

County Cluster Districting Plan for Oklahoma State House*



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State House Districting Rules

Hard Constraints:

- Need to create 101 districts*
- Each district should be contiguous on the map*
- Each district population should be +/- 2.5% of ideal population*
- Ideal population is 38,939 giving bounds of 37,966 and 39,912*

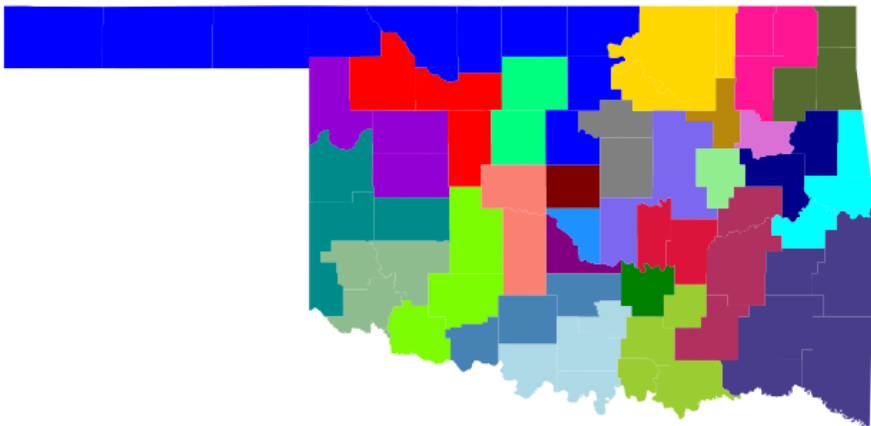
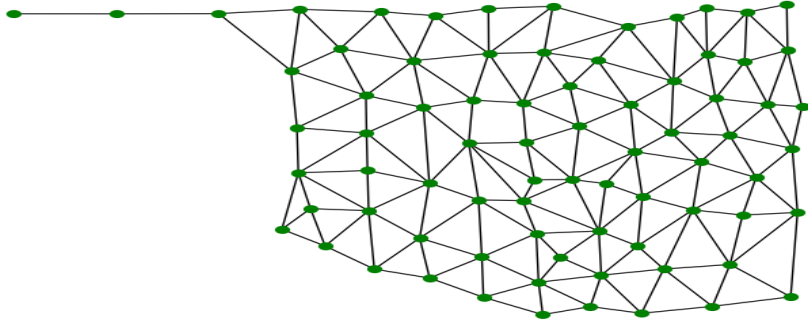
Soft Constraints:

- Compactness
- Preserve subdivisions (e.g., counties*)
- Preserve communities of interest
- ...

This is very hard to do well! Computational difficulty... Local knowledge...Tradeoffs...

*My approach will emphasize these aspects

Step 1: Group Counties into Clusters



Example clusters:

- {Okmulgee} -> 1 district
- {Hughes, Seminole} -> 1 district
- {Oklahoma} -> 20 districts
- {Cotton, Garvin, Stephens} -> 2 districts

Use optimization software to find 28 clusters (see map)

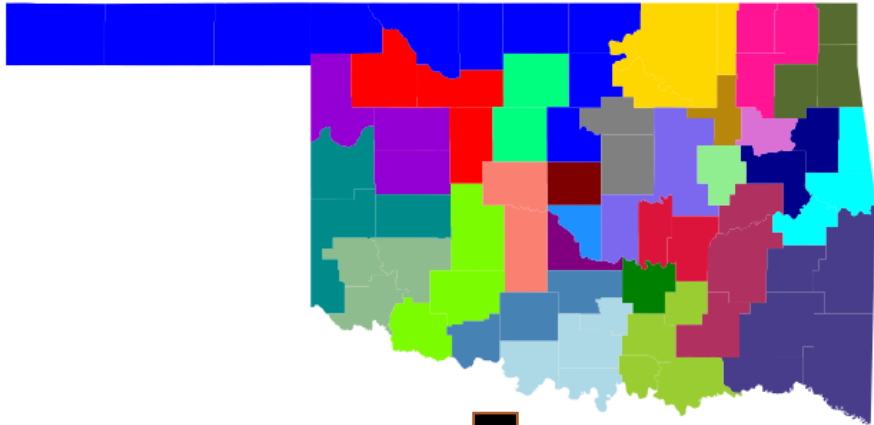
Software requires each cluster to:

- Be contiguous on the map
- Be made of whole counties
- Have population between 37,966 and 39,912, or a multiple thereof
 - Example: Oklahoma County's population of 787,216 is between $20 \times 37,966$ and $20 \times 39,912$

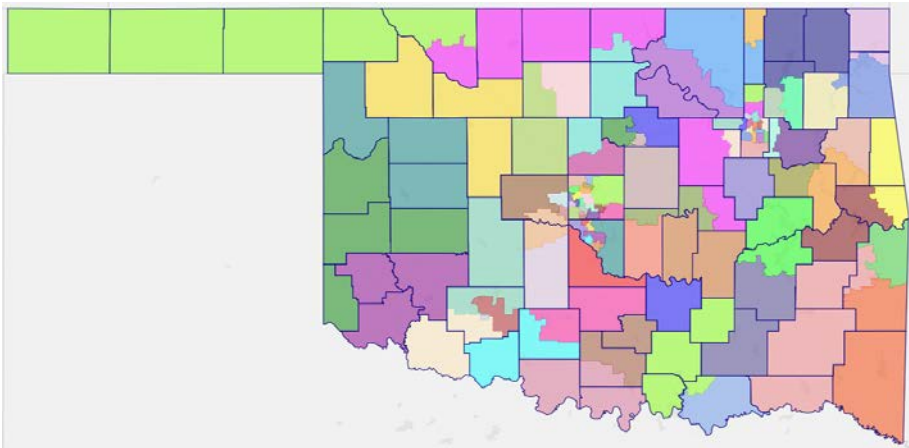
Code here:

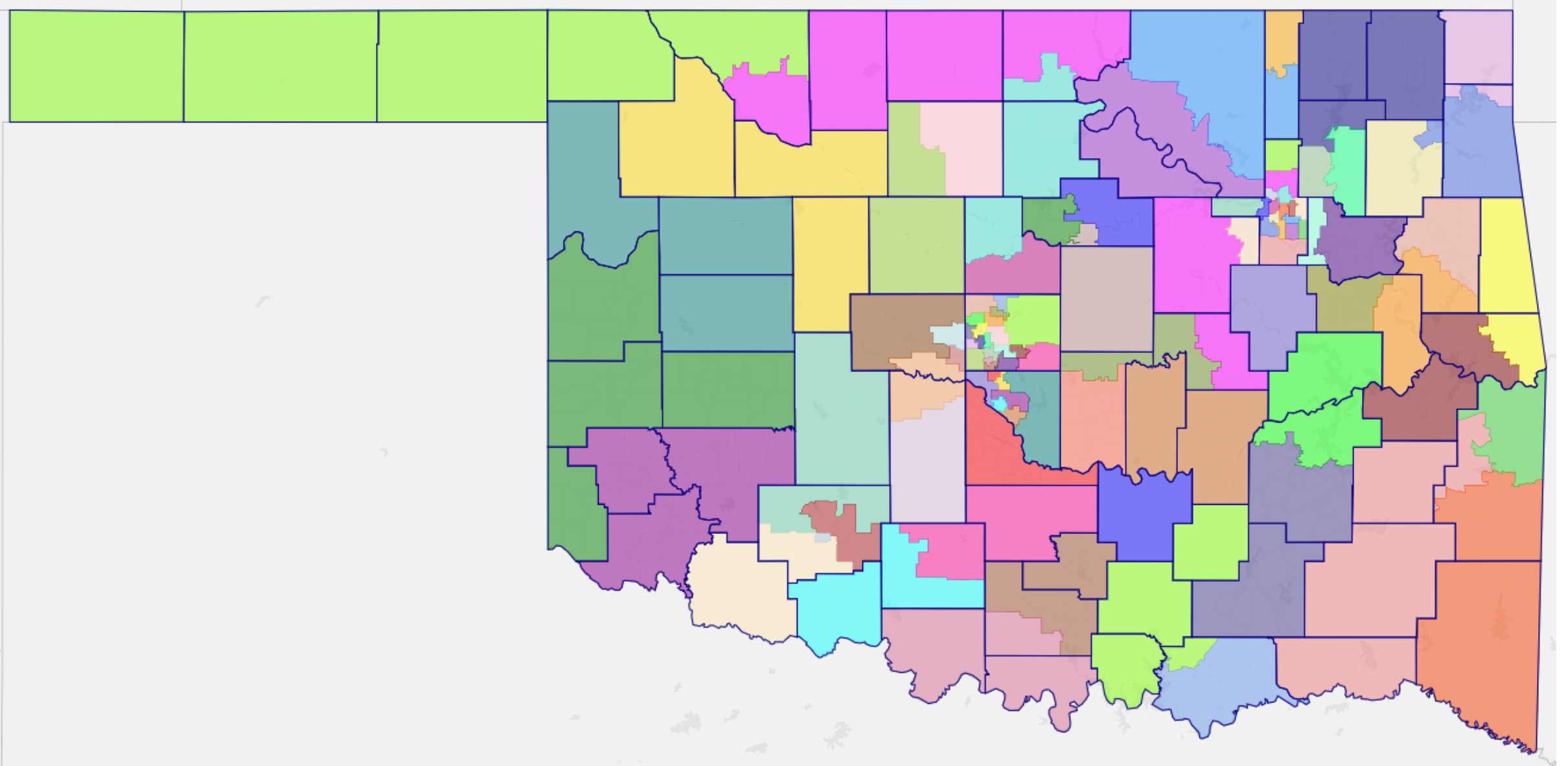
<https://github.com/AustinLBuchanan/OK-County-Clustering>

Step 2: Draw Detailed Plan for Each Cluster



- Now, solve 28 “mini” districting instances
- Easier than solving one big instance
- I drew detailed plans for each cluster “by hand” with Dave’s Redistricting App
- I tried to keep districts compact
- My knowledge of communities of interest is limited!
- Better approach: work with public on step 2

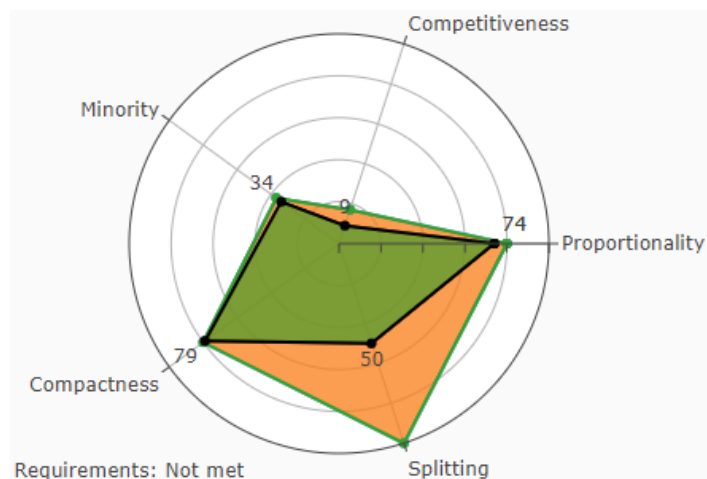




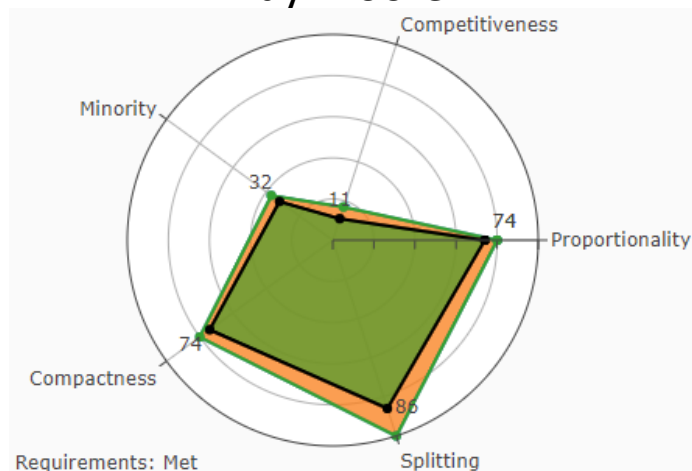
<https://davesredistricting.org/maps#viewmap::d06eedc6-e949-434a-8efc-f948babdcac2>

Comparisons – Strong showing w.r.t. Splitting

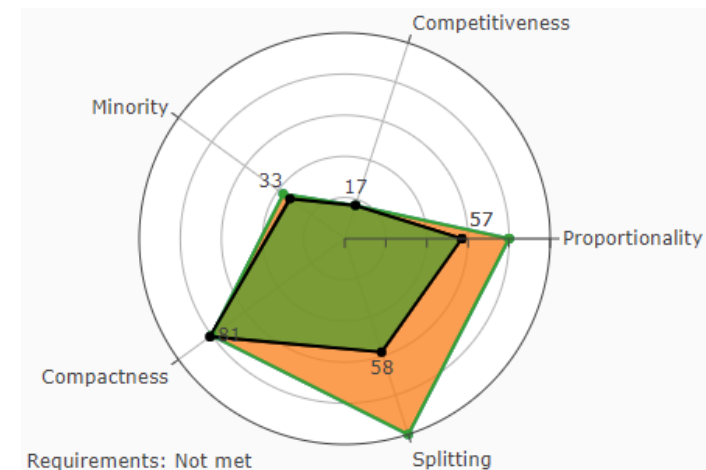
Mark Lawson



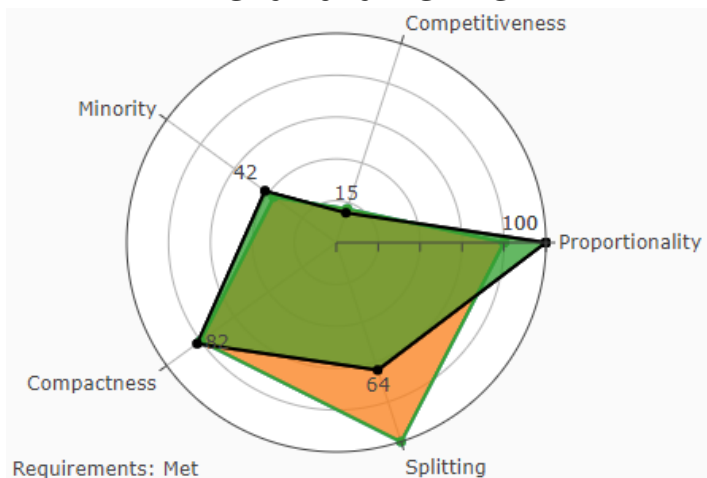
Andy Moore



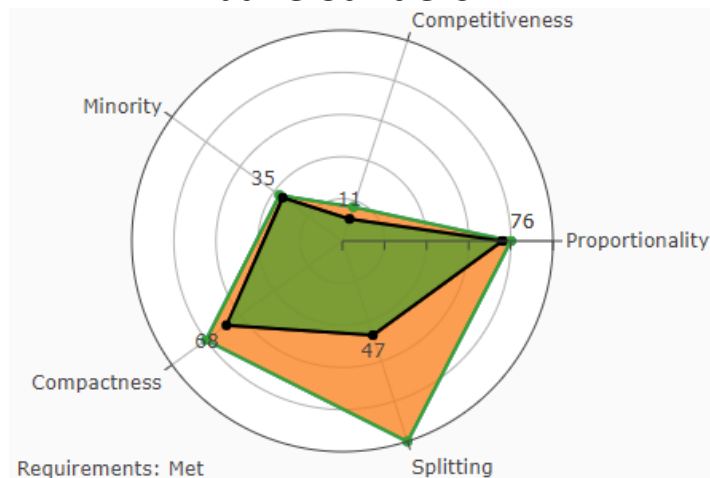
Dan Williams



Alexandra Penner



Julie Sanders



Owen Underwood

