Regulating Elections: Districts

17.251/252
Spring 2016
Throat Clearing

Preferences → The Black Box of Rules → Outcomes
Major ways that congressional elections are regulated

- The Constitution
  - Basic stuff (age, apportionment, states given lots of autonomy)
  - Federalism key
- Districting
- Campaign finance
APPORTIONMENT
Apportionment methods

• 1790 to 1830--The Jefferson method of greatest divisors
  – Fixed “ratio of representation” with rejected fractional remainders
  – Size of House can vary
• 1840--The Webster method of major fractions
  – Fixed “ratio of representation” with retained major fractional remainders
  – Size of House can vary
• 1850-1900--The Vinton or Hamilton method
  – Predetermined # of reps
  – # of seats for state = Population of State/(Population of US/N of Seats)
  – Remaining seats assigned one at a time according to “largest remainder”
  – “Alabama paradox”
• 1940-2010--The method of equal proportions

Source:
https://www.census.gov/population/apportionment/about/history.html
About the Alabama Paradox …

- Called the “Alabama paradox” because of the 1880 census (increasing the House from 299 to 300 reduces Alabama’s seats)
- Rule: Compute “fair share” of seats, then allocate an additional seat according to largest remainder
- Example, 3 states w/ 10 & 11 seats

<table>
<thead>
<tr>
<th>State</th>
<th>Pop.</th>
<th>Fair share</th>
<th>Seats</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>610</td>
<td>4.357</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>590</td>
<td>4.214</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>200</td>
<td>1.429</td>
<td>1→2</td>
</tr>
<tr>
<td>Total</td>
<td>1400</td>
<td>9</td>
<td>9→10</td>
</tr>
</tbody>
</table>

Divisor: 140 = 1400/10
Diversion to the Alabama Paradox

- Called the “Alabama paradox” because of the 1880 census (increasing the House from 299 to 300 reduces Alabama’s seats)
- Rule: Compute “fair share” of seats, then allocate an additional seat according to largest remainder
- Example, 3 states w/ 10 & 11 seats

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<tr>
<td>A</td>
<td>610</td>
<td>4.357</td>
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<td>5</td>
</tr>
<tr>
<td>B</td>
<td>590</td>
<td>4.214</td>
<td>4</td>
<td>4.656</td>
<td>5</td>
</tr>
<tr>
<td>C</td>
<td>200</td>
<td>1.429</td>
<td>1→2</td>
<td>1.575</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>1400</td>
<td>9</td>
<td>9→10</td>
<td>9</td>
<td>9→11</td>
</tr>
<tr>
<td>Divisor</td>
<td>140=</td>
<td>1400/10</td>
<td></td>
<td>127 = 1400/11</td>
<td></td>
</tr>
</tbody>
</table>
Balinsky and Young (1982)

*Fair Representation*

• Any method of apportionment will yield paradoxes

• No apportionment method…
  – Follows the quota rule
    • Quota rule: If $\frac{\text{population}_s}{\text{seats}_1} = I.ddd$, the state either gets $I$ seats or $I+1$ seats
  – Avoids the Alabama paradox
  – Avoids the population paradox
    • Population paradox: when you have two states, and the one that grows faster loses seats to the one that grows slower
Method of equal proportions

- “Results in a listing of the states according to a priority value--calculated by dividing the population of each state by the geometric mean of its current and next seats—that assigns seats 51 through 435.”
- Practically: This method assigns seats in the House of Representatives according to a ‘priority’ value. The priority value is determined by multiplying the population of a state by a ‘multiplier.’ For example, following the 1990 census, each of the 50 states was given one seat out of the current total of 435. The next, or 51st seat, went to the state with the highest priority value and thus became that state's second seat.

Source: https://www.census.gov/topics/public-sector/congressional-apportionment.html
## Priority values after 2010

<table>
<thead>
<tr>
<th>Seat #</th>
<th>State</th>
<th>Priority #</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>California Seat 2</td>
<td>26,404,773</td>
</tr>
<tr>
<td>52</td>
<td>Texas Seat 2</td>
<td>17,867,469</td>
</tr>
<tr>
<td>53</td>
<td>California Seat 3</td>
<td>15,244,803</td>
</tr>
<tr>
<td>54</td>
<td>New York Seat 2</td>
<td>13,732,759</td>
</tr>
<tr>
<td>55</td>
<td>Florida Seat 2</td>
<td>13,364,864</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>431</td>
<td>Florida Seat 27</td>
<td>713,363</td>
</tr>
<tr>
<td>432</td>
<td>Washington Seat 10</td>
<td>711,867</td>
</tr>
<tr>
<td>433</td>
<td>Texas Seat 36</td>
<td>711,857</td>
</tr>
<tr>
<td>434</td>
<td>California Seat 53</td>
<td>711,308</td>
</tr>
<tr>
<td>435</td>
<td>Minnesota Seat 8</td>
<td>710,230</td>
</tr>
<tr>
<td>436</td>
<td>North Carolina Seat 14</td>
<td>709,062</td>
</tr>
<tr>
<td>437</td>
<td>Missouri Seat 9</td>
<td>708,459</td>
</tr>
<tr>
<td>438</td>
<td>New York Seat 28</td>
<td>706,336</td>
</tr>
<tr>
<td>439</td>
<td>New Jersey Seat 13</td>
<td>705,164</td>
</tr>
<tr>
<td>440</td>
<td>Montana Seat 2</td>
<td>703,158</td>
</tr>
</tbody>
</table>

Reapportionment Change in 2010

Courtesy of the U.S. Department of Commerce. This image is in the public domain.
<table>
<thead>
<tr>
<th>Last seat given</th>
<th>Next seat at</th>
</tr>
</thead>
<tbody>
<tr>
<td>435 VA 12 (+1)</td>
<td>436 AL 7 (n.c.)</td>
</tr>
<tr>
<td>434 NY 34 (n.c.)</td>
<td>437 OR 6 (+1)</td>
</tr>
<tr>
<td>433 CA 54 (+1)</td>
<td>438 AZ 10 (+1)</td>
</tr>
<tr>
<td>432 TX 39 (+3)</td>
<td>439 MT 2 (+1)</td>
</tr>
<tr>
<td>431 CO 8 (+1)</td>
<td>440 MN 8 (n.c.)</td>
</tr>
<tr>
<td></td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>446 RI 2 (n.c.)</td>
</tr>
<tr>
<td></td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>746 WY 2 (+1)</td>
</tr>
</tbody>
</table>
ANTICIPATED GAINS/LOSSES IN REAPPORTIONMENT
2015 ESTIMATES

State numbers reflect number of congressional house seats after change put into effect.

Based on Census Bureau estimates released 12/22/2015

Image by MIT OpenCourseWare.
ANTICIPATED GAINS/LOSSES IN REAPPORTIONMENT
2020 PROJECTIONS

State numbers reflect number of congressional house seats after change put into effect.

Projections to 2020 based on 2010-2015 trendline from Census Bureau estimates released 12/22/2015

Image by MIT OpenCourseWare.
APPORTIONMENT CHANGE SINCE 1940

Image by MIT OpenCourseWare.
Recent Reapportionment Court Challenges

  – Method of equal proportions OK

• *Department of Commerce v. United States House of Representatives*, 525 U.S. 316 (1999)
  – The Census Bureau can’t sample

  – “Hot deck” imputation challenged
  – Mormon missionaries miscounted
DISTRICTING
Districting

• Districts required in House races since Apportionment Act of 1842

• Effects of districting
  – Can influence overall responsiveness
  – Can influence quality of representation at a micro level
Districting principles

• Universal principles
  – Compactness and contiguity
  – Equal population
  – Respect existing political communities
  – Political/partisan fairness

• Distinct US principle
  – Civil rights constraints
Principle 1: Compactness

• General idea: \( \min(\text{border/area}) \)
• Types of measures (~30 in all)
  – Contorted boundary
  – Dispersion
  – Housing patterns
Three major measures

Convex Hull

Polsby-Popper

Schwartzberg

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Uses Polsby-Popper method
(Ratio of district’s area to a circle with the same perimeter)

Source: Ingraham, Christopher. "How Gerrymandered is Your Congressional District?"
Compactness in the real world: Kansas 2011 (Good)

Courtesy of the U.S. Department of the Interior/U.S. Geological Survey. This image is in the public domain.
Compactness in the real world
Ohio 2011 (not so good)
Compactness in the real world: Florida
Florida 5th district (formerly 3rd)
Florida 20th District
New Florida Map

Congressional Districts

SC14-1905

2-Dec-15
Ordered by The Florida Supreme Court

See LWV v. Detzer, Case No. SC14-1905

This content is in the public domain.
Principle 2: Contiguity

• General idea: keep the district together

Bad

Good

?
Contiguity in the real world: Ohio in 2010

Courtesy of the Ohio Secretary of State. Used with permission.
Principle 3: Equal population

• Implied by having districts
• Bad: Many states before 1960s
  – Illinois in 1940s (112k-914k)
  – Georgia in 1960s (272k-824k)
• Good: equality?
## Equality in 2000

<table>
<thead>
<tr>
<th>State</th>
<th>Ideal District Size</th>
<th>Percent Overall Range</th>
<th>Overall Range (# of people)</th>
<th>State</th>
<th>Ideal District Size</th>
<th>Percent Overall Range</th>
<th>Overall Range (# of people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>636,300</td>
<td>0.00%</td>
<td>-</td>
<td>Montana</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Alaska</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Nebraska</td>
<td>570,421</td>
<td>0.00%</td>
<td>6</td>
</tr>
<tr>
<td>Arizona</td>
<td>641,329</td>
<td>0.00%</td>
<td>0</td>
<td>Nevada</td>
<td>666,086</td>
<td>0.00%</td>
<td>6</td>
</tr>
<tr>
<td>Arkansas</td>
<td>668,350</td>
<td>0.04%</td>
<td>303</td>
<td>New Hampshire</td>
<td>617,893</td>
<td>0.10%</td>
<td>636</td>
</tr>
<tr>
<td>California</td>
<td>639,088</td>
<td>0.00%</td>
<td>1</td>
<td>New Jersey</td>
<td>647,257</td>
<td>0.00%</td>
<td>1</td>
</tr>
<tr>
<td>Colorado</td>
<td>614,465</td>
<td>0.00%</td>
<td>2</td>
<td>New Mexico</td>
<td>606,349</td>
<td>0.03%</td>
<td>166</td>
</tr>
<tr>
<td>Connecticut</td>
<td>681,113</td>
<td>0.00%</td>
<td>0</td>
<td>New York</td>
<td>654,360</td>
<td>0.00%</td>
<td>1</td>
</tr>
<tr>
<td>Delaware</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>North Carolina</td>
<td>619,178</td>
<td>0.00%</td>
<td>1</td>
</tr>
<tr>
<td>Florida</td>
<td>639,295</td>
<td>0.00%</td>
<td>1</td>
<td>North Dakota</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Georgia</td>
<td>629,727</td>
<td>0.01%</td>
<td>72</td>
<td>Ohio</td>
<td>630,730</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hawaii</td>
<td>582,234</td>
<td>-</td>
<td>-</td>
<td>Oklahoma</td>
<td>690,131</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Idaho</td>
<td>646,977</td>
<td>0.60%</td>
<td>3,595</td>
<td>Oregon</td>
<td>684,280</td>
<td>0.00%</td>
<td>1</td>
</tr>
<tr>
<td>Illinois</td>
<td>653,647</td>
<td>0.00%</td>
<td>11</td>
<td>Pennsylvania</td>
<td>646,371</td>
<td>0.00%</td>
<td>19</td>
</tr>
<tr>
<td>Indiana</td>
<td>675,609</td>
<td>0.02%</td>
<td>102</td>
<td>Rhode Island</td>
<td>524,160</td>
<td>0.00%</td>
<td>6</td>
</tr>
<tr>
<td>Iowa</td>
<td>585,265</td>
<td>0.02%</td>
<td>134</td>
<td>South Carolina</td>
<td>668,669</td>
<td>0.00%</td>
<td>2</td>
</tr>
<tr>
<td>Kansas</td>
<td>672,105</td>
<td>0.00%</td>
<td>33</td>
<td>South Dakota</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Kentucky</td>
<td>673,628</td>
<td>0.00%</td>
<td>2</td>
<td>Tennessee</td>
<td>632,143</td>
<td>0.00%</td>
<td>5</td>
</tr>
<tr>
<td>Louisiana</td>
<td>638,425</td>
<td>0.04%</td>
<td>240</td>
<td>Texas</td>
<td>651,619</td>
<td>0.00%</td>
<td>1</td>
</tr>
<tr>
<td>Maine</td>
<td>637,462</td>
<td>-</td>
<td>-</td>
<td>Utah</td>
<td>744,390</td>
<td>0.00%</td>
<td>1</td>
</tr>
<tr>
<td>Maryland</td>
<td>662,061</td>
<td>0.00%</td>
<td>2</td>
<td>Vermont</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>634,910</td>
<td>0.39%</td>
<td>-</td>
<td>Virginia</td>
<td>643,501</td>
<td>0.00%</td>
<td>38</td>
</tr>
<tr>
<td>Michigan</td>
<td>662,563</td>
<td>0.00%</td>
<td>1</td>
<td>Washington</td>
<td>654,902</td>
<td>0.00%</td>
<td>7</td>
</tr>
<tr>
<td>Minnesota</td>
<td>614,935</td>
<td>0.00%</td>
<td>1</td>
<td>West Virginia</td>
<td>602,781</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mississippi</td>
<td>711,165</td>
<td>0.00%</td>
<td>10</td>
<td>Wisconsin</td>
<td>670,459</td>
<td>0.00%</td>
<td>5</td>
</tr>
<tr>
<td>Missouri</td>
<td>621,690</td>
<td>0.00%</td>
<td>1</td>
<td>Wyoming</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Source: National Conf. of State Leg.
2012 Supreme Court Case: W.Va. Deviations Acceptable

- Tennant vs. Jefferson County Commission
  - Overturns “as nearly as practicable” rule
- Originally passed bill had zero population variation
- Final bill:
  - 1st dist: 615,991
  - 2nd dist: 620,682
  - 3rd dist: 616,141
Principle 4: Respect for existing political communities*

- Iowa
- Politicians like it
- May be better for citizens
- Getting more difficult with computer drafting of districts and (nearly) equal populations

*Upheld in Tennant v. JCC

Prepared by Iowa Legislative Services Agency for educational purposes, this content is in the public domain.
But, the Assembly’s another matter
Principle 5: (Partisan) Fairness

- Results should be symmetrical
- Results should be unbiased
Partisan Fairness

• What is the right responsiveness?
Swing ratio

• Measure of responsiveness
• Concept:
  – Swing ratio = $\Delta Seats_p / \Delta Votes_p$
• Various ways to measure
  – Empirical: across time
  – Theoretical: “uniform swing analysis”
Why the swing ratio is rarely 1

Distribution of vote share

Distribution of seat share

Slope $\sim 3$
Why the swing ratio is rarely 1

![Graphs showing the relationship between % Dem vote and another variable. One graph has a horizontal line at 50% with a slope of 1 marked.]

Slope = 1
Mayhew Diagram 2008
Mayhew Diagram 2010
Mayhew Diagram 2012
Mayhew Diagram 2014
Empirical swing ratio
(with data from 1946-2014)
Figure 6.4

Swing ratio = 1.90:1
Bias = 3.6 points
Cumulative distributions, 2008 & 2010

- 2008 swing = 1.15
- 2010 swing = 1.76
- 2012 swing = 1.58
CDF 2014

2014 swing = 1.12
Redistricting and the “Republican Advantage” in the House

• Democrats beat Republicans nationwide in popular vote in 2012, but Republicans won the House handily
  – Likely to repeat in 2016
• Explanation: Republican gerrymanders in 2011
  – Ohio (48% Dem vote → 4D, 12R)
  – Florida (47% Dem vote → 10D, 17R)
  – North Carolina (51% Dem vote → 4D, 9R)
  – Pennsylvania (51% Dem vote → 5D, 13R)
  – Michigan (53% Dem vote → 5D, 9R)
  – Wisconsin (51% Dem vote → 3D, 5R)
Reasons for skepticism about the “Republican gerrymander” problem

• Incumbency accounts for ~ 7 points advantage, and there are more Republican incumbents

• Democrats are more concentrated geographically than Republicans
  – Confirmed by Chen and Rodden)

• Florida court case will yield at most a 3-seat shift to the D’s
Court cases concerning partisan fairness

• Davis v. Bandemer (1986)
  – Democrats challenge Indiana plan
  – Court has jurisdiction over partisan gerrymandering
  – This was not a partisan gerrymander

  – Democrats challenge Pennsylvania plan
  – Partisan gerrymandering may be nonjusticiable
  – No majority to overturn Davis v. Bandemer
Principle 5: (Racial) fairness

• From 15th amendment
  – “The right of citizens of the United States to vote shall not be denied or abridged by the United States or by any State on account of race, color, or previous condition of servitude.”

• Voting Rights Act of 1965
  – Prevented dilution
    • Section 2: General prohibition against discrimination
    • Section 5: Pre-clearance for “covered” jurisdictions
      – covered jurisdictions must demonstrate that a proposed voting change does not have the purpose and will not have the effect of discriminating based on race or color.
    • S.C. says you have to show intent
  – 1982: VRA extension allows effect
  – 1990: Justice dept. moved to requiring maximizing minority representation through pre-clearance
  – 2013: Shelby County v. Holder
    • Section 4b [coverage formula] unconstitutional, thus Section 5 unenforceable
    • Section 2 still in force (probably)
    • Effect greatest in non-districting cases
    • Possible effects on redistricting going forward
Some Court Cases Pertaining to Districting

• Equal population
  – Colgrave v. Green (1946): “political question”
  – Gray v. Sanders (1963): Ga. unit rule
  – Wesberry v. Sanders (1964): “one person, one vote” doctrine
  – Davis v. Bandemer (1986): political gerrymanders subject to review, even if one person, one vote met
  – Veith v. Pennsylvania (2002): no deviation allowed (but political gerrymanders may be OK)
VRA Cases

- 1965: Dilution outlawed
- 1982: Extension + Republican DOJ = Racial gerrymanders
- 1993: Shaw v. Reno
  - Race must be narrowly tailored to serve a compelling gov’t interest, or….
  - Sandra is the law
  - Non-retrogression doctrine
  - Districting overturned in GA, NC, VA, FL, TX, LA, NY (but not IL)
- Page v. Bartels (2001): incumbency protection OK, even if it’s only minority incumbents
- Alabama Legislative Black Caucus v. Alabama (2015) (It’s a mis-reading of Section 5 to keep the % of African Americans in a district the same)
- Shelby County (2013): struck down pre-clearance formula
Current Redistricting

Courtesy of Justin Levitt. Used with permission.

Source: Justin Levitt, “All about Redistricting.”
Mid-Decade Redistricting Cases after 2000

- Colorado
  - State Supreme Court rules unconstitutional by state constitution, SCOTUS refuses to hear
- Pennsylvania
  - *Bandemer* upheld; redistricting not overturned
- Texas
  - *League of United Latin American Citizens et al v Perry.*
  - Mid-decade redistricting OK
  - VRA problem with one state legislative district
- Virginia
  - Gov. McAuliffe vetoed a mid-decade state plan in 2015
Who Does the Redistricting?
Arizona Legislature vs. Ariz. Redistricting Commission

Attorneys for Plaintiff Arizona State Legislature

UNITED STATES DISTRICT COURT
DISTRICT OF ARIZONA

Arizona State Legislature,
Plaintiff,
v.
Arizona Independent Redistricting Commission, and Colleen Mathis, Linda C. McNulty, José M. Herrera, Scott D. Freeman, and Richard Stertz, members thereof, in their official capacities; Ken Bennett, Arizona Secretary of State, in his official capacity,
Defendants.

No. CV-12-01211-PHX-PGR

FIRST AMENDED COMPLAINT

Apportionment Matter:
Three-Judge Panel Requested
Pursuant to 28 U.S.C. § 2248
Arizona Legislature vs. Ariz. Redistricting Commission

• Arguments heard Mar. 2, 2015
• Question: Can redistricting be lodged in a state body that acts independently of the state legislature?
  – the Times, Places and Manner of holding elections for . . . Representatives [in the House] shall be prescribed in each State by the Legislature thereof, but the Congress may at any time by law make or alter such regulations.” (Article I, sec. 4)
• Answer: Yes
Arch & Summer Street in Boston
Near this site stood the home of state senator Israel Thorndike, a merchant and privateer. During a visit here in 1812 by Governor Elbridge Gerry, an electoral district was oddly redrawn to provide advantage to the party in office. Shaped by political intent rather than any natural boundaries, its appearance resembled a salamander. A frustrated member of the opposition party called it a gerrymander, a term still in use today.
An aside about the states: Run-off vs. plurality rule

• The South
• California’s “top-two primary”
  – (really like Louisiana’s “Jungle Primary”)
• Interest in “instant runoff”
17.251 Congress and the American Political System I
Fall 2016

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