AI and Redistricting

Can AI do political redistricting for us, and would it do a better job?

Answer: Let's ask Professor Tam

Terms to remember…

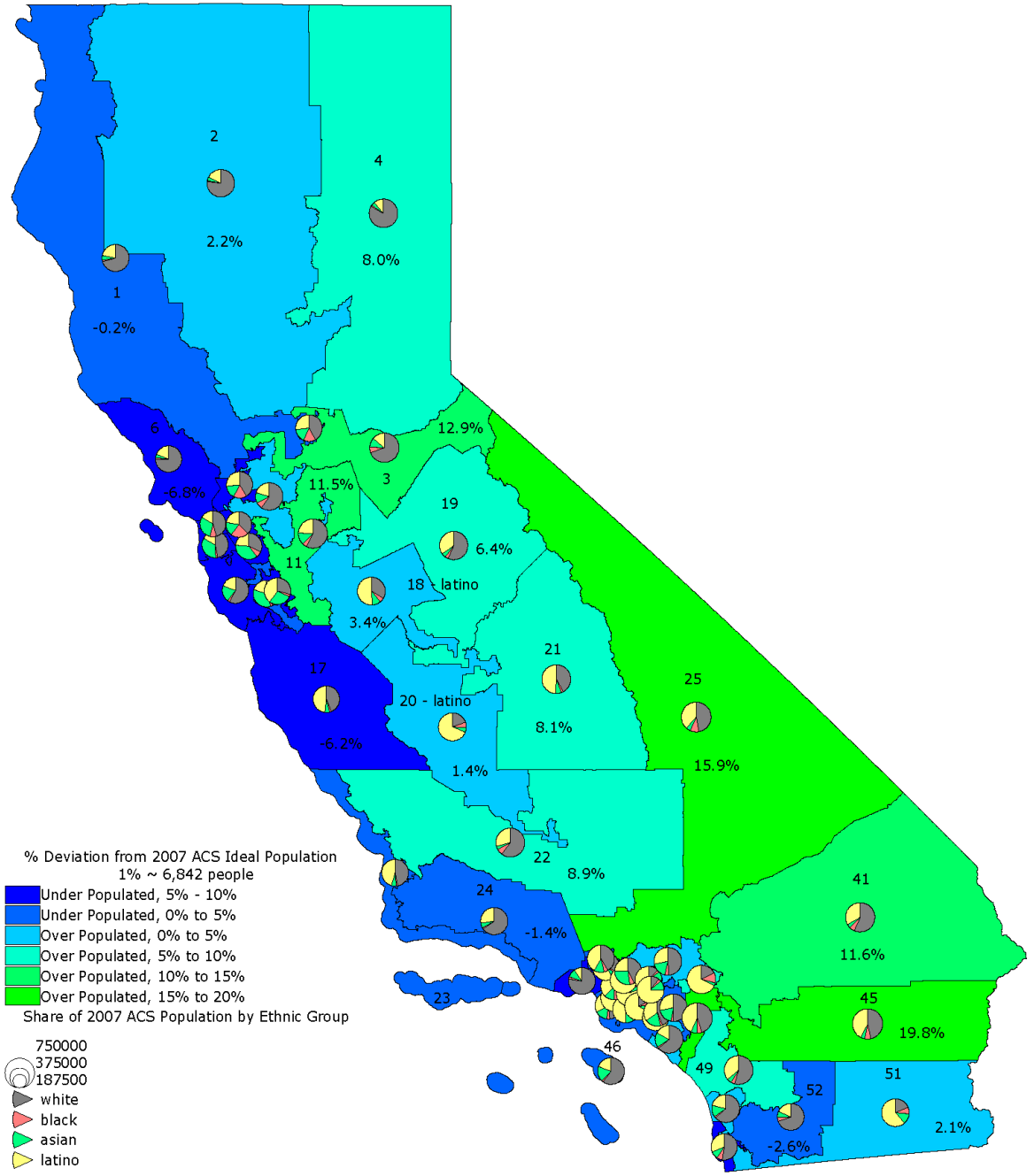
- **AI** in this **sense**: using machine intelligence to **replace or augment** human decision-making in a political task
- **Apportionment** (allocation of congressional districts to states) versus **redistricting** (line drawing of specific districts in all but the six states that have only 1 Member).
- **Bipartisan/Incumbent** gerrymander versus **partisan** gerrymander.
- The contestable question of **redistricting fairness**

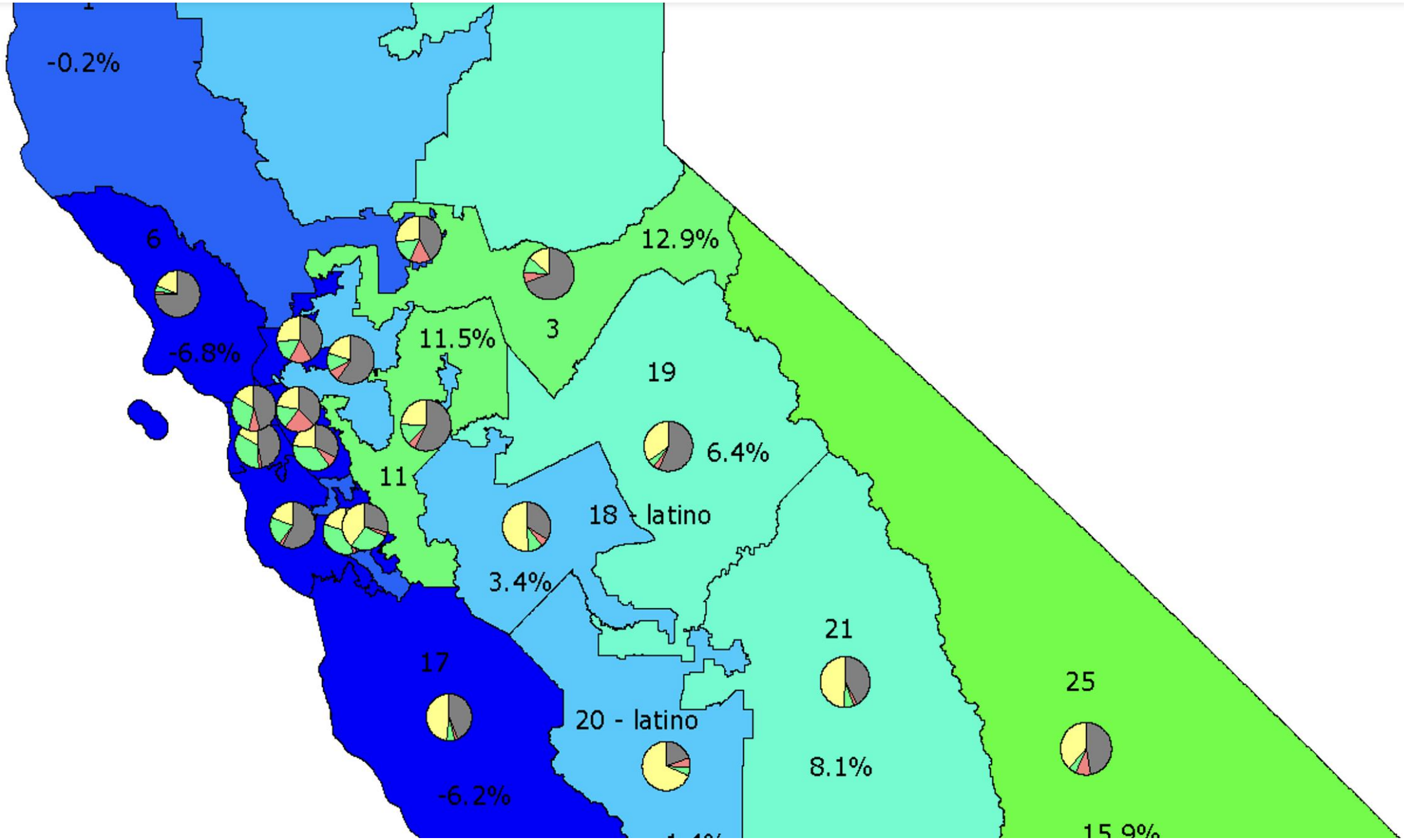
Role of Computers, Optimization and LLMs?

- Computers as **GIS tools** for line drawing and assessing populations equality, possible political impacts
- Automated Plan generation **to assist** human line drawing
- **AI/LLMs** replacing human line drawing

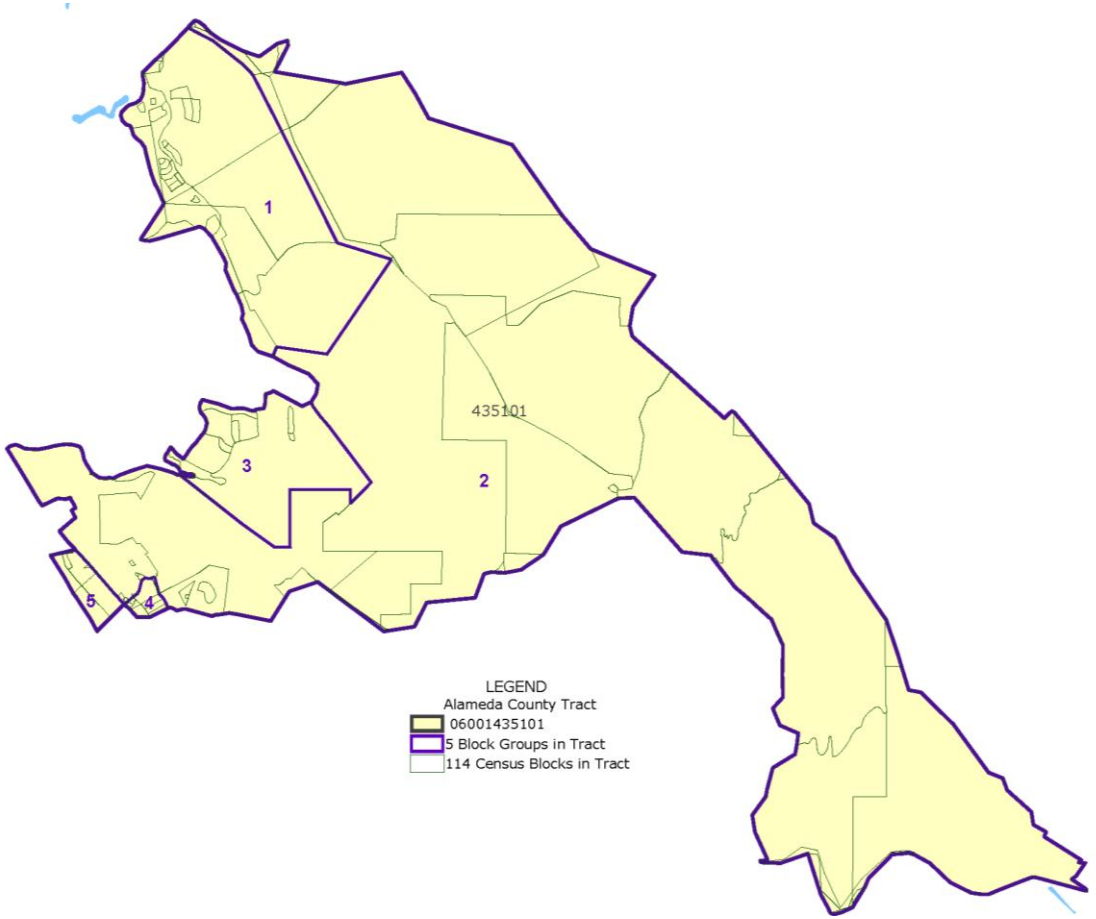
➢**The inescapable fact-value problem in politics**

California Congressional Districts Deviation from 2007 ACS Ideal with District Population by Ethnicity

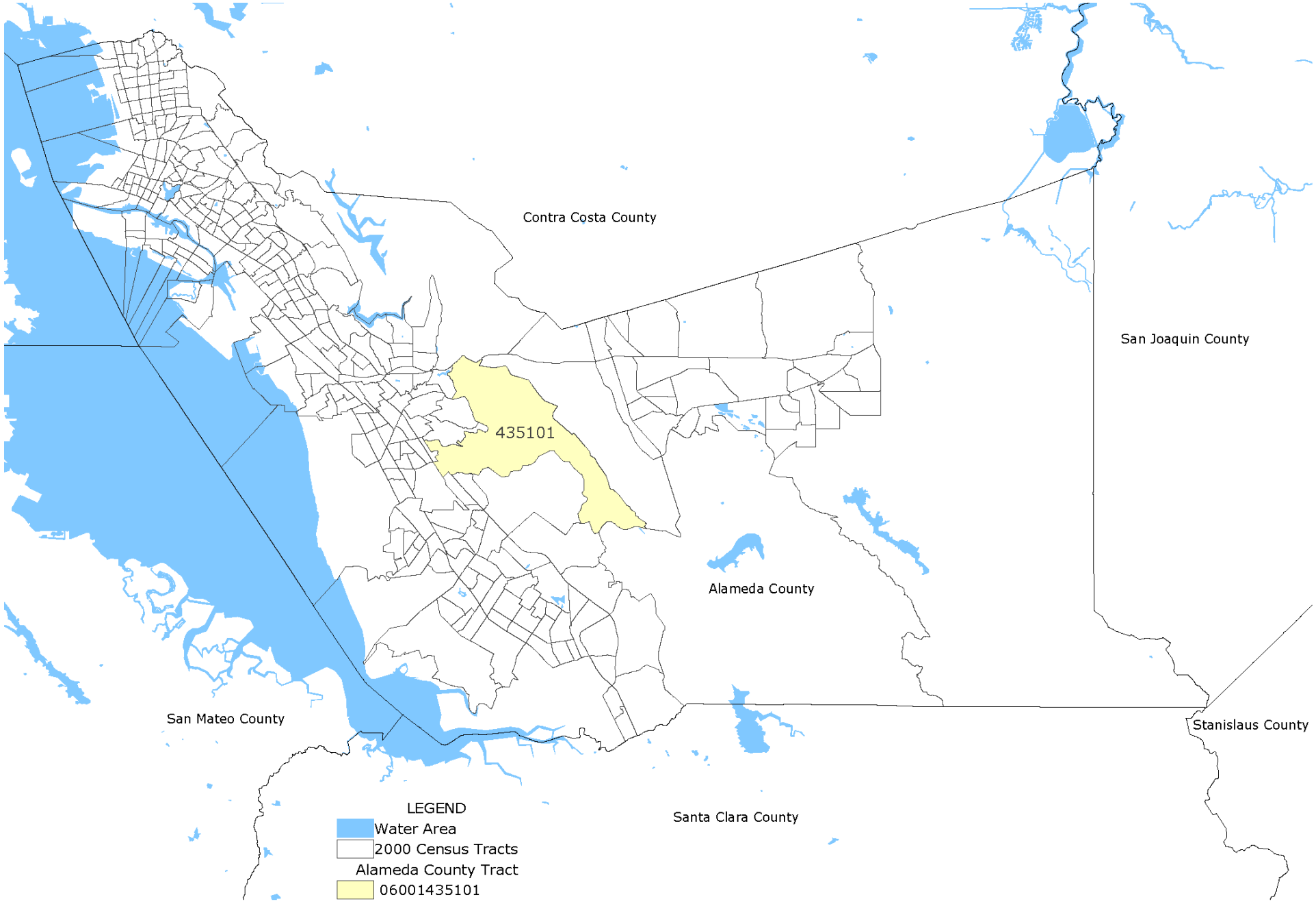



-0.2%
6
-6.8%
12.9%
3
11.5%
19
6.4%
11
18 - latino
3.4%
17
-6.2%
20 - latino
21
8.1%
25
15.9%

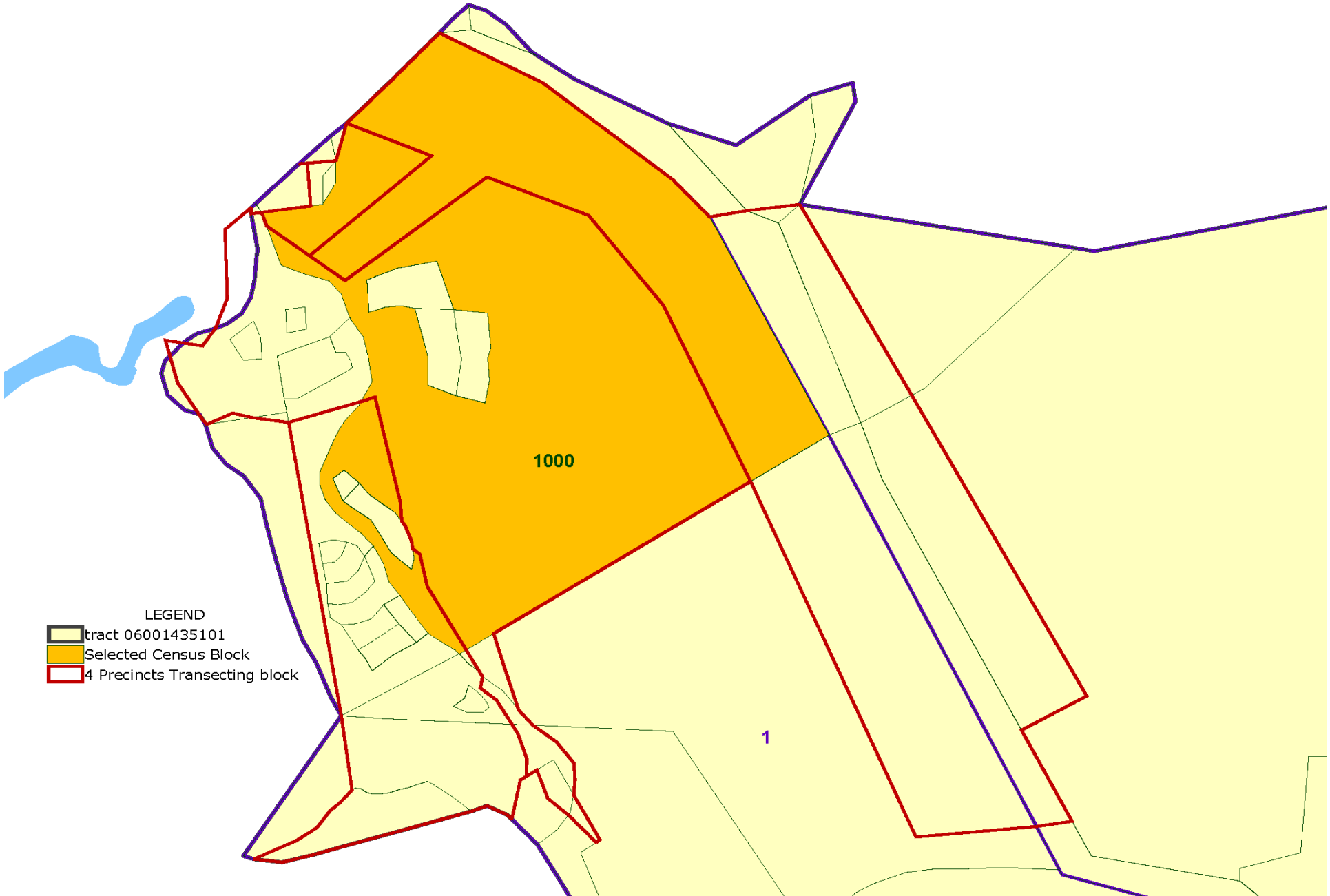
Computers to facilitate/enhance line drawing



Alameda County, California
2000 Census Tracts (321 tracts in county)



Alameda County, California
Census Block 1000 with transecting 2008G precincts



Equal population

Baker v. Carr, 1962

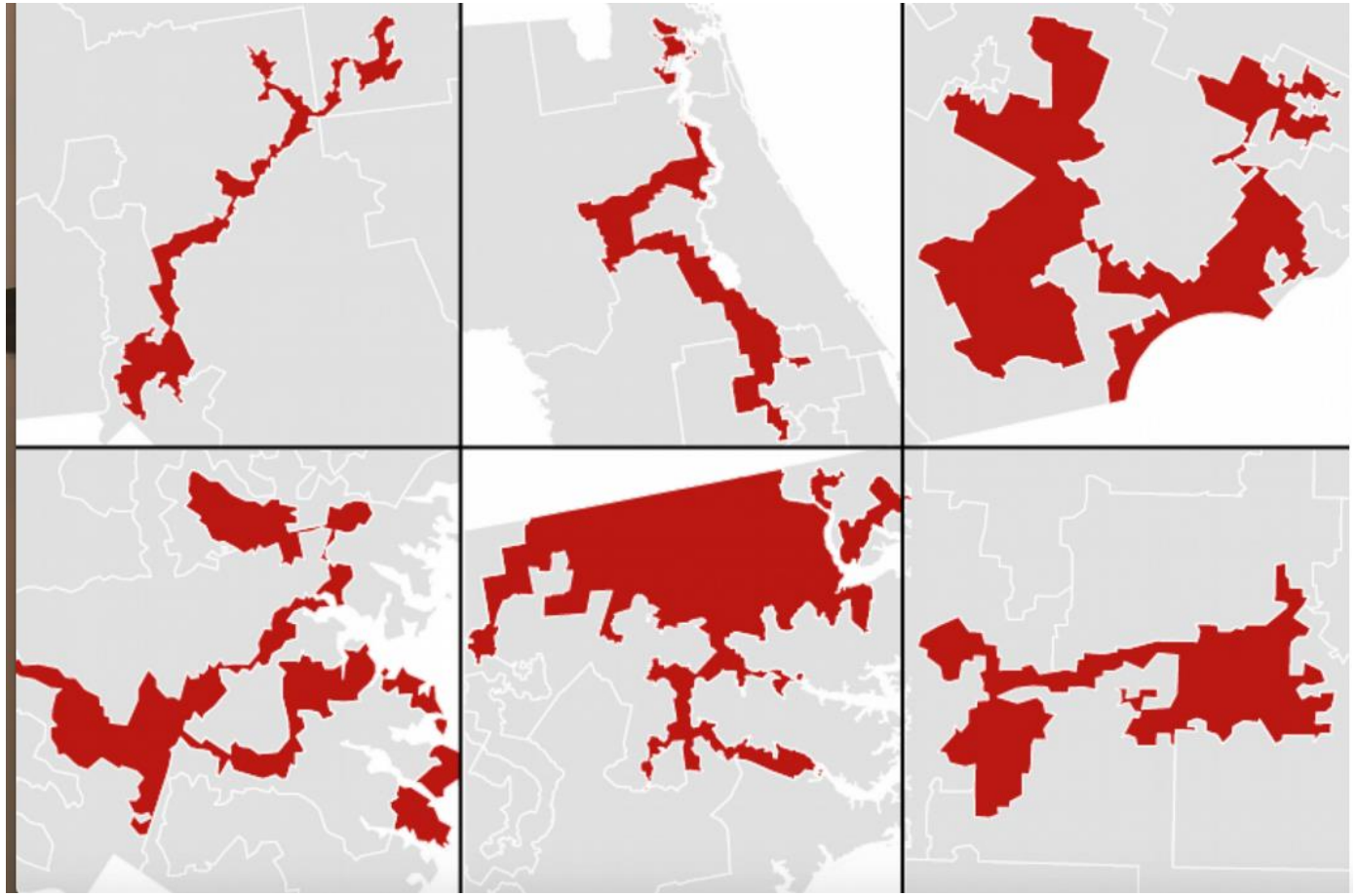


- Congress: as equal as possible
- State legislature: up to 10% "deviation," if for good reason

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What Many Think as Gerrymander: Ugly Lines



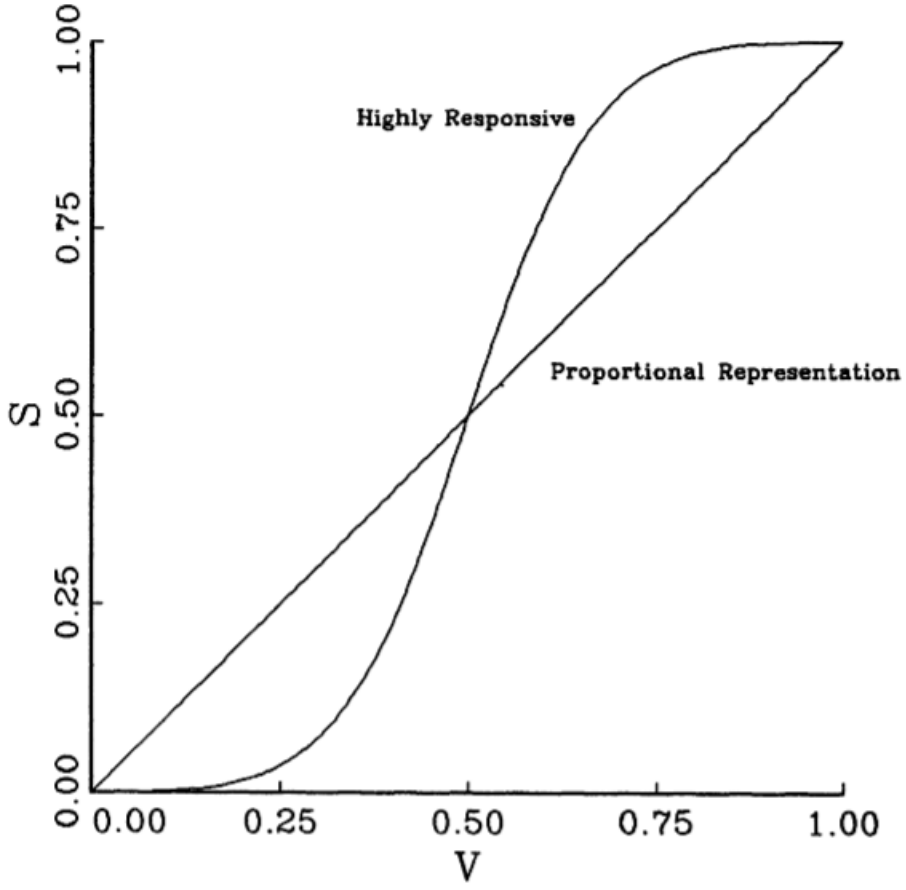
After federal law, add state limitations

	State leg.	Congress
• Contiguity	49	23
• Political boundaries	41	18
• Compactness	36	17
• Communities of interest	22	13
• Partisanship/competition	12	10
• Nesting	14	n/a

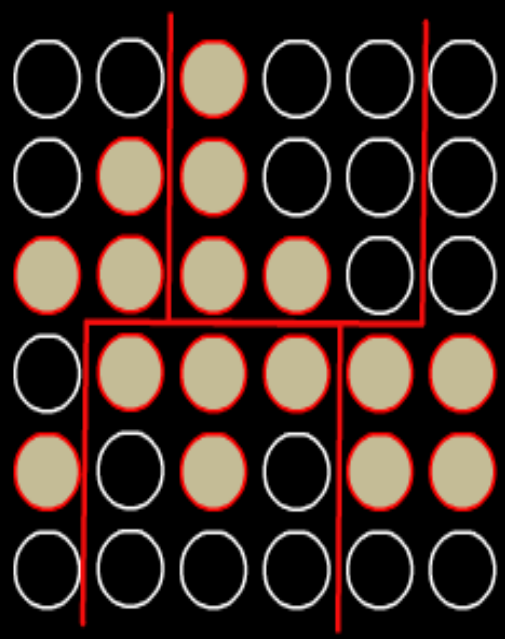
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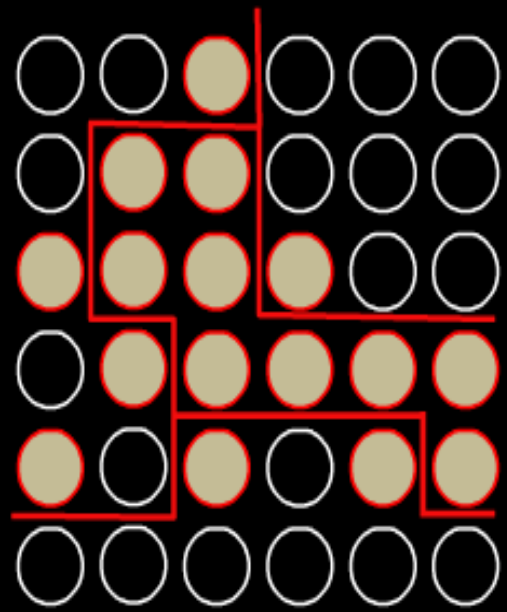
But redistricting raises deep issues such as political fairness



Minority representation



Cracking



Packing

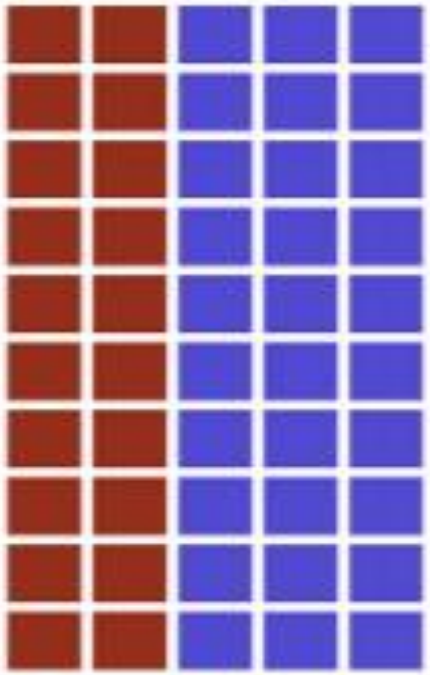
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Gerrymandering, explained

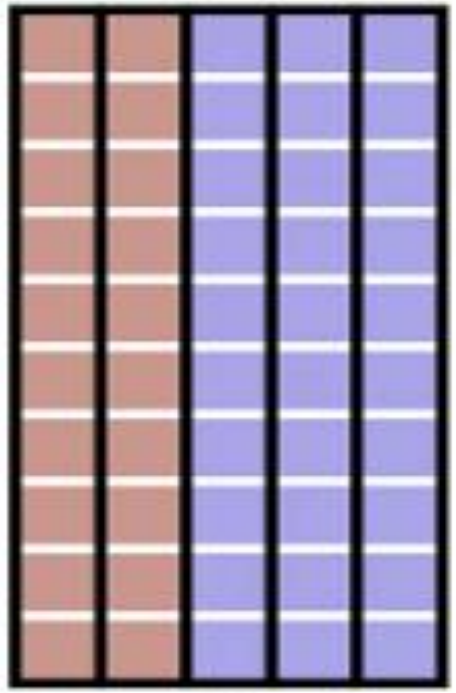
Three different ways to divide 50 people into five districts

50 people



60% blue, 40% red

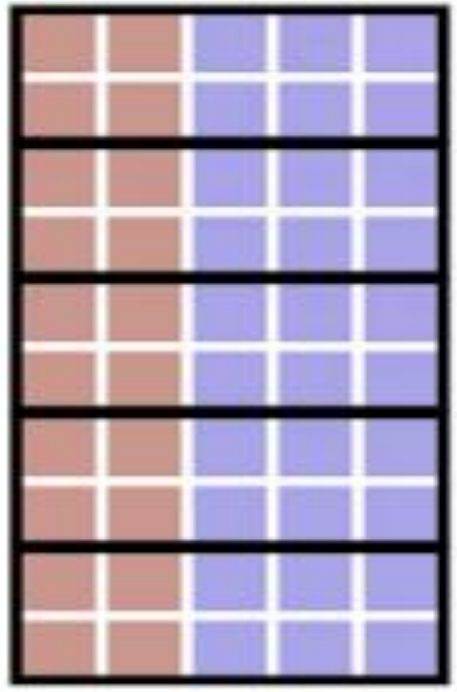
1. Perfect representation



3 blue districts, 2 red districts

BLUE WINS

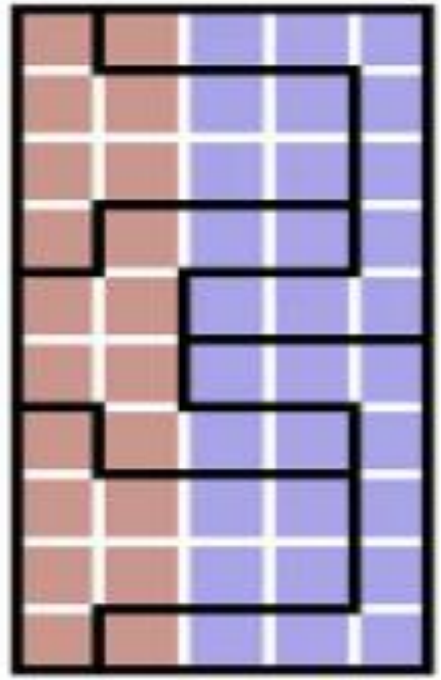
2. Compact, but unfair



5 blue districts, 0 red districts

BLUE WINS

3. Neither compact nor fair



2 blue districts, 3 red districts

RED WINS

Computation to guide redistricting decision-making

1. Computers **replace hand calculators** and large data sets with GIS, demographic and political information
2. Multicriteria Optimization to achieve **an optimal outcome** by specifying the criteria ranking or weights (**neutral criteria can be pretextual)**
3. Multicriteria Optimization to identify **acceptable alternatives** that are above legal/politically chosen levels for each criterion—**people still choose** which one.
4. **LLMs choose**, we push the button and get the preferred plan in the name of **procedural fairness**