Electoral Maps and Why They Are Wrong

How we can fix this problem

Jordan Tishler
April 12, 2023

What Were Trying to Solve

Ideal

Understanding the best way to display election votes on the web in an interactive way, with respect to population instead

of area.

Reality

Most election maps are misleading, and render votes by riding and area rather than population. The population is what drives election results.

Consequences

These maps mislead the public about what drives elections and regularly decrease voter turnout each year.

Our Proposal

To create an interactive map that displays electoral data from a previous year, and updates based off of zoom, allowing for both national and local analysis.

Products Were Using

ArcGIS Online web maps, ArcGIS Story Maps, ArcGIS Dashboards and ArcGIS Experenice Builder.

The Problem

The picture below shows an average map of Canada's and USA's political ridings during different election periods. This is how most of the public sees the voting season as.
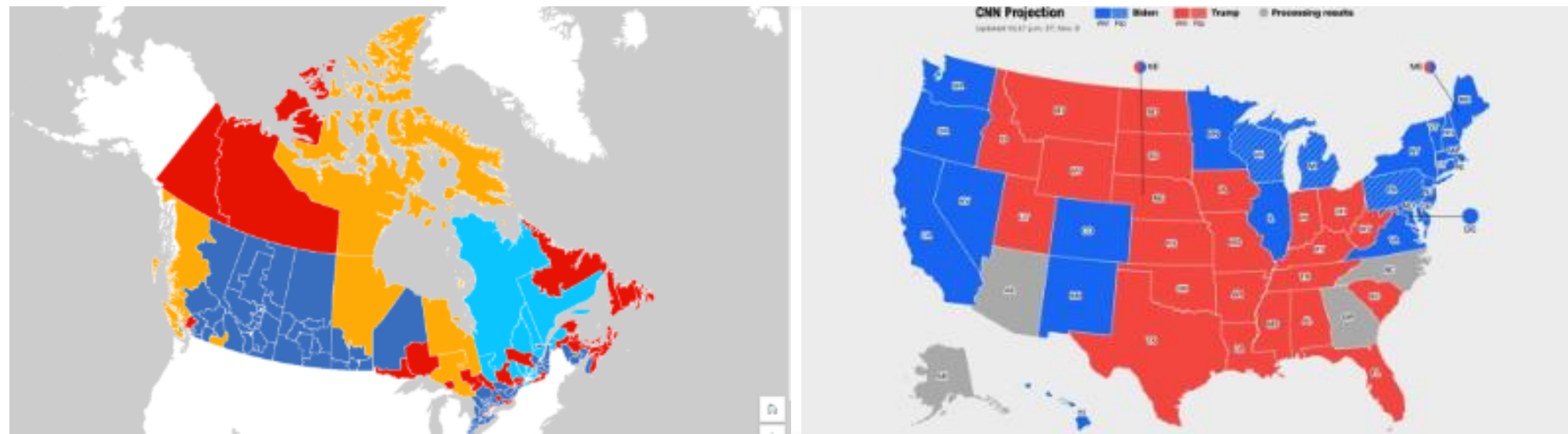

Elecrotral maps of Canada and USA

The major problem with these maps is that they show the votes based on the winning party in each electoral district or state and not through the population. **Why is This a problem:** well if we look at a map from 2008 often considered one of the most misleading maps in political history. It shows the republican party (red) massively outweighing the Democrats

(blue) But in Reality, Blue won because the areas the Democrats won had significantly more population.

This makes for the largely misinformed public that thinks their vote does not really matter decreasing the overall voter turnout each year. It's often considered that a vote in Wyoming is 3x more important than a vote in Florida just because of the amount of land it covers. (Durran, 2019)
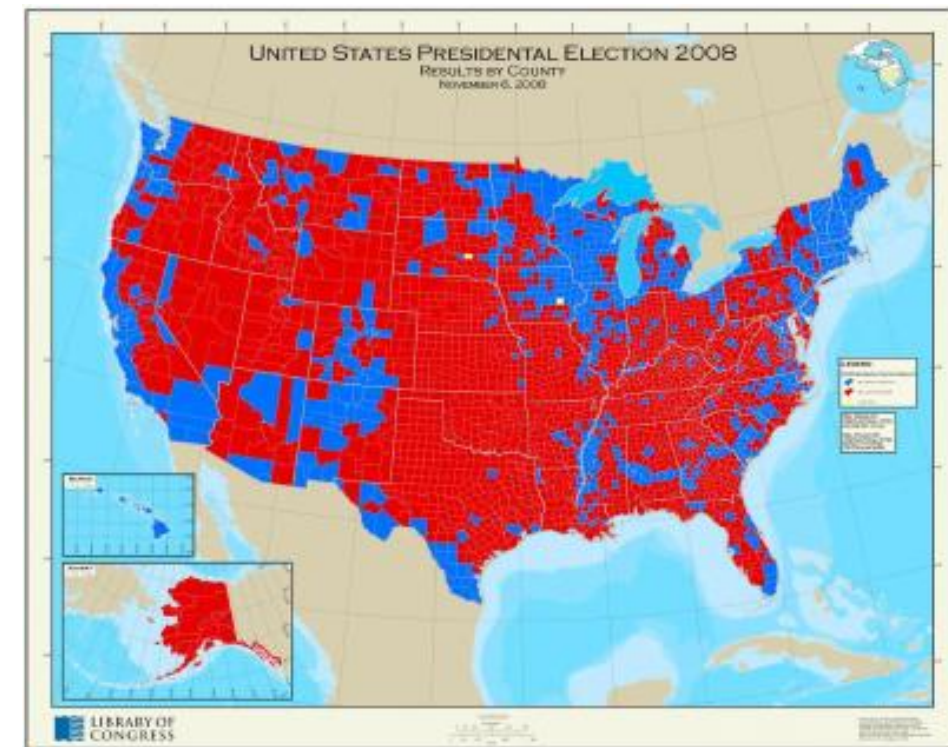
2008 electoral map of USA

The Solution

How we plan to solve this

We plan on solving this problem by experimenting with different ideas that will prioritize the population instead of using the misleading attribute area. our first idea is through color and size where we can represent the winning party in the district with an actual number of votes it got represented

by size. Second, we wanted to show a dashboard with more information so that they aren't only presented with a map of misleading information. lastly, we wanted to show the data through a 3d plain by making areas with more votes/population taller than the others that had a decreased population.

What we Created

1. Through Colour and Size

We looked at a badly represented map of Ontario's ballot system and looked at it through the area (Figure 1) we then added a new attribute in size by using the total ballots cast creating the map you see below. By looking at these maps we can see that when it is area-based it looks like the NDP (orange) easily won. In reality, the liberals won (red) and it was a lot closer race than it looked. the main votes were actually between the liberals and the
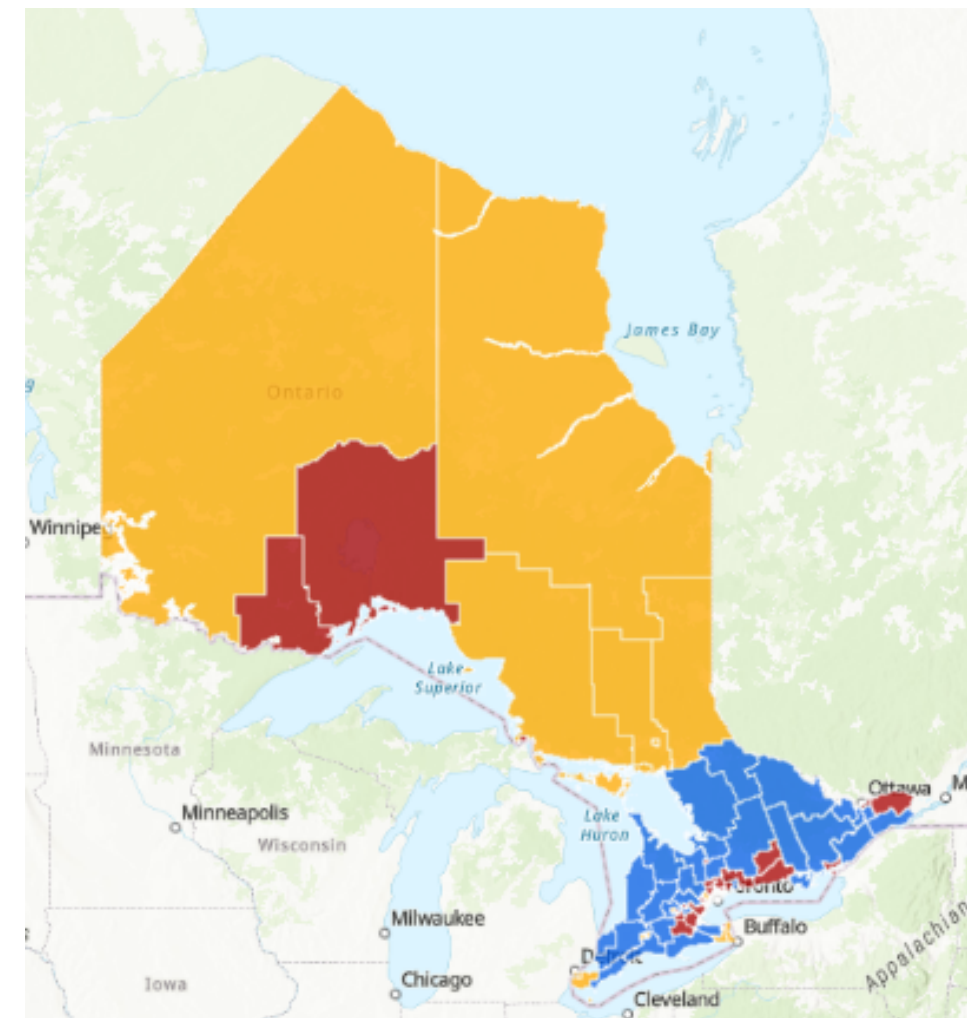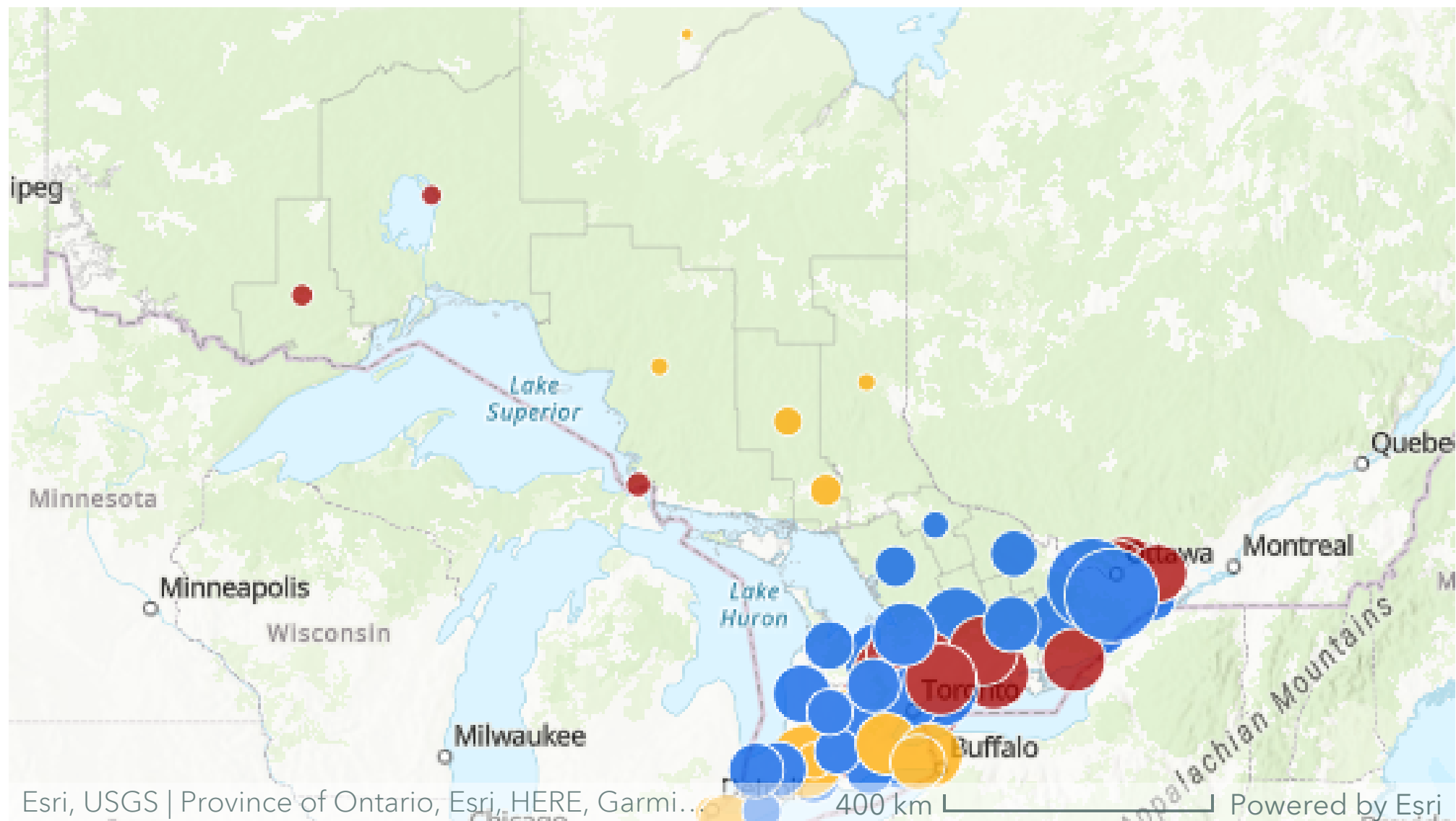

Figure 1: Electoral votes of Ontario in 2014

conservatives (blue) where the NDP was only third. These areas that had the most population are much better represented in the map below by the areas with bigger circles.

Electoral ontario map using election results form 2014 in reltion to actual ballots cast

2. Map Dashboard

We have created a dashboard that shows a map of votes through Canada in 2021. You can zoom in to see different areas and their votes. Additionally, we added two indicators to show the number of valid ballots in the area and the percentage of voter turnout in the area. we also added a list showing electoral district information, a pie graph of the number of votes each party received in each area, and a gauge representing. You are also able to select an electoral district and see all the data associated with it instead of using the zoom feature.

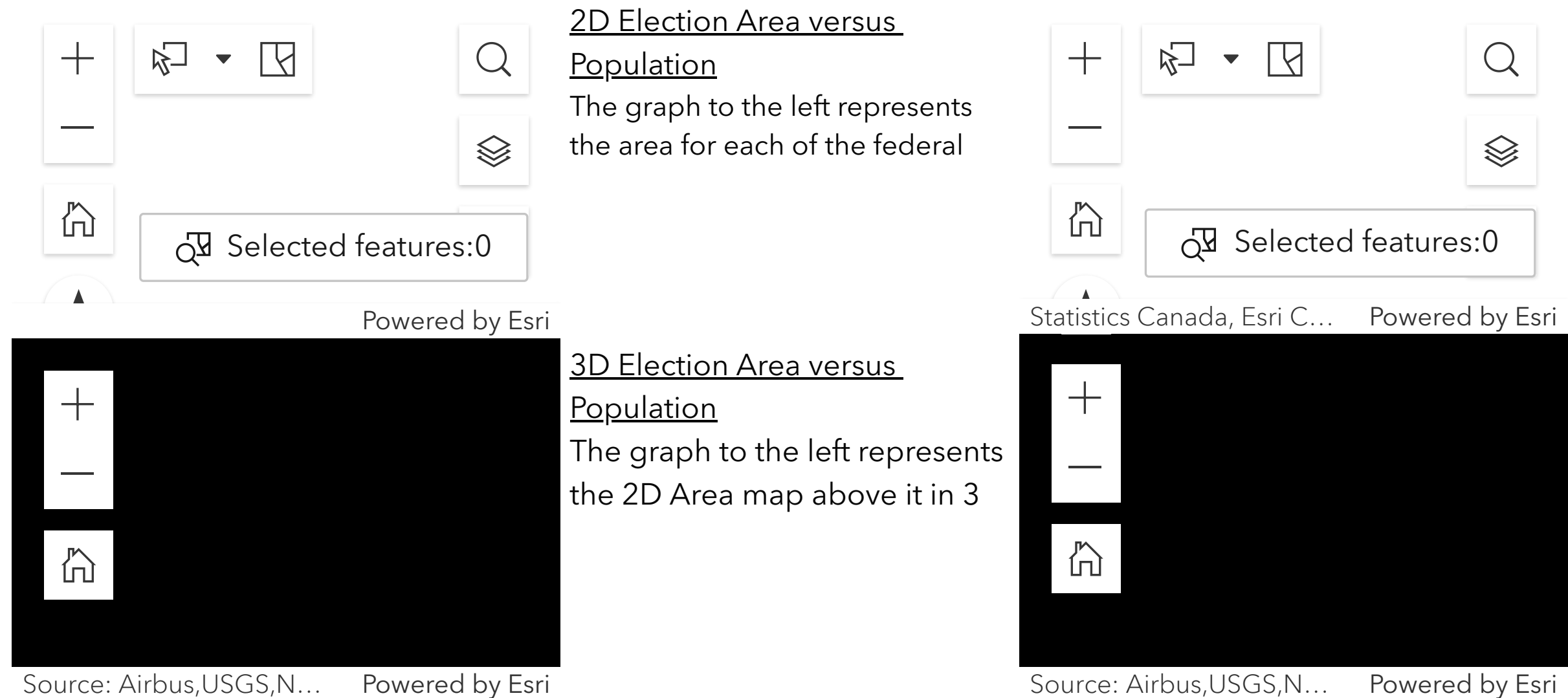44th Canadian General Election Overview by Electoral Voting District (2021)

3. 3D Height Map

The third thing we created is a 3D height map based on population. on the left we have 2 maps that take in shape area and compare them to the right which is based on population.

The population is shown by using a 3d height map making areas with a higher population taller than others.

2D and 3D Comparison Map of

*Right click and drag to adjust in 3D. All mans will

<u>2D Election Area versus Population</u>

The graph to the left represents the area for each of the federal

Selected features:0

Powered by Esri

Statistics Canada, Esri C...   Powered by Esri

<u>3D Election Area versus Population</u>

The graph to the left represents the 2D Area map above it in 3

Source: Airbus,USGS,N...   Powered by Esri

Source: Airbus,USGS,N...   Powered by Esri

2D and 3D Comparison Map of Election Area and Population Data

Methodology

How we Created these

1. Through Shape and Size

This was created by taking data from the ArcGIS living atlas of Ontario and then symbolizing it differently by using 2 fields instead of 1. We used the total ballots cast and the party won this now shows the map through the number of people who voted instead of through the area.

2. The Dashboard

We created this by getting our data from Open Canada/Canadian government and geo-referencing the data to locate it on ArcGIS Pro.

We then uploaded the data to arcgis online and created the dashboard.

Once the dashboard was created we added an indicator, a gauge, a list, and a pie graph. we then made sure it changed off of zoom and/or select. This made it easy for people to see exact information from exact electoral districts.

3. 3d Scene Map

we created this by using experience builder. We used a mix of Canadian census population data and electoral districts' total area in Canada. we then used 2 2Dmaps which showed the difference between area and population based on color where the darker the color the increased number. we then added 2 3d maps to show the same data but with a visual representation of height (example below)
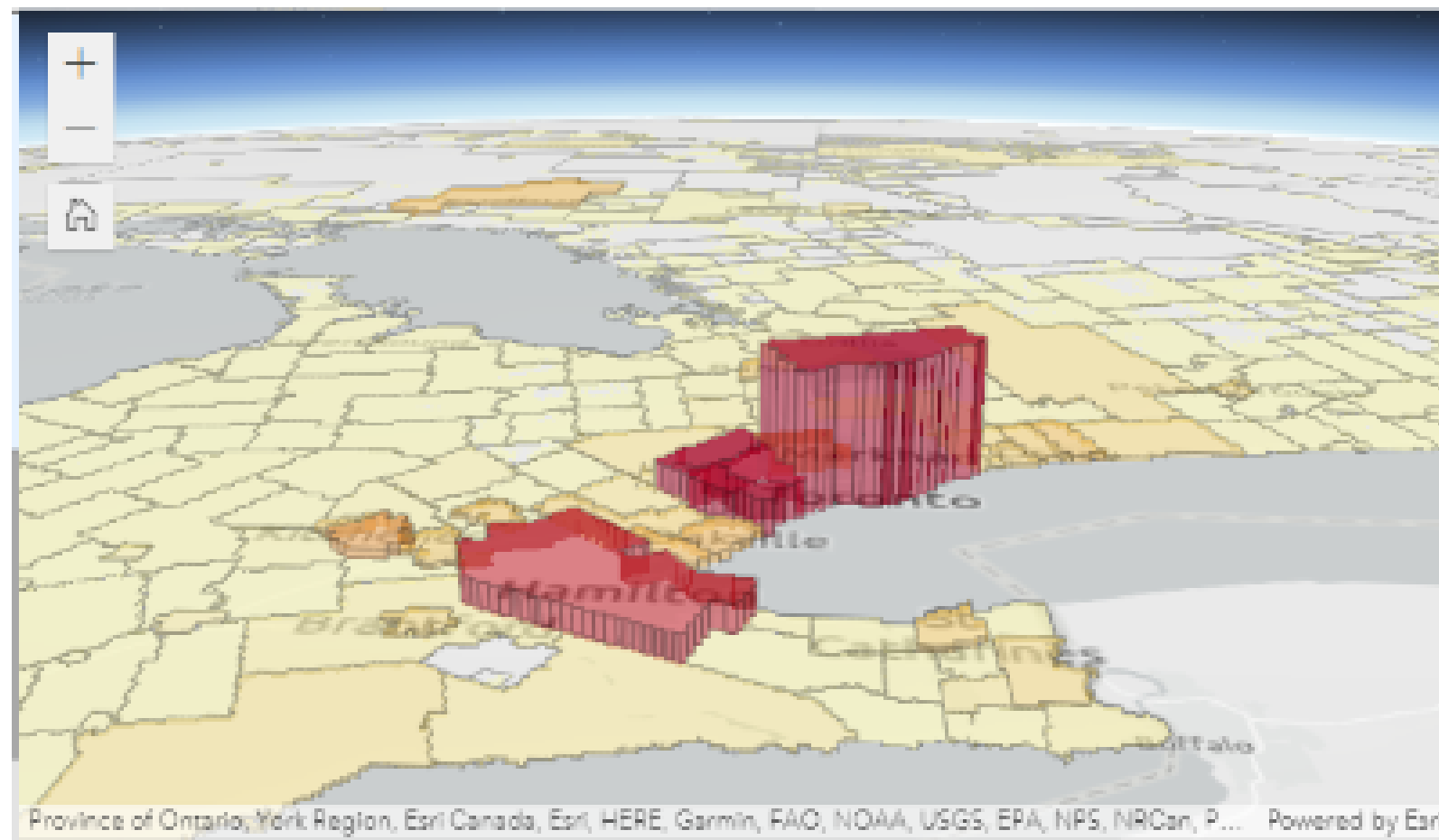
3d Height map based population

References

Durran, D. R. (2019, July 8). *Whose votes count the least in the Electoral College?* The Conversation. https://theconversation.com/whose-votes-count-the-least-in-the-electoral-college-74280