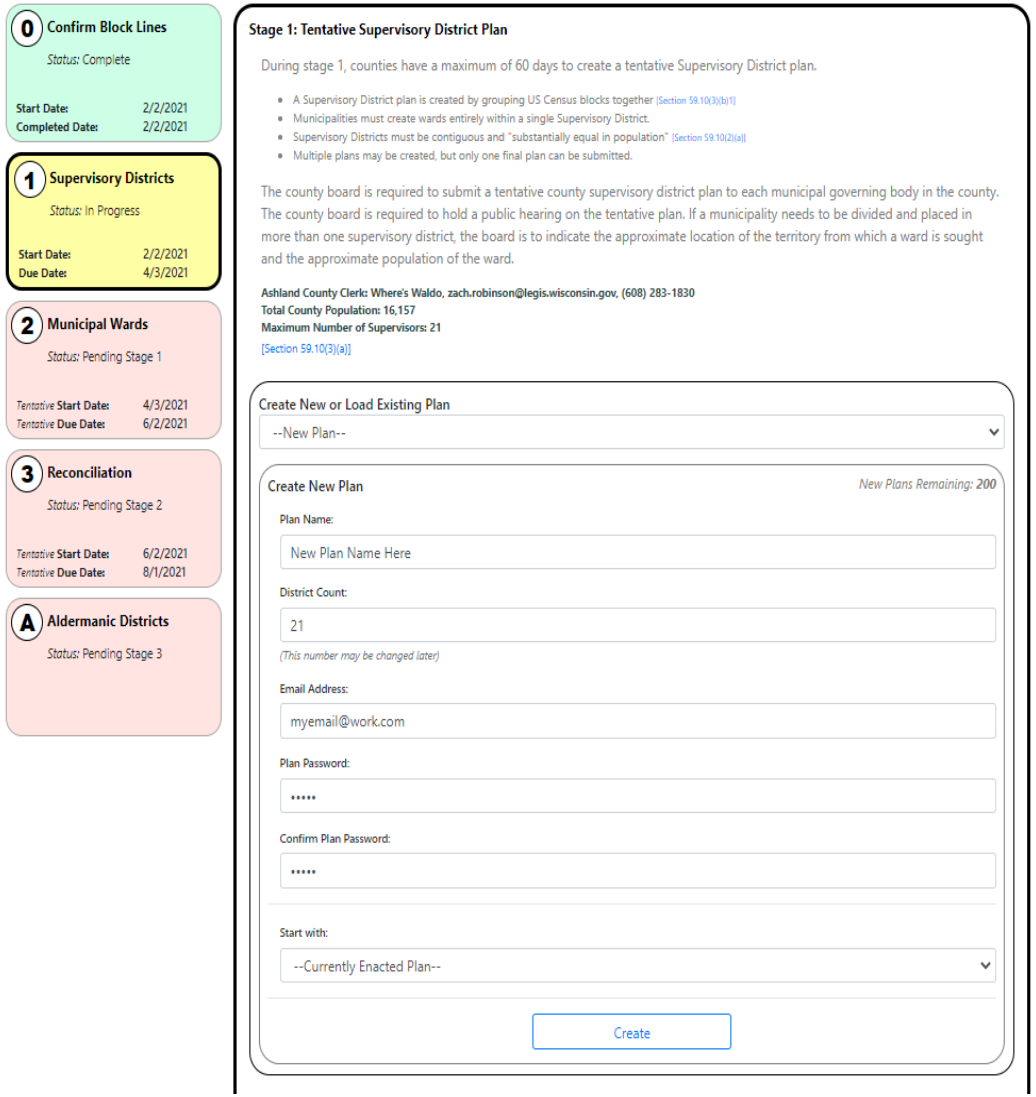


Status: Verified

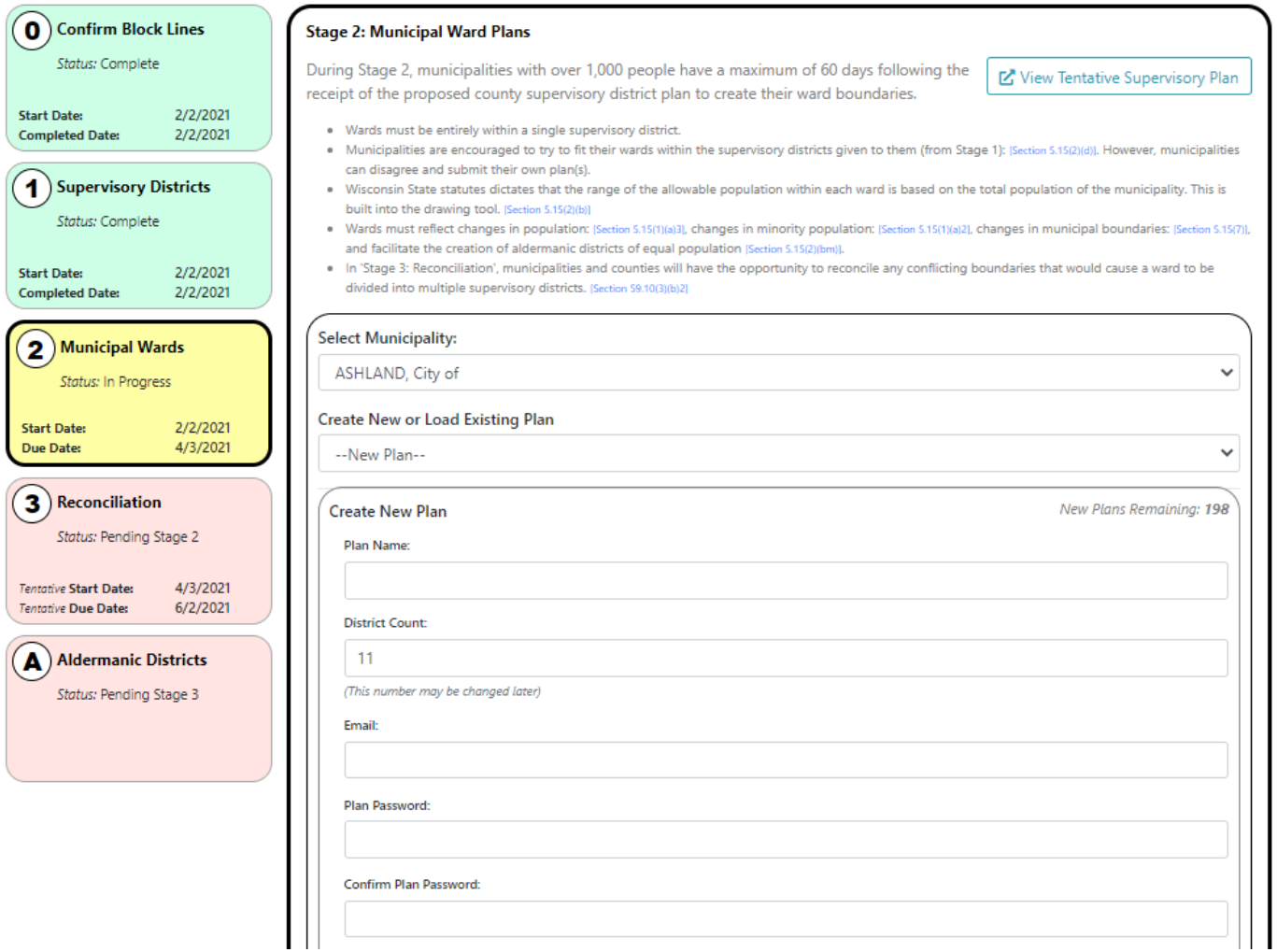
BORDER	COUSUBFP	NAME	CTV	PERSONS	WHITE	BLACK	HISPANIC	ASIAN	AMINDIAN	PISLAND	OTHER	OTHERMLT	PERSONS18	WHITE18	BLACK18	HISPANIC18	ASIAN18	AMINDIAN18	PISLAND18	OTHER18	OTHERMLT18
	00600	Ahnapee	T	5	4	0	0	0	1	0	0	0	5	4	0	0	0	1	0	0	0
	01000	Algoma	C	2	2	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0
		Totals:		7	6	0	0	0	1	0	0	0	7	6	0	0	0	1	0	0	0

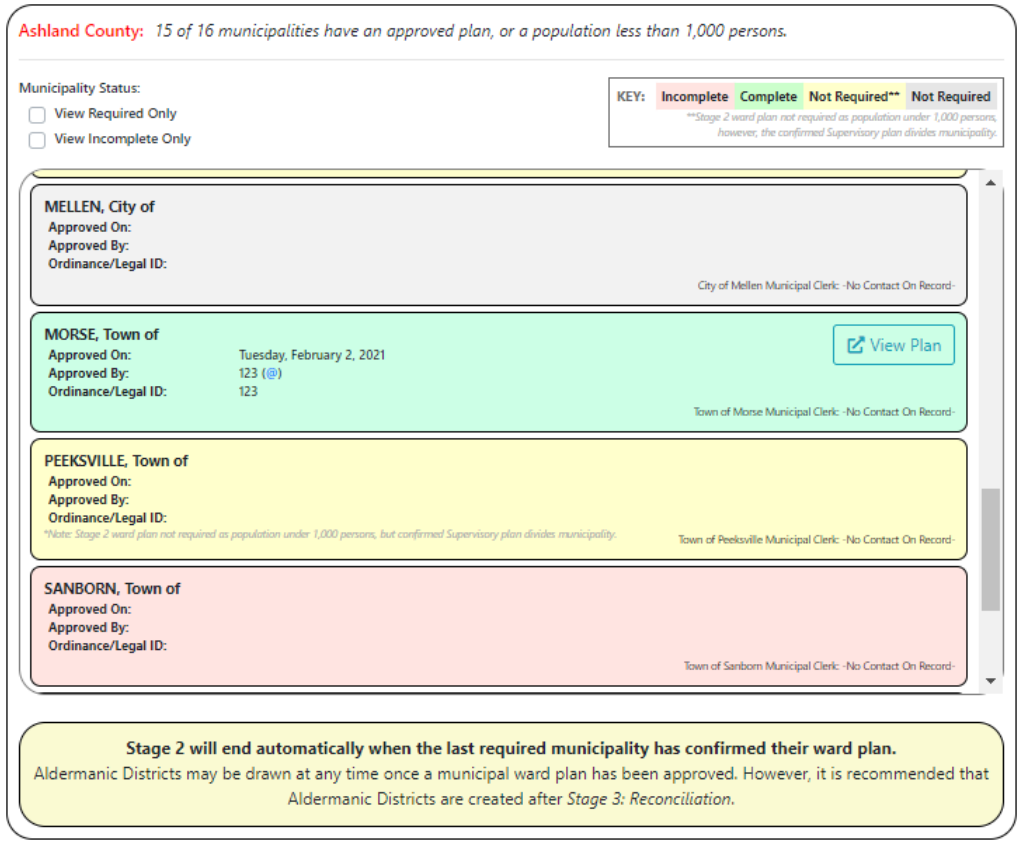
Stage 1: Tentative Supervisory District Plan

- A **Supervisory District plan** is created by grouping **US Census blocks** together.
- During Stage 1, counties have a maximum of **60 days** to create a tentative Supervisory District plan.

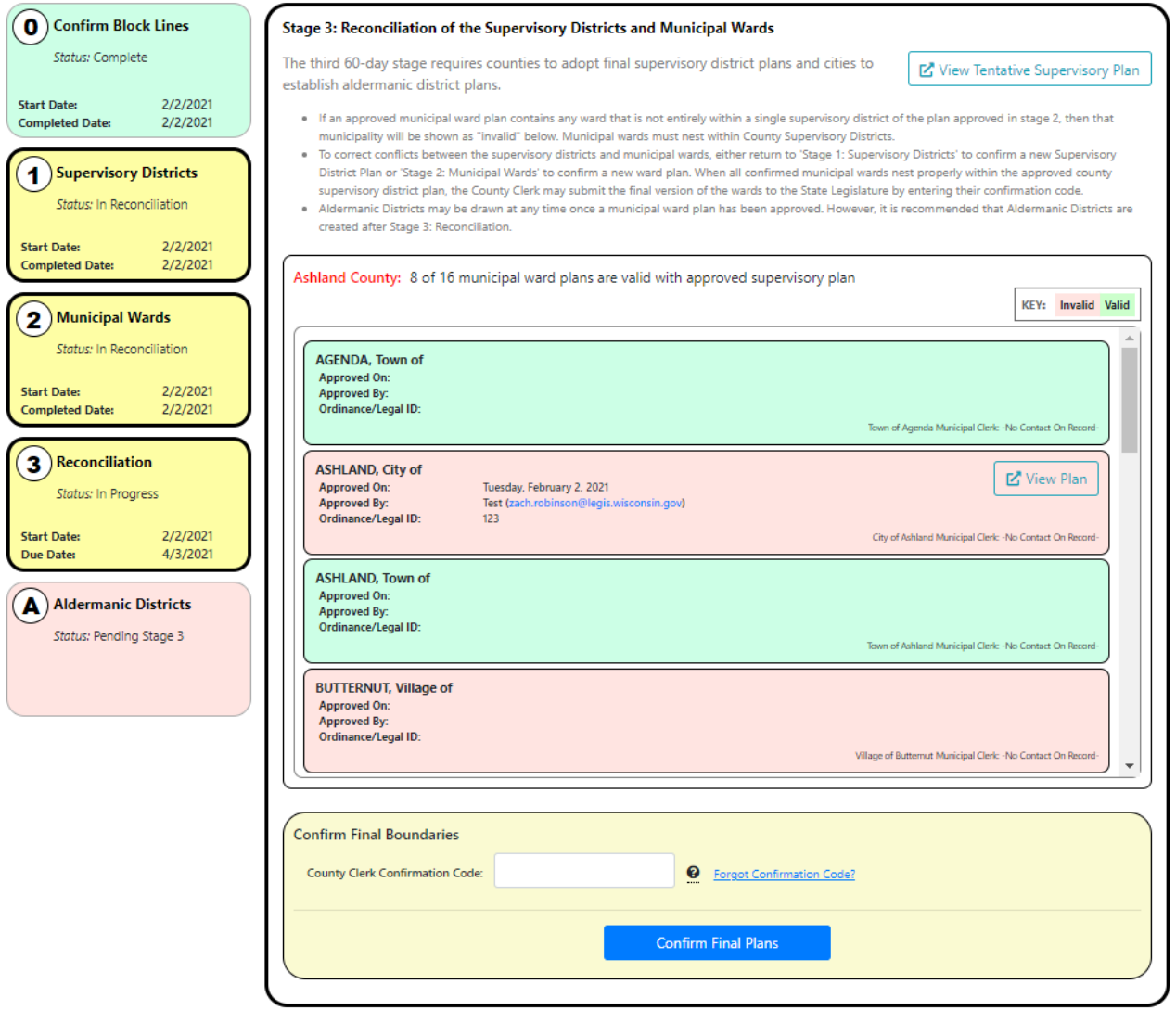


Stage 2: Municipal Ward Plans

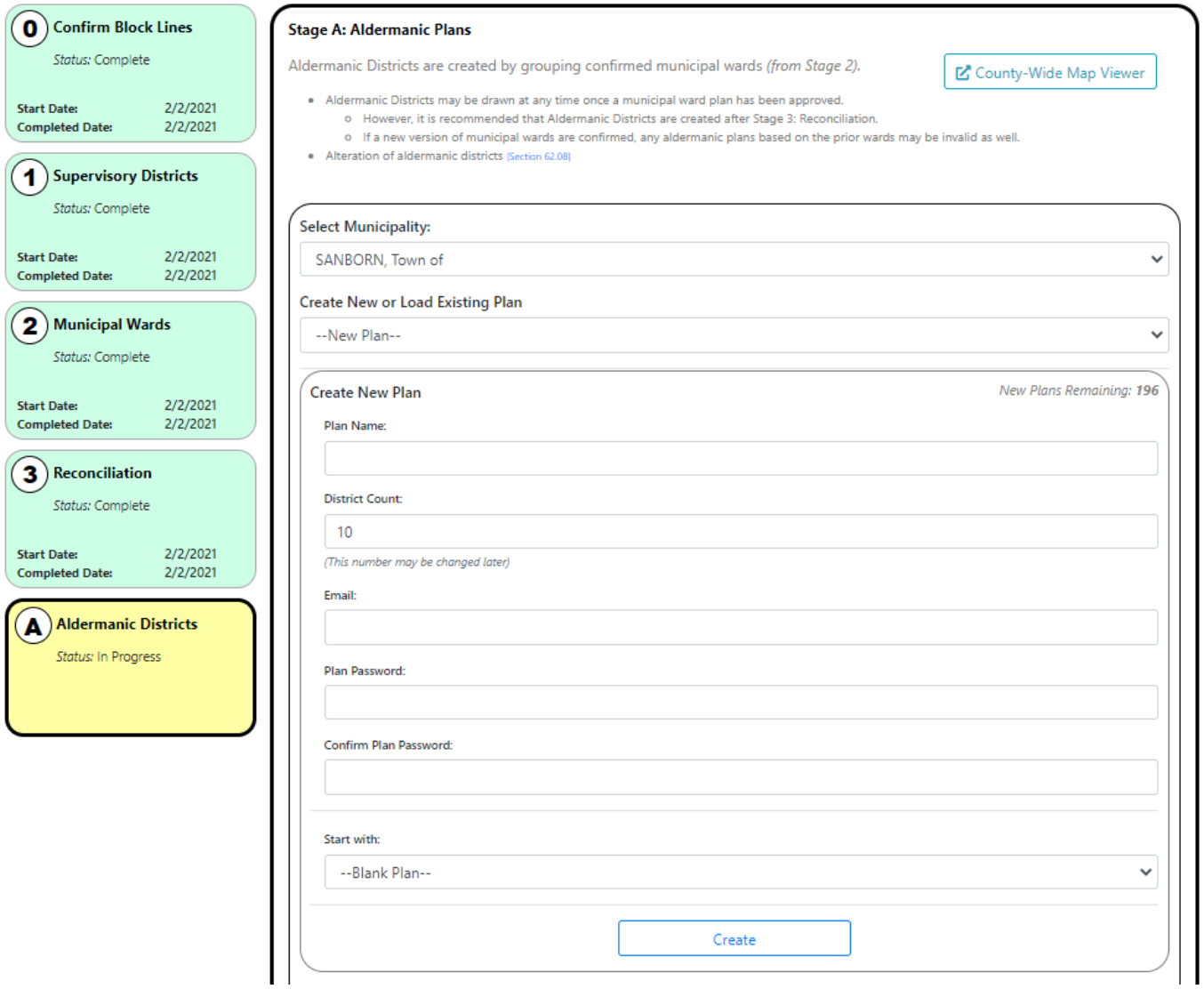




Stage 3: Reconciliation

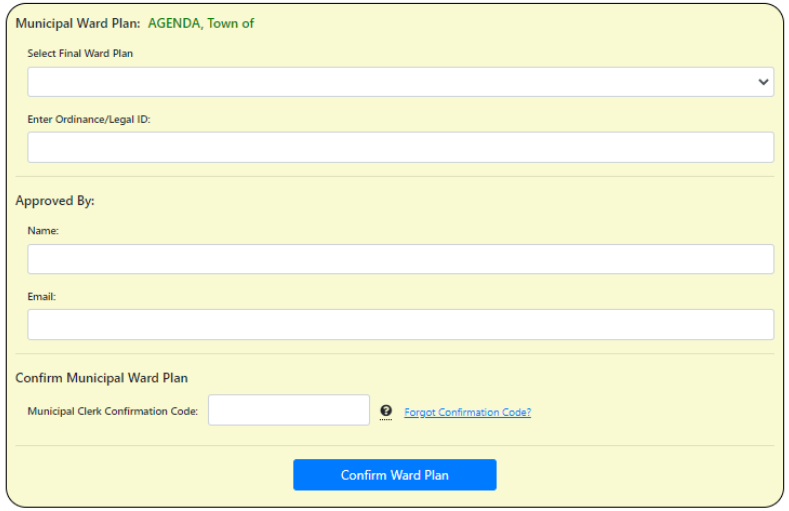


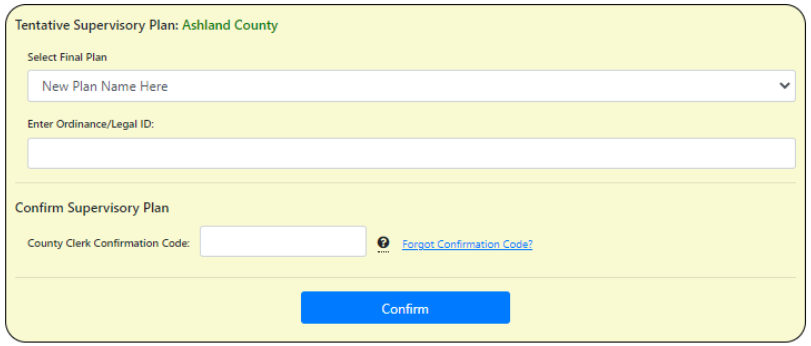
Stage A: Aldermanic Districts

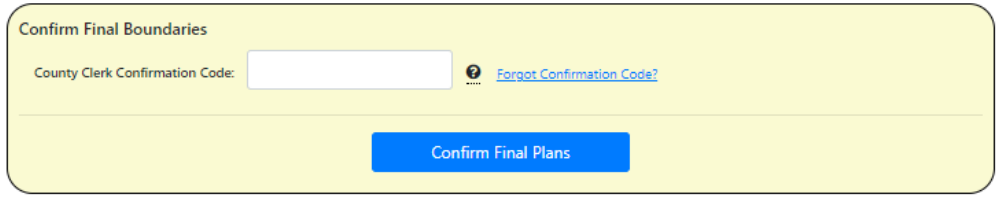


Confirmation Credentials – Confirming a Plan

- Provided by LTSB to LIO, County Clerk, and Municipal Clerks
  - Unique to that single individual
- Officially confirms Supervisory, Municipal and Aldermanic Plans once adopted, and verifies US Census Block Geography
  - Plan Ordinance or Legal ID required to confirm
  - Only the LIO's code will work to confirm block lines in Stage 0



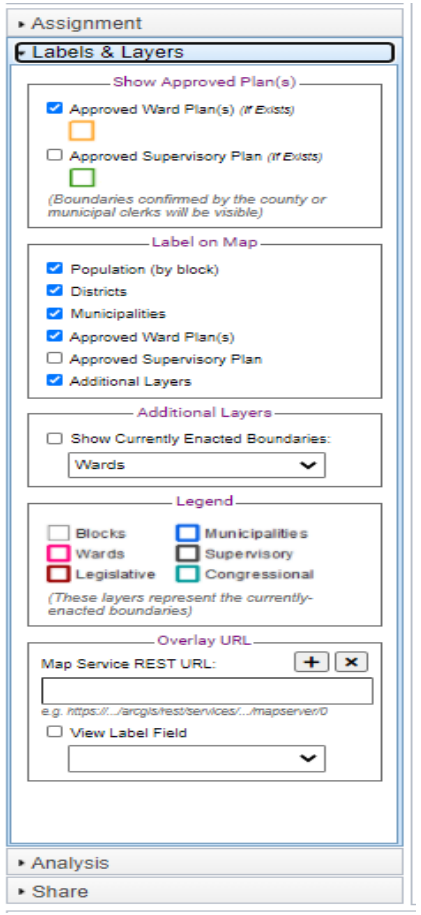


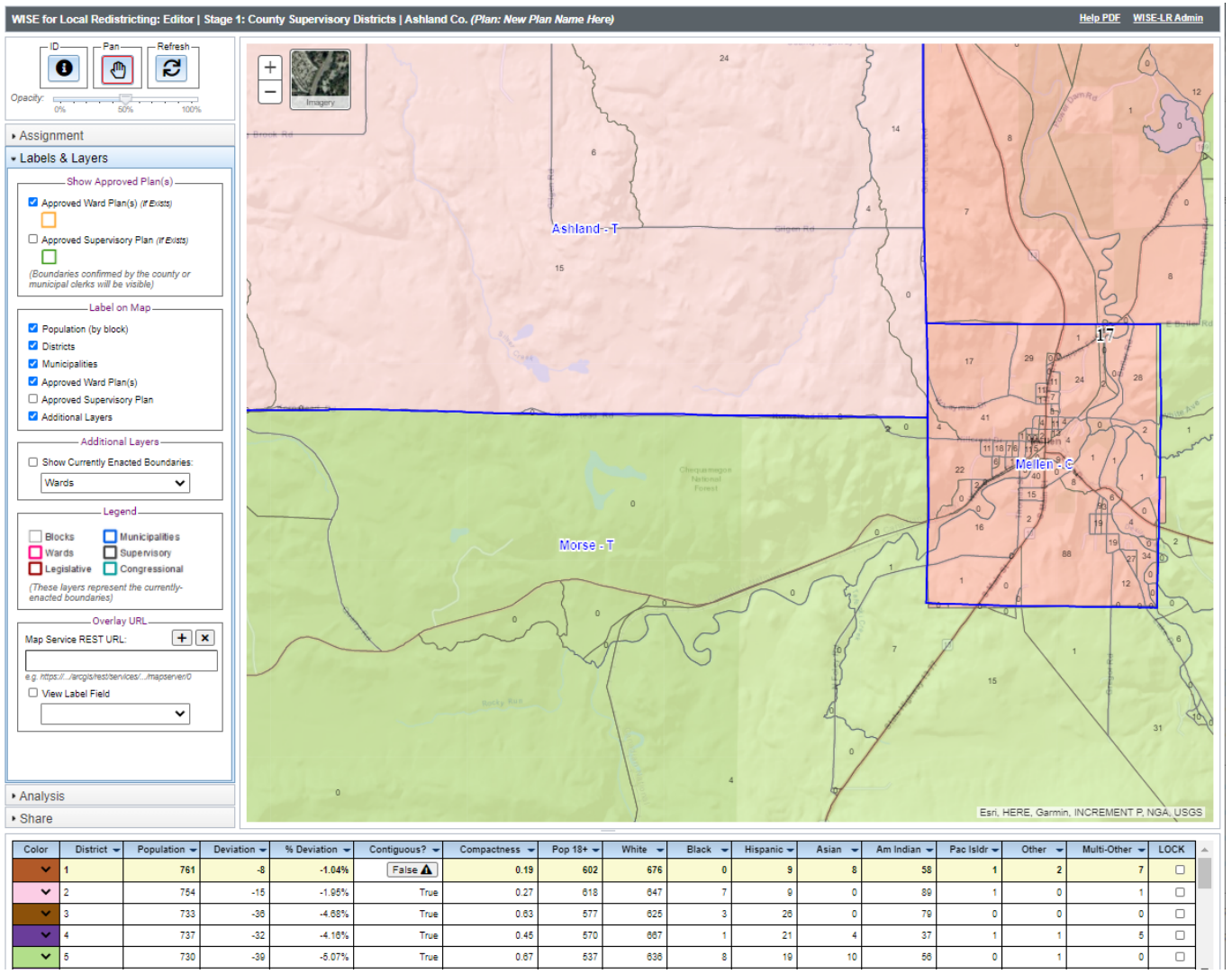


WISE-LR Editor

WISE-LR Editor

- Mapping application where all plans are drawn





Color	District	Population	Deviation	% Deviation	Contiguous?	Compactness	Pop 18+	White	Black	Hispanic	Asian	Am Indian	Pac Islr	Other	Multi-Other	LOCK
	1	761	-8	-1.04%	False	0.19	602	676	0	9	8	58	1	2	7	
	2	754	-15	-1.95%	True	0.27	618	647	7	9	0	89	1	0	1	
	3	733	-36	-4.68%	True	0.63	577	625	3	26	0	79	0	0	0	
	4	737	-32	-4.16%	True	0.45	570	667	1	21	4	37	1	1	5	
	5	730	-39	-5.07%	True	0.67	537	636	8	19	10	56	0	1	0	

Understanding the Attribute Table

- Population (& Demographics)
  - Aggregate count of block population(s) assigned to a district.
- Valid Range (Ward Plans)
  - Statutorily described range that the ward population must fall within.
- Deviation from Ideal (Supervisory Plans)
  - The ideal population of a Supervisory District is the total population of the county divided by the number of districts. This field will show the count deviation from that ideal population.
- % Deviation
  - Indicates how far from the ideal division of the population by the number of districts or wards.

Color	District	Population	Deviation	% Deviation
	1	1,108	339	44.08%
	2	754	-15	-1.95%
	3	272	-497	-64.63%
	4	123	-646	-84.01%
	5	674	-95	-12.35%

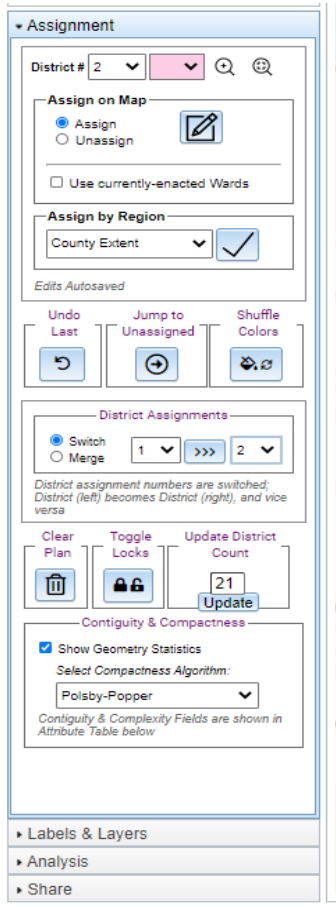
Color	District	Population	Deviation	% Deviation	Contiguous?	Compactness	Pop 18+	White	Black	Hispanic	Asian	Am Indian	Pac Isldr	Other	Multi-Other	LOCK
	1	1,080	311	40.44%	False ⚠	0.44	833	958	0	18	16	75	1	2	10	☐
	2	754	-15	-1.95%	True	0.27	618	647	7	9	0	89	1	0	1	☐
	3	733	-36	-4.68%	True	0.63	577	625	3	26	0	79	0	0	0	☐
	4	737	-32	-4.16%	True	0.45	570	667	1	21	4	37	1	1	5	☐
	5	730	-39	-5.07%	True	0.67	537	636	8	19	10	56	0	1	0	☐

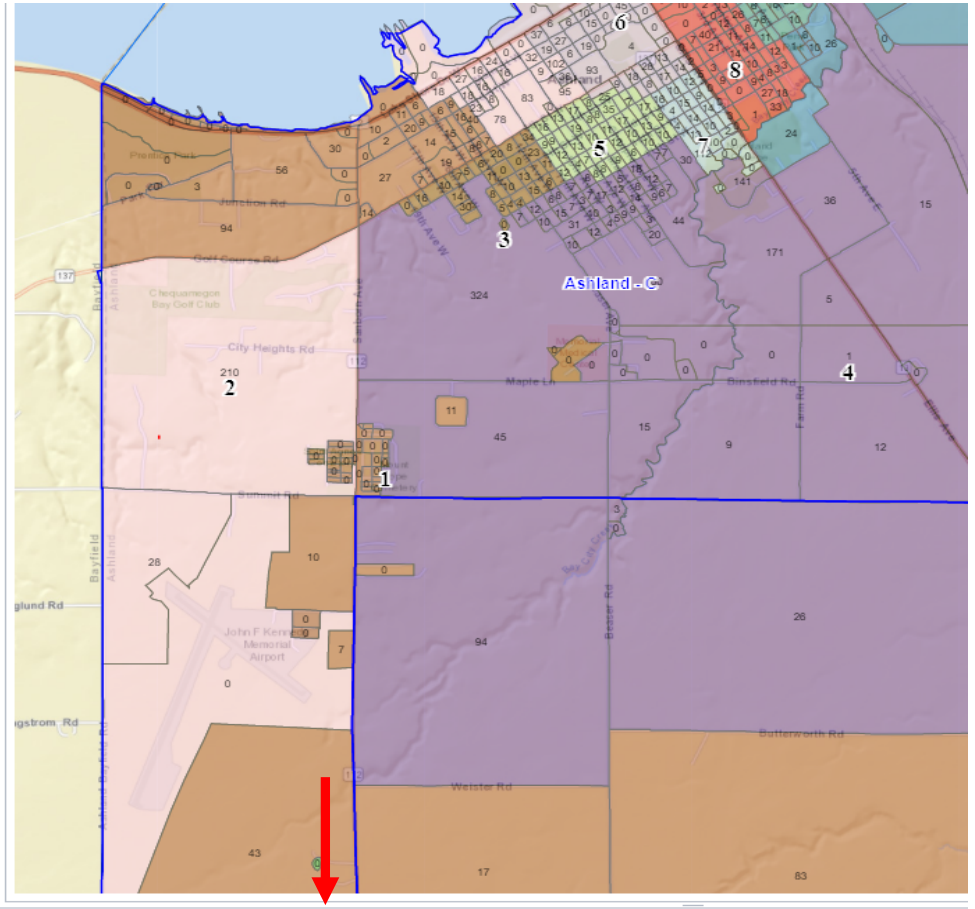
Geometric Attributes

1. Contiguity

- True or False –
  - All blocks within a district (or ward) share a boundary with (or touch) one another.
  - In other words, the district is a single polygon area when 'True' or the district has blocks disconnected from the main district when 'False'.

- Municipal islands are allowed
  - While legally allowed, municipal islands (or actual islands) assigned to a district within the main municipality may show up as non-contiguous.



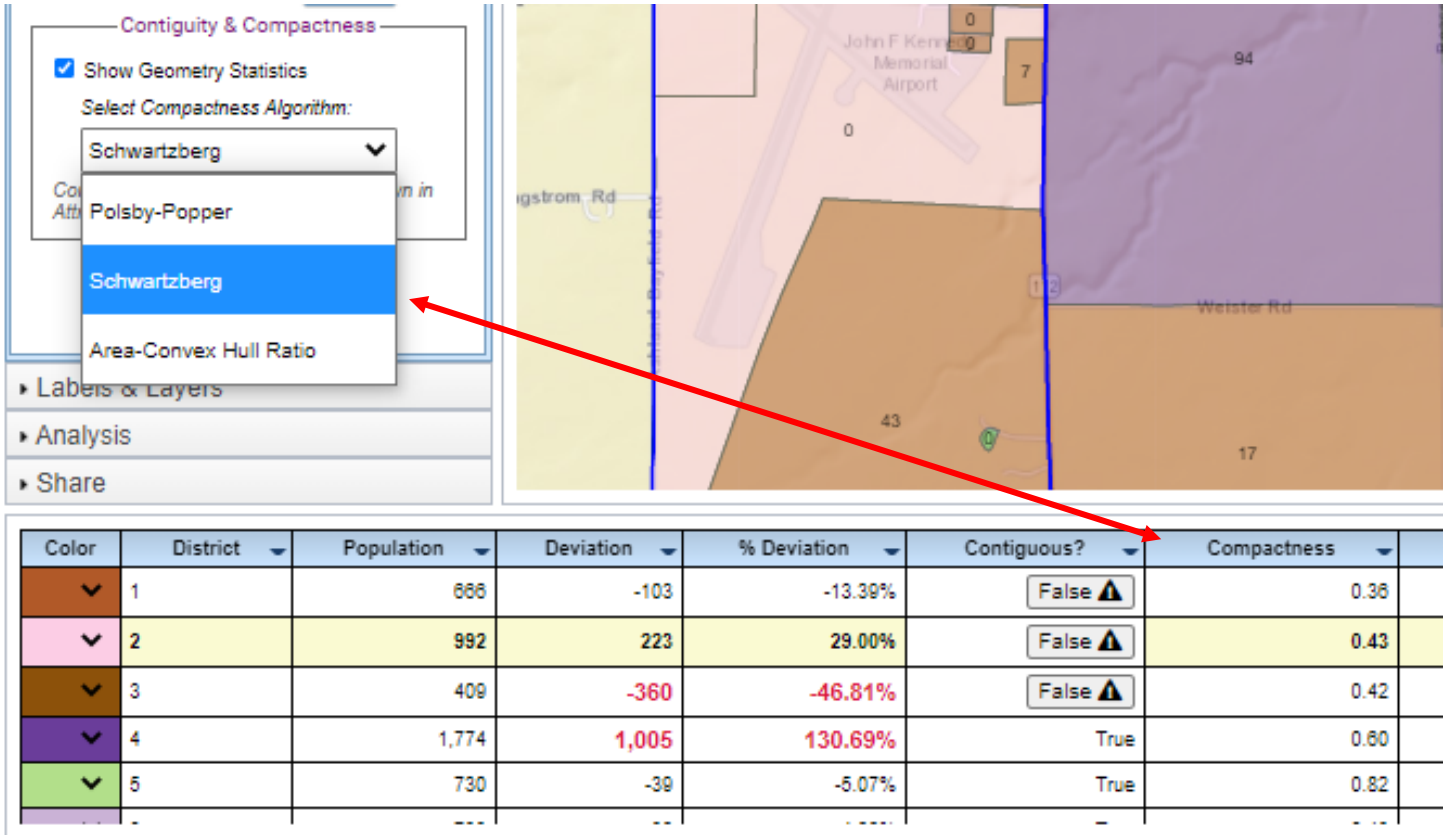


Color	District	Population	Deviation	% Deviation	Contiguous?	Compactness	Pop 18+	White	Black	Hisp
	1	666	-103	-13.39%	False	0.13	530	584	0	
	2	992	223	29.00%	False	0.18	793	862	7	
	3	409	-360	-46.81%	False	0.18	317	354	3	
	4	1,774	1,005	130.69%	True	0.35	1,434	1,587	5	
	5	730	-39	-5.07%	True	0.67	537	636	8	

Geometric Attributes

2. Compactness Measurements

- A score between 0 and 1
  - 1 is most compact
- Three algorithms to select from:
  1. Polsby-Popper
  2. Schwartzberg
  3. Area-Convex Hull Ratio



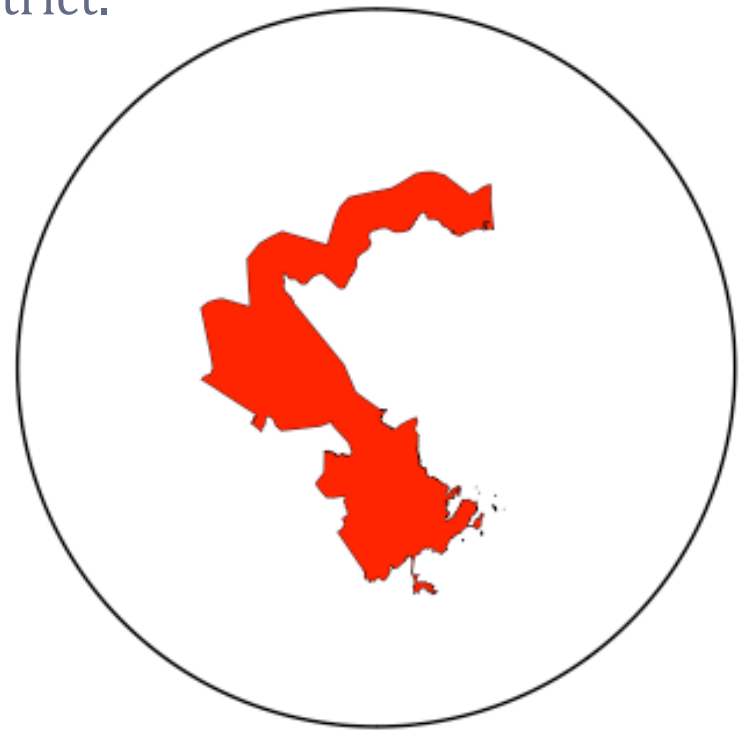
Color	District	Population	Deviation	% Deviation	Contiguous?	Compactness
	1	666	-103	-13.39%	False	0.36
	2	992	223	29.00%	False	0.43
	3	409	-360	-46.81%	False	0.42
	4	1,774	1,005	130.69%	True	0.60
	5	730	-39	-5.07%	True	0.82

Compactness Measurements

1. Polsby-Popper:

- Measures the ratio of the area (A) of the district to the area of a circle whose circumference is equal to the perimeter (P) of the district.

$$= 4\pi * \frac{A}{P^2}$$



Circumference Equal to District Perimeter

Graphic Credit: https://fisherzachary.github.io/public/r-output.html

Compactness Measurements

2. Schwartzberg:

- Ratio of the perimeter (P) of the district to the circumference of a circle whose area is equal to the area of the district (A).

$$= {}^{1}\Big/ \frac{P}{2\pi\sqrt{(A/\pi)}}$$

Circle with Area Equivalent to the District

Graphic Credit: https://fisherzachary.github.io/public/r-output.html

Compactness Measurements

3. Area/Convex Hull:

- Compares the area of the district (A) to the area of the smallest bounding convex polygon (C). The score penalizes for boundary contortions, but grants flexibility, as any non-concave polygon is seen as ideal.

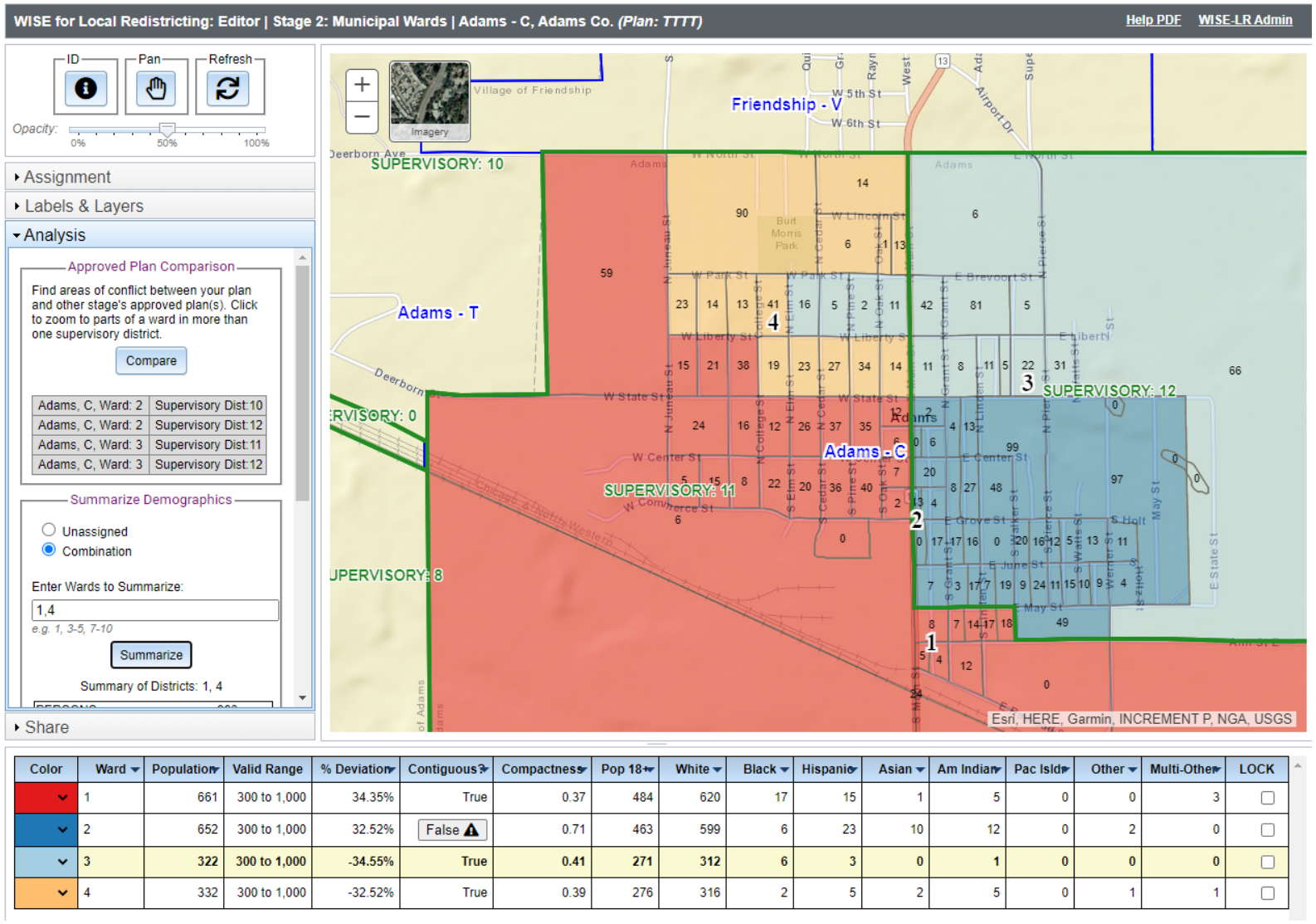
$$= \frac{A}{C}$$

Convex Hull

Graphic Credit: https://fisherzachary.github.io/public/r-output.html

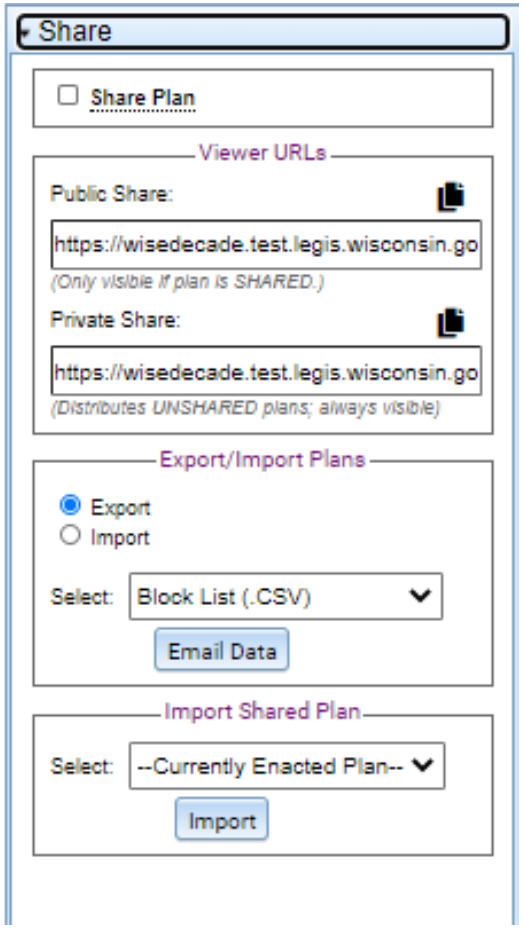
Analysis

- **Approved Plan Comparison**
  - Show wards in multiple supervisory districts
- **Summarize Demographics**
  - Enter District/Ward numbers to Summarize.
- **Overlay Demographics**
  - Add a dynamic, thematic overlay of demographics



Color	Ward	Population	Valid Range	% Deviation	Contiguous?	Compactness	Pop 18+	White	Black	Hispanic	Asian	Am Indian	Pac Isld	Other	Multi-Other	LOCK
	1	661	300 to 1,000	34.35%	True	0.37	484	620	17	15	1	5	0	0	3	
	2	652	300 to 1,000	32.52%	False ⚠	0.71	463	599	6	23	10	12	0	2	0	
	3	322	300 to 1,000	-34.55%	True	0.41	271	312	6	3	0	1	0	0	0	
	4	332	300 to 1,000	-32.52%	True	0.39	276	316	2	5	2	5	0	1	1	

Sharing Plans

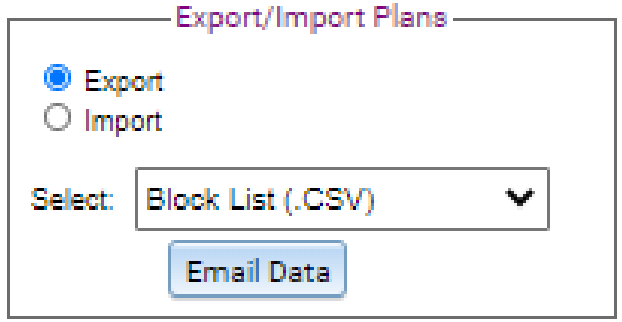


WISE-LR Editor

- Public Share URL
  - Only visible within WISE-LR to other county users if plan is SHARED
- Private Share URL
  - Distributes UNSHARED plans; always visible.
  - Anyone with access to this URL will be able to see your plan.
  - Be careful with how this is distributed.

WISE-LR Viewer

- What people see if they open a shared URL
- Share pane
  - Send an email to someone with the plan's data.



Questions?

https://legis.wisconsin.gov/ltsb/local-redistricting/

Legislative Technology Services Bureau

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