Step 2 Guide: How to Analyze Current District Maps

1. Gather Resources & Tools

✅ Find Current District Maps

- Georgia's Legislative and Congressional Districts:
  📍 Georgia General Assembly District Maps
  📍 Dave's Redistricting Tool
  📍 Georgia Secretary of State's Elections Office

✅ Gather Demographic & Voting Data

- U.S. Census Bureau - Georgia Data (https://data.census.gov)
- Ballotpedia - Georgia Elections & Voting Trends (https://ballotpedia.org)
- GA Inspire Data Portal (Statistics & Voting Trends)

✅ Use Mapping & GIS Tools

- ArcGIS Online (https://www.arcgis.com)
- Google Earth - Political Boundaries Overlay

2. Analyze District Maps for Gerrymandering

🔹 Step 1: Examine the Shape of Districts

- Look for oddly shaped or elongated districts that may indicate gerrymandering.
- Compared to compact and logical district boundaries in other states.

🔹 Step 2: Compare with Demographic Data

- Who lives in each district? Analyze racial, ethnic, and income distribution patterns.
- Are minority communities split across districts (cracking) or packed into one district (packing)?

🔹 Step 3: Compare with Voting Trends

- Look at historical voting results. Does the districting favor one party disproportionately compared to the overall state voting trends?
- Analyze if districts are competitive or heavily one-sided.

🔹 **Step 4: Apply Mathematical Analysis**

- Calculate the Efficiency Gap (measures wasted votes).
- Use the Polsby-Popper Test (checks district compactness).
- Compare the number of safe vs. competitive districts.

How to Apply Mathematical Analysis (Step-by-Step Guide)

1. Measure Compactness (Polsby-Popper Test)

Compactness refers to how **regular** or **irregular** a district's shape is. A compact district should look like a square or circle, while gerrymandered districts often have stretched, jagged shapes.

🔹 **Formula:**

$$\text{Polsby-Popper Score} = \frac{4\pi \times \text{Area of District}}{(\text{Perimeter of District})^2}$$

🔹 **Steps:**

1. Find your district's **area** and **perimeter** (Use GIS software or map resources).
2. Plug the numbers into the formula.
3. Compare your result:
    - **Score close to 1** → District is compact (fair).
    - **Score close to 0** → District is stretched or oddly shaped (possible gerrymandering).

🔹 **Example Calculation:**

- District **A** has an area of **50 square miles** and a perimeter of **30 miles**.
- Applying the formula: $$\frac{4\pi \times 50}{30^2} = \frac{628}{900} \approx 0.698$$
- **Result:** District A is compact but could still be gerrymandered.

2. Calculate Wasted Votes (Used in Efficiency Gap Analysis)

Gerrymandering often wastes votes by **"packing"** or **"cracking"** communities. This analysis checks how many votes are "wasted" in an election.

- **Formula:**

$$\text{Wasted Votes} = |\text{Votes Lost by Winner} - \text{Votes Lost by Loser}|$$

- **Steps:**

1. Identify the total votes for each candidate in a district.
2. Wasted votes for the **winner** = all votes **above 50%** (since they only need 50% +1 vote to win).
3. Wasted votes for the **loser** = **all** votes they received (since they lost).
4. Compare wasted votes for each party. If one party consistently has more wasted votes across districts, gerrymandering is likely.

- **Example Calculation:**

- **Candidate A (Winner):** 12,000 votes
- **Candidate B (Loser):** 7,000 votes
- Wasted votes for **Candidate A**: 12,000 - 9,001 = **2,999** (Only needed **9,001** votes to win).
- Wasted votes for **Candidate B**: **7,000** (All votes lost).
- **Total Efficiency Gap:**

$$\frac{|2,999 - 7,000|}{\text{Total Votes}}$$

3. Find the Efficiency Gap (Measures Partisan Bias)

The **Efficiency Gap** measures how many votes are wasted to benefit one political party. A high-efficiency gap means **one party consistently benefits from how districts are drawn**.

- **Formula:**

$$\text{Efficiency Gap} = \frac{\text{Wasted Votes for Party A} - \text{Wasted Votes for Party B}}{\text{Total Votes in Election}}$$

- **Steps:**

1. Use the **wasted vote totals** calculated in Step 2.
2. Subtract the wasted votes of one party from the other.
3. Divide by the total number of votes cast in all districts.
4. **Interpret the result:**
    - **0 to 5%:** Normal variation in elections.
    - **5% to 7%:** Some bias, but within legal limits.
    - **Above 7%:** Likely partisan gerrymandering.

- **Example Calculation:**

- Total Wasted Votes for **Party A** = **50,000**
- Total Wasted Votes for **Party B** = **30,000**
- Total Votes Cast = **250,000**
- Efficiency Gap:

$$\frac{50,000 - 30,000}{250,000} = \frac{20,000}{250,000} = 8\%$$

- **Result:** An **8% Efficiency Gap** suggests **strong partisan bias** in districting.

How to Use These Results

- If compactness is low, the district may be intentionally stretched to dilute votes.
- If one party has more wasted votes, it suggests cracking or packing to weaken their representation.
- If the Efficiency Gap is above 7%, the map is likely unfair and may need redistricting.

3. Record Findings & Complete Deliverable

- Take screenshots or printouts of analyzed maps.
- Write a brief analysis explaining where and why gerrymandering may be occurring.
- Provide data-backed evidence from demographic and voting statistics.

Deliverable Template: Step 2 – Analyzing Current District Maps

Student Name: _____
Date: _____
District(s) Analyzed: _____

Section 1: Basic Information

Which district(s) are you analyzing? (State, congressional, or local)
Example: Georgia's 6th Congressional District

Where is this district located? (Urban, suburban, rural)
Example: Mostly suburban, covering parts of North Atlanta

What is the current party representation in this district?
Example: Historically Republican, flipped to Democrat in 2018

Section 2: District Shape & Compactness

What does the shape of the district look like?

- ☐ Compact & Logical
- ☐ Irregular but reasonable
- ☐ Highly irregular and stretched

Does the district look manipulated? Why or why not?
Example: The district extends thinly, windingly to include specific voter populations.
Compactness Score (if applicable, use Polsby-Popper or another test)
Example: 0.22 (low compactness, indicating possible gerrymandering)

Section 3: Demographics & Voting Trends

What are the key demographic statistics of this district?

Category	Percentage
White	XX%
Black	XX%
Hispanic	XX%
Asian	XX%
Other	XX%

Does the district seem to "crack" or "pack" certain racial/ethnic groups?
Example: The district appears to "crack" Black voters by splitting them into three separate districts, reducing their overall influence.

How do the voting trends compare to the demographics?
Example: Despite the district being 60% Democratic in voter registration, it has been drawn in a way that makes it a Republican stronghold.

Section 4: Gerrymandering Indicators & Analysis

Does the district favor one political party more than expected?

- ☐ Yes
- ☐ No
- ☐ Unsure

Efficiency Gap Calculation (if applicable):
Example: 12% efficiency gap in favor of Republicans, indicating a likely partisan gerrymander.

What is your overall assessment?
Example: This district shows strong signs of partisan gerrymandering due to its odd shape, voter distribution, and historical election results.