algorithmic redistricting and black representation

zachary schutzman

redistricting algorithms

compactness at the forefront; "maximize compactness, subject to population balance and connectedness"

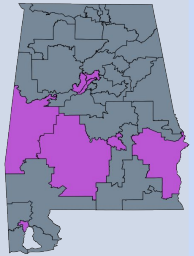
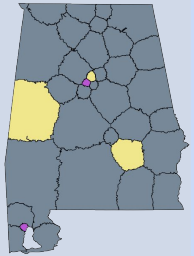
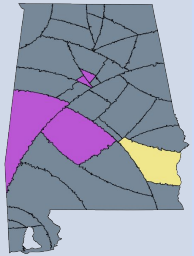
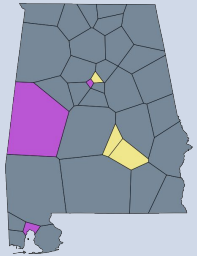
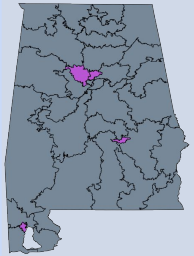
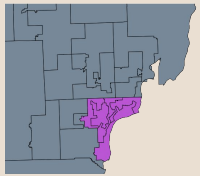
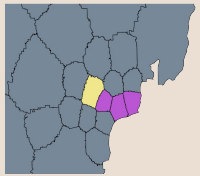
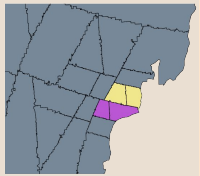
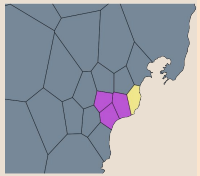
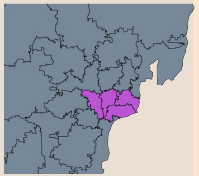
proponents say this is "fair" because the algorithm doesn't take in racial, ethnic, political, economic, etc. data and therefore **cannot be biased** in favor of or against any group

"opportunity districts"

when will a district provide the **opportunity** for a particular community, which **votes cohesively**, to elect **their candidate of choice**?

we compare four different districting algorithms to draw state senate districts in alabama and michigan.

all four draw fewer **black opportunity districts** than appear in the enacted plans and fewer than would be expected by a proportionality benchmark

	enacted	annealing	arcs	voronoi	tree
alabama: 27% black; 35 districts rural and urban black pop. racially polarized vote					
purple districts are "clear" opp. dists. yellow districts are "marginal" opp. dists.	8 0 5 0	2 3 3 1	4 1 2 2	3 3 3 3	4 0 4 0
michigan: 14% black; 38 districts black pop. mainly in detroit (shown) voting not very racially polarized					
	enacted by state legs., used in recent elections	iteratively assign blocks to improve compactness brian olson (2009)	recursively partition the state with circular arcs levin & friedler (2019)	find a balanced voronoi-like partition cohen-addad & klein (2018)	recursively draw and clip spanning trees gerrychain (2018)