Redistricting Abstract

Political redistricting is a complicated, multi-faceted process that requires consideration of many different metrics, including district population, compactness, conservation of political boundaries, and voting fairness. To account for these competing metrics, we utilize multi-criteria optimization and simulated annealing to build better political districts automatically with computers. In our efforts to improve maps with respect to multiple objectives, we apply district recombination, where a neighbor to the current map state is any map that redistributes the geographic units from any two adjacent districts into two new viable districts. By using multi-criteria techniques to gradually improve many maps simultaneously, we can produce many high-quality maps, which can then be candidates for implementation.