# County Cluster Districting Plan for Oklahoma State Senate*

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# State Senate Districting Rules

Hard Constraints:

- Need to create 48 districts*
- Each district should be contiguous on the map*
- Each district population should be +/- 2.5% of ideal population*
- Ideal population is 81,935 giving bounds of 79,887 and 83,983*

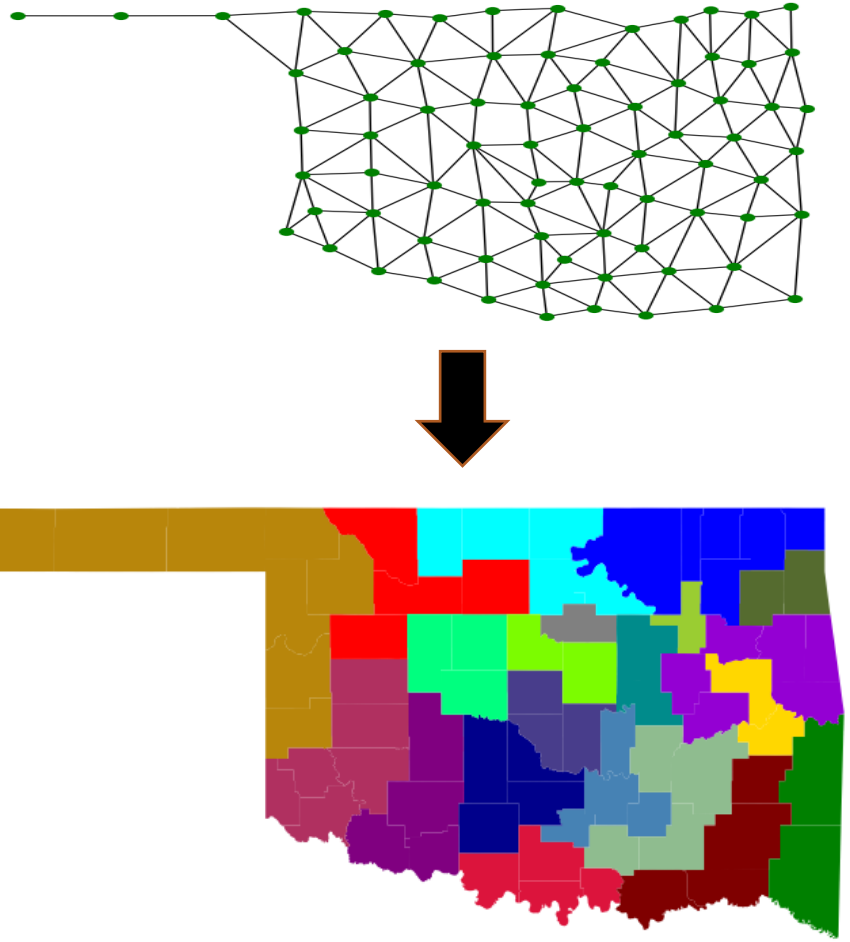
Soft Constraints:

- 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:

- {Payne} -> 1 district
- {Logan, Lincoln} -> 1 district
- {Tulsa} -> 8 districts
- {Blaine, Kingfisher, Canadian} -> 2 districts

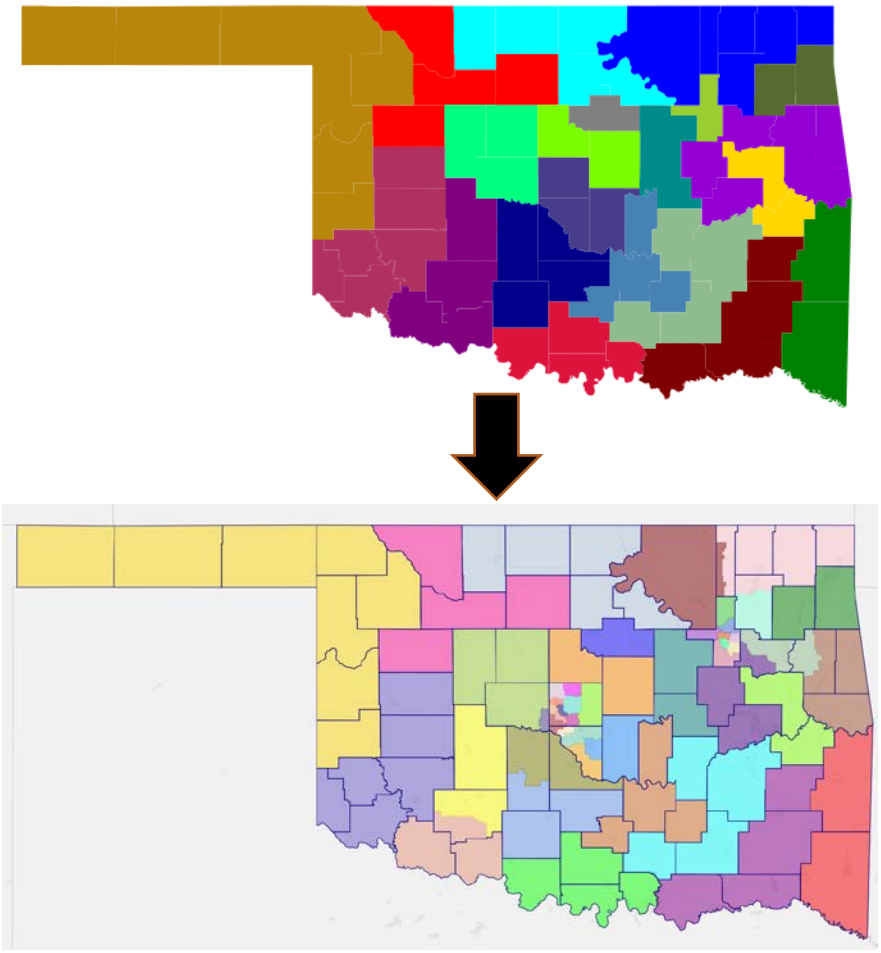
Use optimization software to find 21 clusters (see map)

Software requires each cluster to:

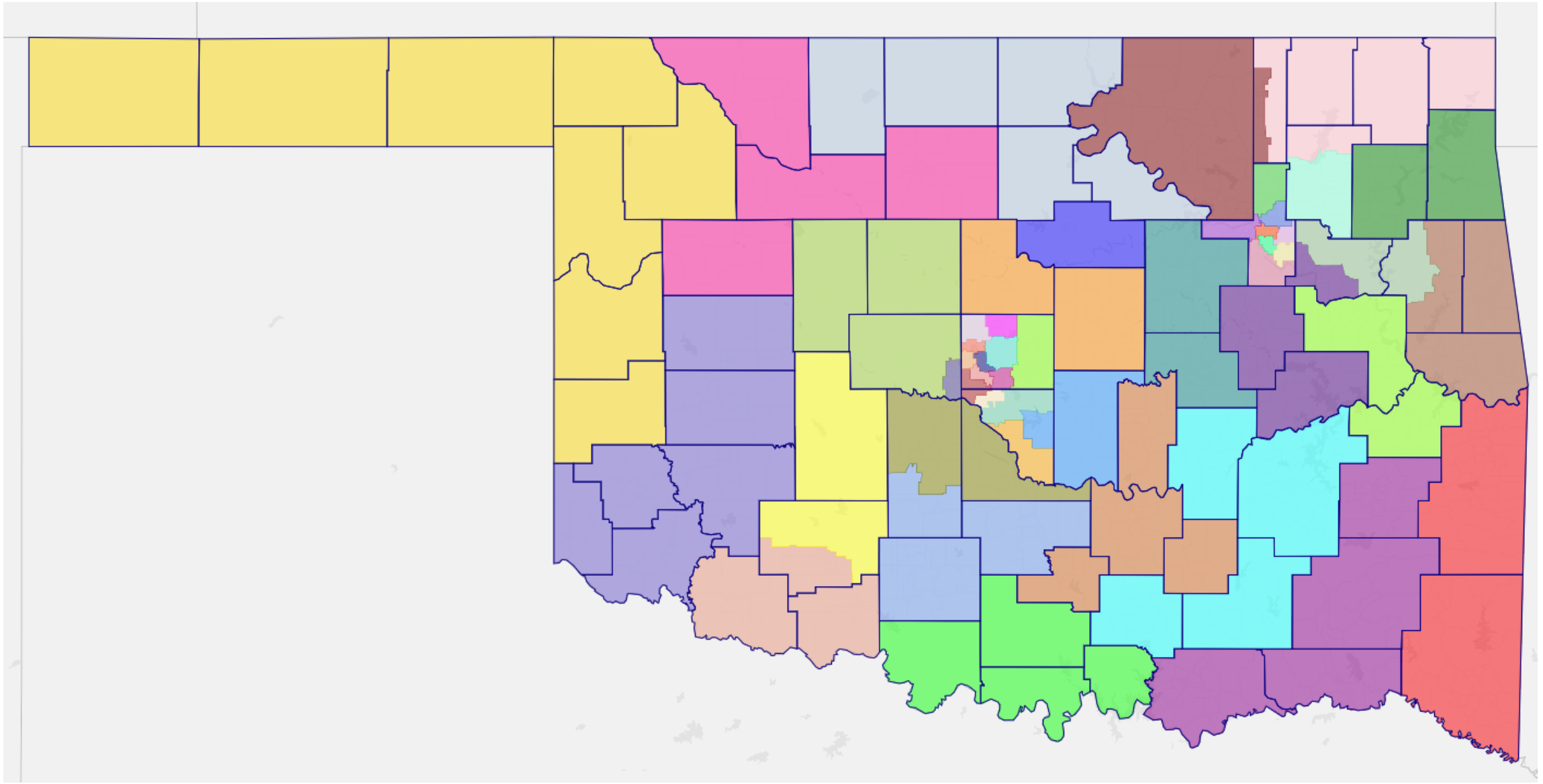
- Be contiguous on the map
- Be made of whole counties
- Have population between 79,887 and 83,983, or a multiple thereof
  - Example: Tulsa County's population of 646,419 is between 8*79,887 and 8*83,983

Code here:
https://github.com/AustinLBuchanan/OK-County-Clustering

# Step 2: Draw Detailed Plan for Each Cluster



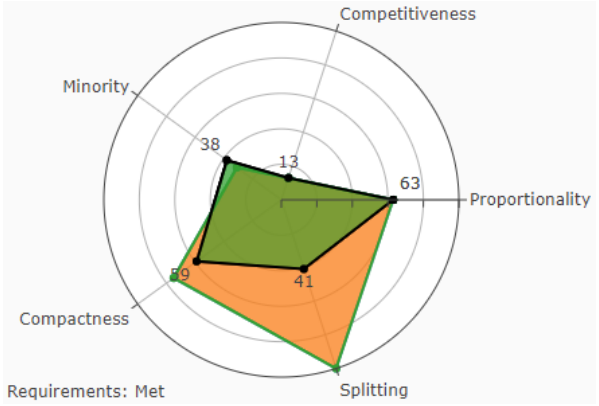
- Now, solve 21 “mini” districting instances
- Easier than solving one big instance
- I drew detailed plans for each cluster “by hand” with Dave’s Redistricting App
- I tried to keep districts compact
- My knowledge of communities of interest is limited!
- Better approach: work with public on step 2



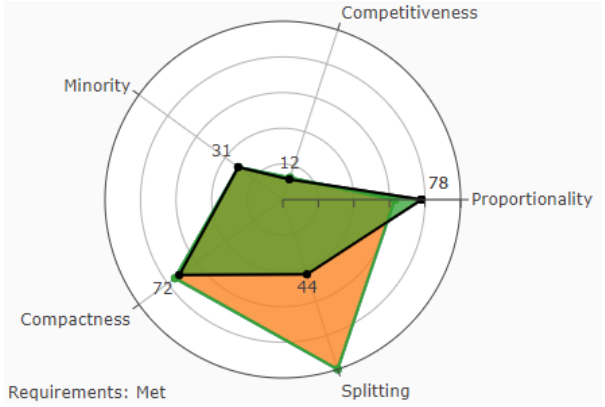
https://davesredistricting.org/join/9ff06581-03d0-40b3-9fad-1650c9ed0b6c

# Comparisons – Strong showing w.r.t. Splitting

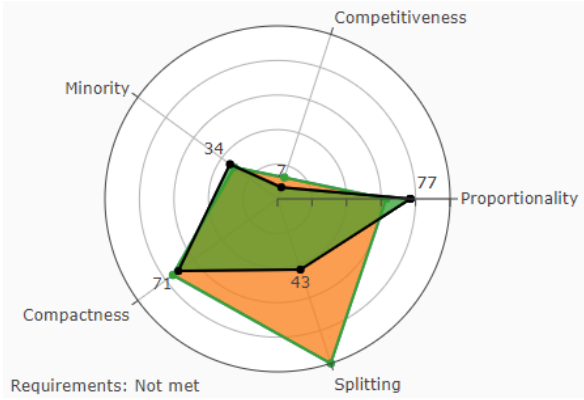
## Public Map 1



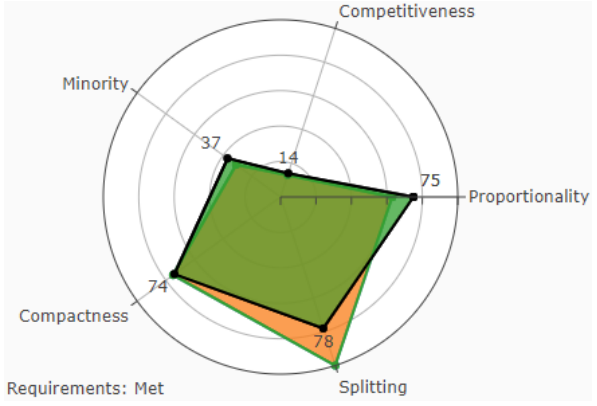

## Public Map 2



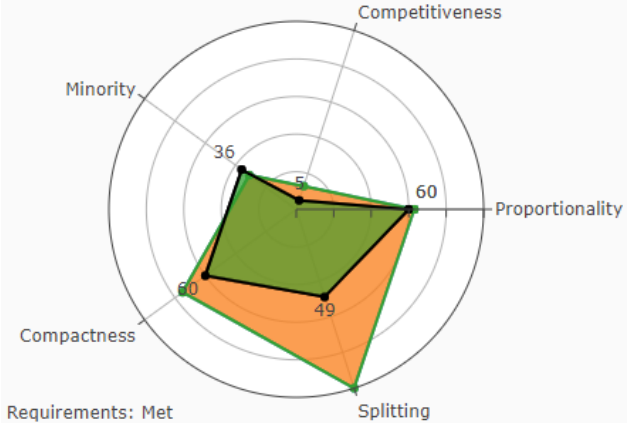

## Public Map 3



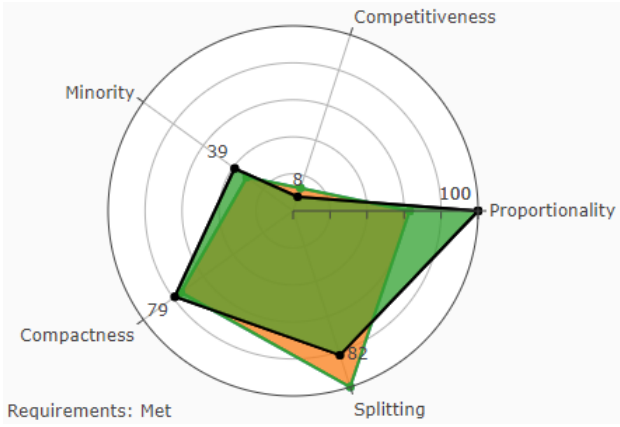

## Public Map 4



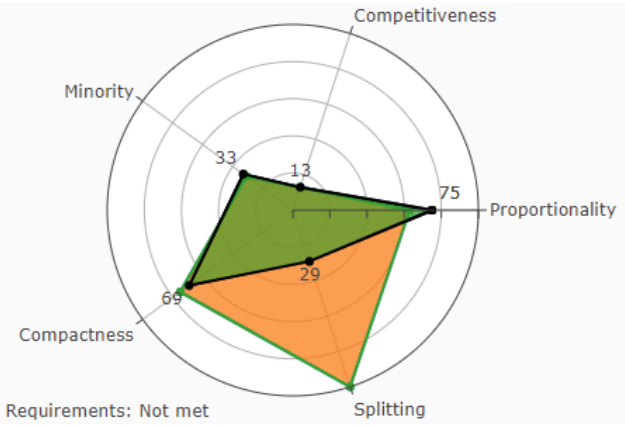

## Public Map 6




## Public Map 7




## Public Map 8




## Public Map 9