

redistricting is the process of drawing geographic regions for electoral purposes. the united states has a **history of abusing redistricting** to limit social, racial, ethnic, and political groups' power

many have proposed "neutral" **algorithmic** tools to perform this task which draw nicely shaped districts subject to constraints like being connected and having equal population

proponents argue that because the algorithm doesn't take in racial, ethnic, political, economic, etc. data it **cannot be biased** in favor of or against any group

opportunity districts are districts that provide the **opportunity** for a community, which **votes cohesively**, to elect **their candidate of choice**

we compare four algorithmically-drawn state senate plans in alabama and michigan. **all four** have fewer **black opportunity districts** than the enacted plans and fewer than would be expected using a proportionality standard

preprint
& poster
available
online



tinyurl.com/algo-black-rep

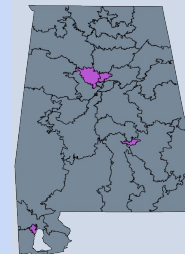
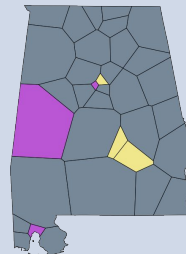
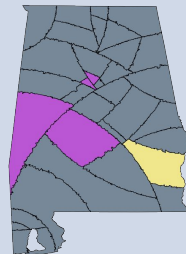
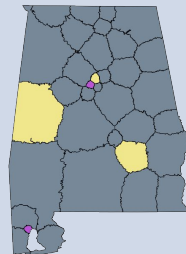
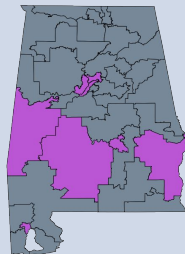
algorithmic redistricting and black representation

zachary schutzman

eaamo 2021

alabama

27% black; 35 districts
both rural & urban
black pop.
racially polarized vote



purple districts are
"clear" opp. dists.
yellow districts are
"marginal" opp. dists.

80
enacted

23
annealing

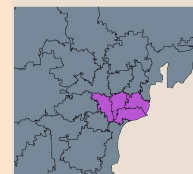
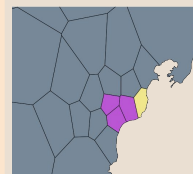
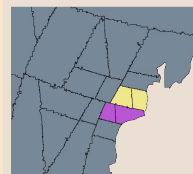
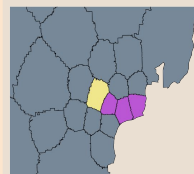
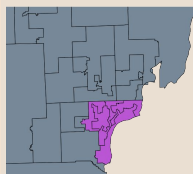
41
arcs

33
voronoi

40
tree

michigan

14% black; 38 districts
black pop., mainly in
detroit (shown)
very racially polarized vote



the algorithmic plans
have a **few districts**
where black voters have
lots of influence and
many others where their
strength is **diluted**

enacted by
state legs.,
used in recent
elections

iteratively
assign blocks
to improve
compactness

recursively
partition the
state with
circular arcs

find a
balanced
voronoi-like
partition

recursively
draw and clip
spanning
trees

brian olson '09

levin & friedler '19

cohen-addad, klein, young '18

gerrychain '18