Redistricting technology through the ages

Will Adler
Senior Technologist, Elections & Democracy
Center for Democracy & Technology
cdt.org
@wtadler
wadler@cdt.org
The modern era of redistricting, 1971–

• pre-computer age 1971–1990
The modern era of redistricting, 1971–

- pre-computer* age 1971–1990
- PC age 1991–2010
- Internet age 2011–

*(mostly)
Census tabulation

1790–1870
“Clerks who made tally marks or added columns of figures with a pen or a pencil.”

1880
“A tabulating machine: a wooden box in which a roll of paper was threaded past an opening where a clerk marked the tallies in various columns and then added up the marks.”

Source: U.S. Census Bureau
Census tabulation

1890–1940
Hollerith machine

Source: Computer History Museum
Census tabulation

1951
UNIVAC I computer

Source: U.S. Census Bureau
1971: Very little computerization

- Perhaps only CA, DE, IA, GA, WA use computers.
- Census small geographies were not very useful.

1975: PL94-171

- 1975: Congress passes PL94-171 to allow states to work with the Census on geographies. NCSL plays key role in getting it passed.
1981

- Census data not perfect, but much better than 1971.
- Even for the states that did use computers, incredibly labor-intensive process.
Let’s draw some districts!
Step 1. Receive data from the Census

Step 2. Print out a really big map.
Step 3. Crawl around on your hands and knees with dry erase markers, drawing districts on acetate.

Step 4. Record district-tract assignments onto punch cards.

Step 5. Drive to the local university. Run the punch cards through the mainframe overnight.

Step 6. Pick up your report.

Step 7. Did you achieve your objectives? No? Go back to step 2.
Young man... can you spare a moment?
1991: The culmination of some mid-80s revolutions

- In the mid-80s, revolutions were underway...
  - ... in the Census: TIGER
  - ... in the legislatures: getting creative
  - ... in computer hardware: faster, smaller, cheaper
  - ... in computer software: graphical user interfaces (GUIs), geographic information system (GIS)
  - ... in the law: Gingles factors
2001

- Commercial off-the-shelf software available: CityGate, Maptitude
- Can be run off of laptops
- Uses of the Internet are rudimentary
- Some legislatures still building their own software
2011: The Internet age

- Free Internet redistricting software: Dave’s Redistricting App, DistrictBuilder
- Public workstations
- Increased access
- Great data journalism
2021

• Proliferation of free online tools
• States seeing unprecedented interest in redistricting
• Legislatures, commissions, soliciting public input
Beyond 2021

• Anyone can draw a map now.

• Soliciting public input is great, but how are legislatures supposed to make sense of all this public input?

Report coming out tomorrow on a piece of this puzzle.
Key sources


- Kimball W. Brace (2004). *Technology and Redistricting: A Personal Prospective on the Use of Technology in Redistricting over the past Thirty Years.*

- Linda Meggers (GA)

- Cathy Clark McCully (Census)

- Clare Dyer (TX)

- Butch Speer (LA)

- Peter Wattson (MN)

- John Guthrie (FL)

- Haley Proehl, Kathy Steinle, Michael Stewart (NV)

Will Adler
Senior Technologist, Elections & Democracy Center for Democracy & Technology

[cdt.org](http://cdt.org)
[wtadler](https://twitter.com/wtadler)
[wadler@cdt.org](mailto:wadler@cdt.org)