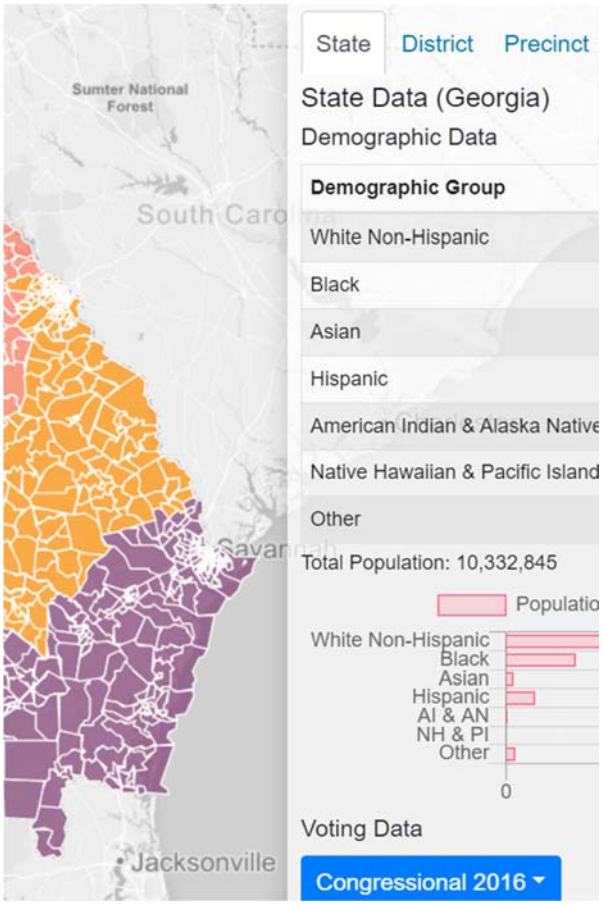
Automated Redistricting System

The Stony Brook University Automated Redistricting System (ARS) provides for the rapid generation of statewide congressional districts in accordance with constitutional and court-ordered guidelines, as well as user-defined preferences. ARS incorporates measures of the quality of a districting plan into a mathematical function, and then attempts to optimize it. Once the user selects a state, she can specify the importance of various measures such as compactness, equal population, and political fairness, along with other parameters such as the desired number of congressional districts.



The user can run the system from any computer with a browser, and see the districts forming during the run. The time to complete districting depends on the size of the state, but a typical state takes only a few minutes to complete. When ARS is run, the user's display is updated with the new district boundaries and vote projections for those districts.

ARS is used for actual state districting exercises, but can also be used to explore the impact of possible legislative and administrative actions. For example, it can be used to determine the maximum number of majority-minority districts in a state. It can also be used to estimate the impact of ranked voting.

The Automated Redistricting System has a wide range of features, including:

- Graphical comparison of original and generated districts
- Multiple measures of political fairness and gerrymandering
- Multiple compactness measures
- Contiguity of each generated district
- Display of existing districts, with voting results and demographic data
- Statewide voting summary for previous elections
- Preservation of selected incumbents in current districts
- Generation of majority-minority districts based on upper and lower bounds for a minority population within the district
- Display of data to enable analysis of whether a given demographic group voted as a bloc in a prior election
- Ability to save generated maps and retrieve and display previously generated maps
- User specified prior elections that are used as predictors of future election results
- Generation of multiple districting solutions that help to analyze the range of Republican/Democratic results for a state