SAT & ACT Test Metrics by California County

By Trevor O'Donnell

Problem Statement:

- California has 58 counties which produce varying educational outcomes for its youth. The goal of this study is to identify the counties that have the worst and best overall student performance on the SAT and ACT tests, to determine which counties are in most need of educational resources, and which ones can be scaled back. Furthermore, it seeks to identify county-level demographic indicators, which may be useful in predicting SAT and ACT down the line.
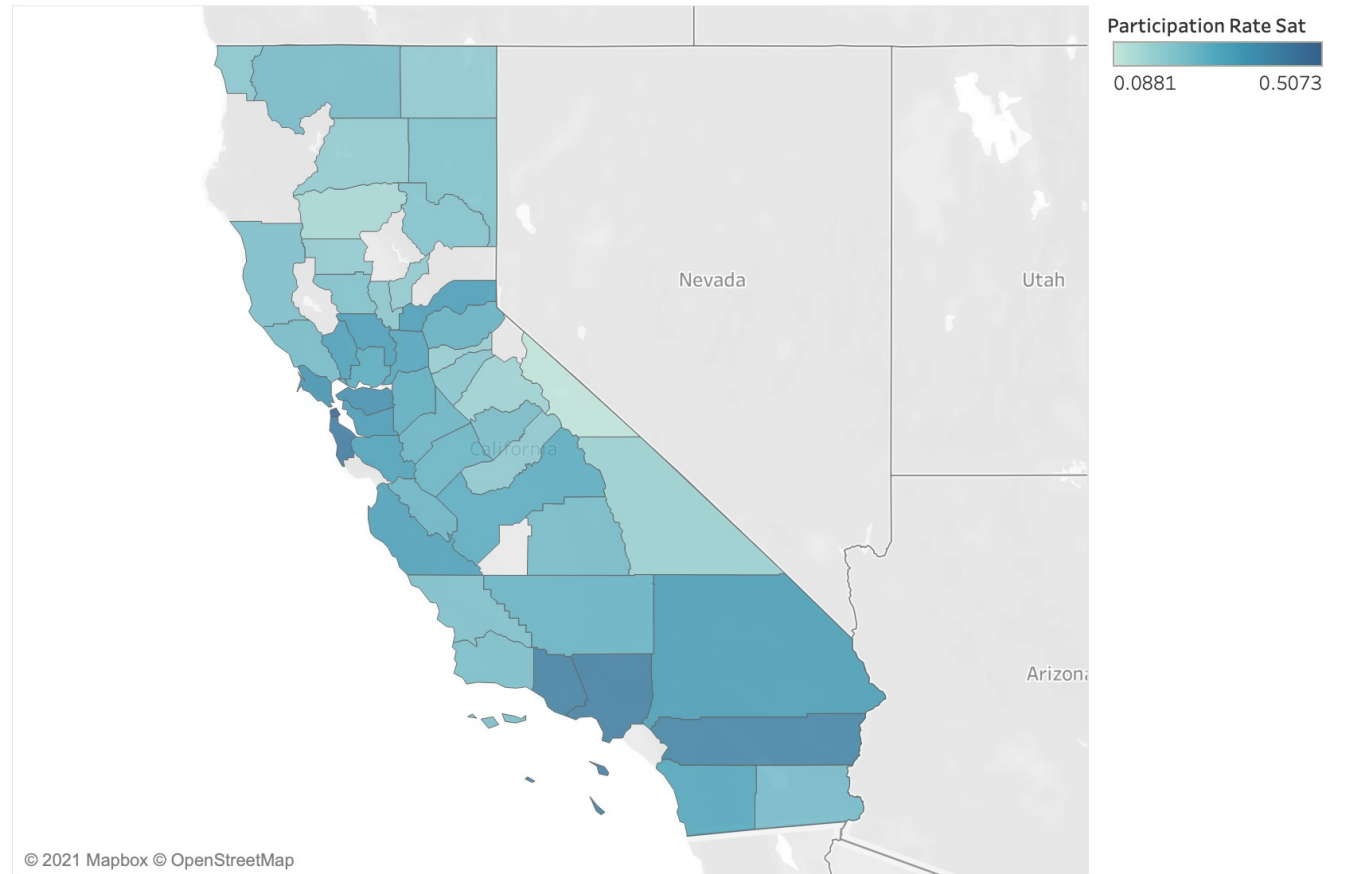
Participation Rates SAT

Counties with lowest participation:

- 1. Mono (.08)

- 2. Nevada (.09)

- 3. Tehama (.13)

- 4. Tuolumne (.15)

- 5. Inyo (.16)

Counties with highest participation:

- 1. San Francisco (.51)

- 2. San Mateo (.43)

- 3. Los Angeles (.42)
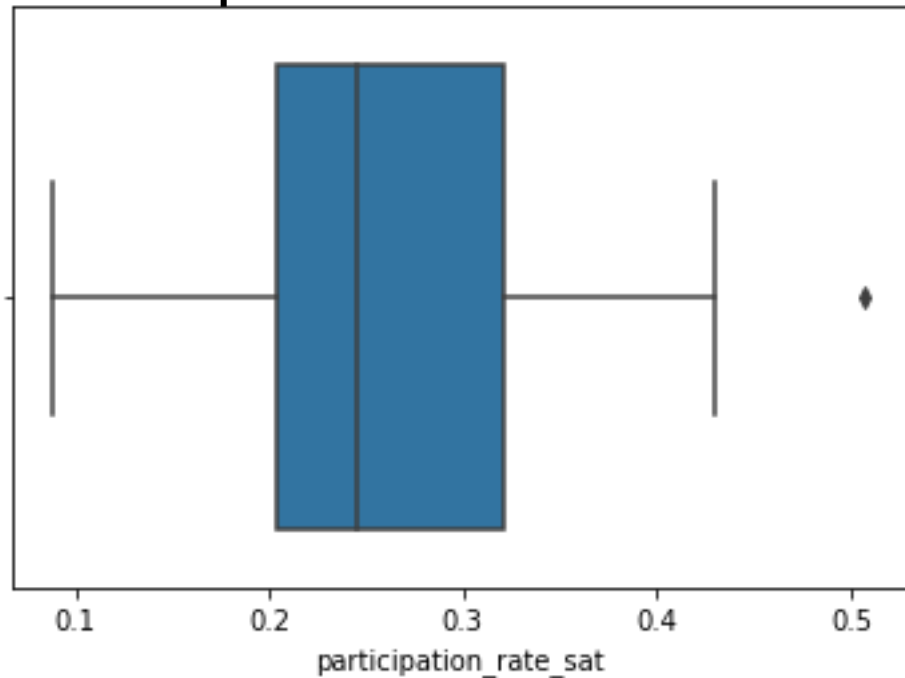
- 4. Ventura (.42)

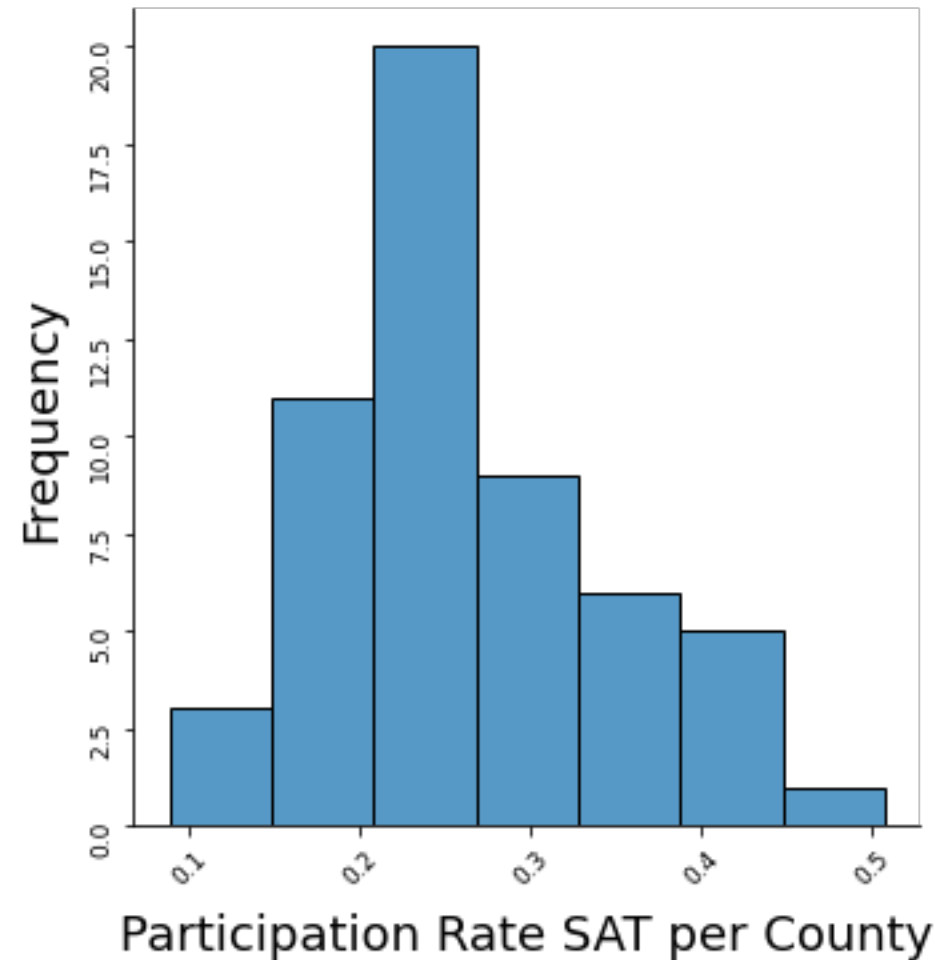- 5. Riverside (.41)

SAT Participation Rates by County

Map based on Longitude (generated) and Latitude (generated). Color shows sum of Participation Rate Sat. Details are shown for County Name (Sat Census.Csv).

Participation Rates SAT

Boxplot

Distribution of Participation Rate SAT per County

Participation Rates SAT

List of best demographic indicators
- 1. Percent Pop. HH Income 50-79K (-.72)
- 2. Percent Pop. Asian (.68)
- 3. Percent Pop Female, Age 40-49 (.68)
- 4. Percent Pop Some College Education (-.68)
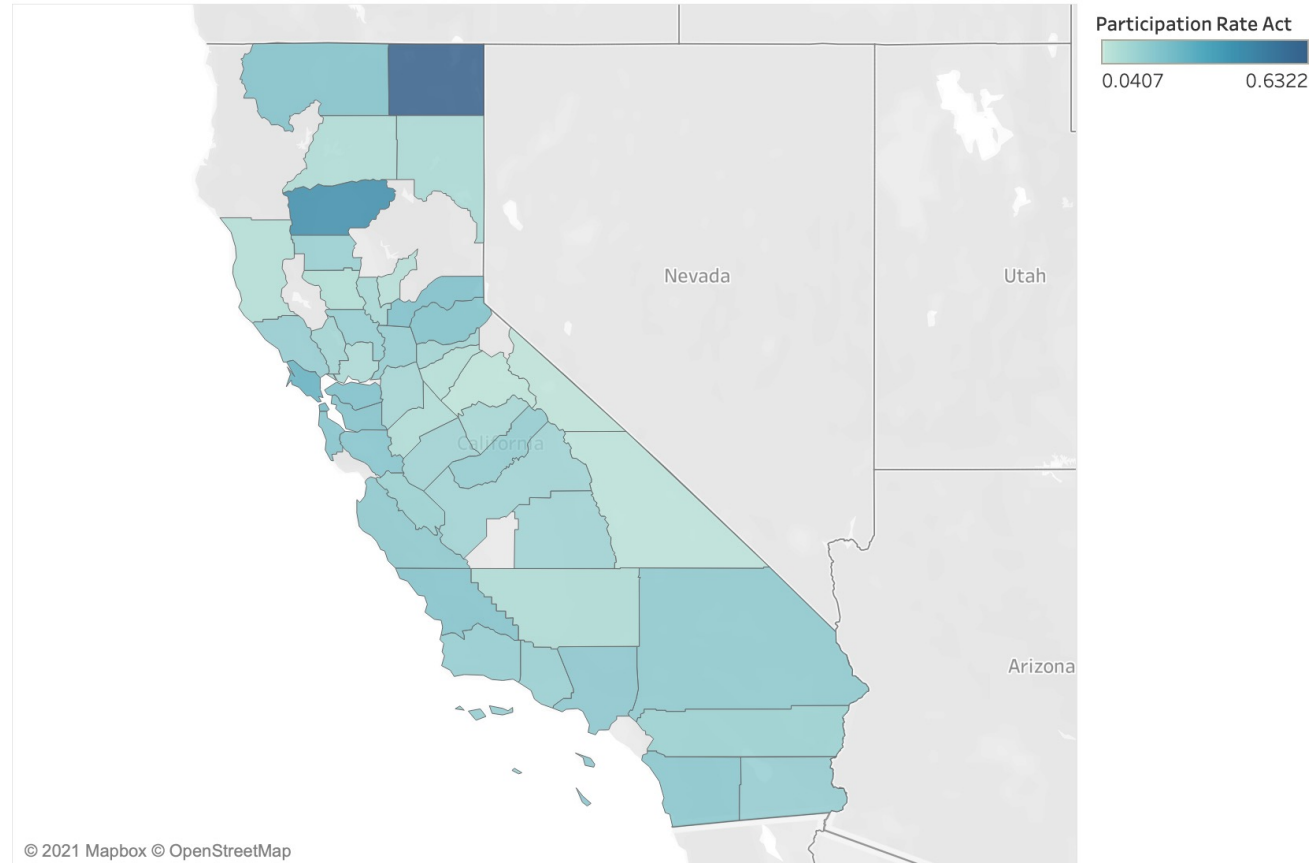- 5. Median Value of Owner-Occupied Homes (.68)

Participation Rates ACT

Counties with lowest participation:

- 1. Nevada (.04)
- 2. Tuolumne (.04)
- 3. Mono (.05)
- 4. Inyo (.05)
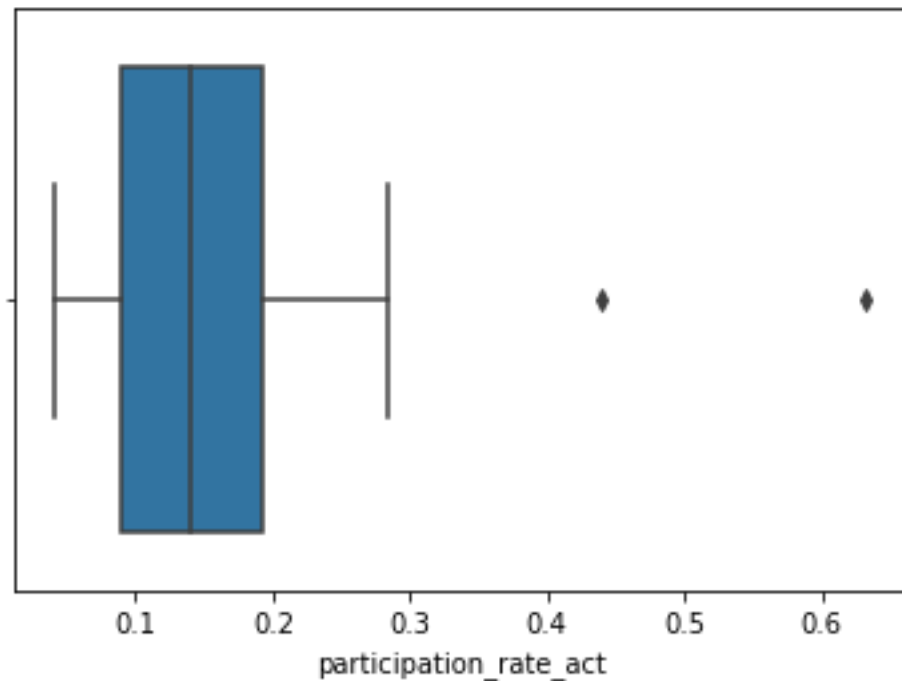- 5. Yuba (.06)

Counties with highest participation:

- 1. Modoc (.63)
- 2. Tehama (.44)
- 3. Marin (.28)
- 4. San Francisco (.24)
- 5. Contra Costa (.21)

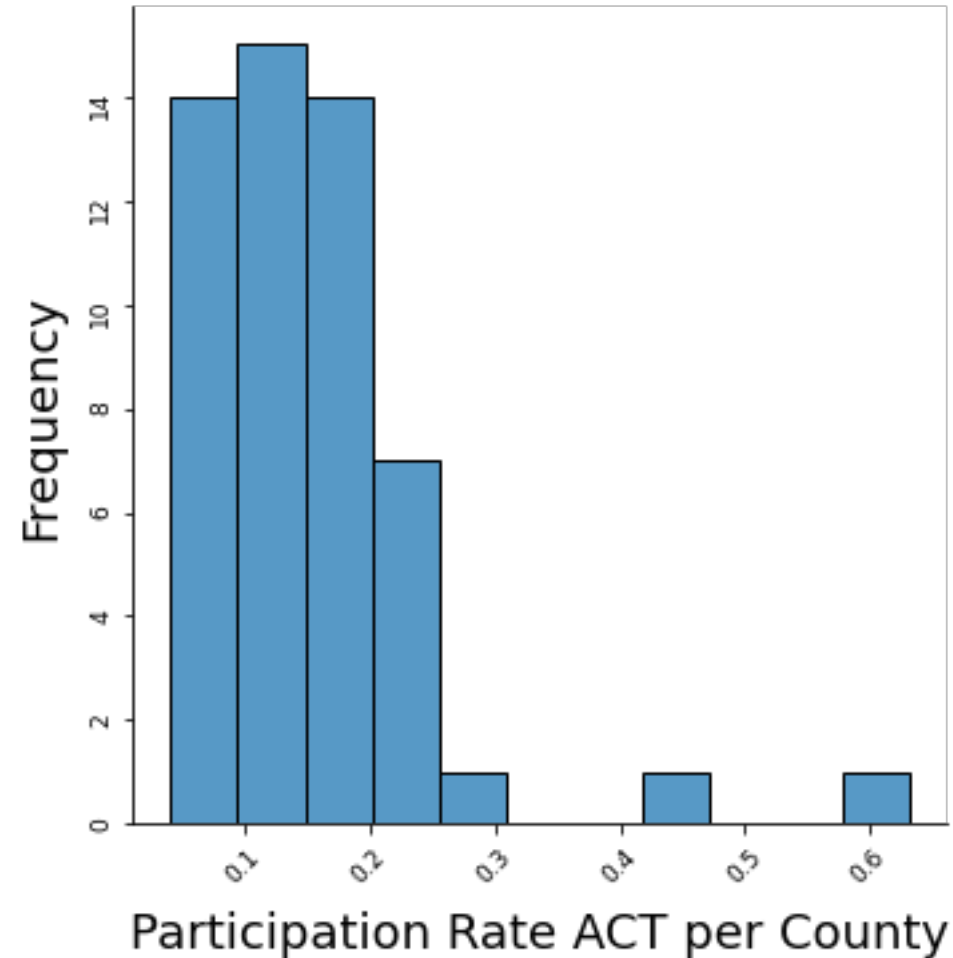ACT Participation Rates by County

Map based on Longitude (generated) and Latitude (generated). Color shows sum of Participation Rate Act. Details are shown for County Name.

Participation Rates ACT

Distribution of Participation Rate ACT per County

Participation Rates ACT

List of best demographic indicators

- 1. Percent Pop. HH Income 50-79K (-.25)
- 2. Percent Pop Female, Age 40-49 (.25)
- 3. Percent Pop Some College Education (-.24)
- 4. Median Value of Owner-Occupied Homes (.20)
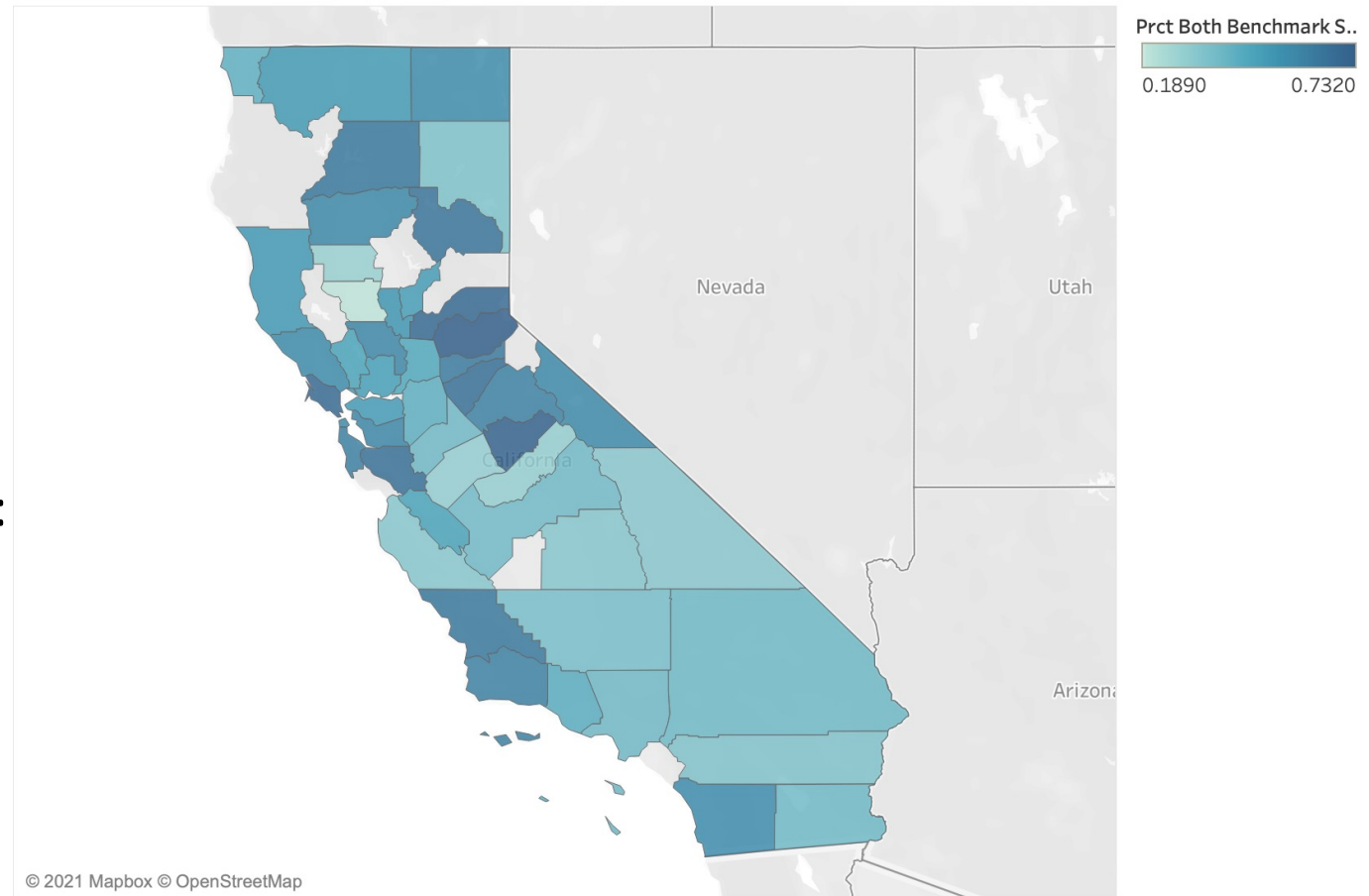- 5. Population Density (.17)

Composite Scores SAT

Counties with lowest composite scores:

- 1. Colusa (.19)
- 2. Glenn (.28)
- 3. Madera (.29)
- 4. Merced (.29)
- 5. Inyo (.32)

Counties with highest composite scores:

- 1. El Dorado (.73)
- 2. Mariposa (.72)
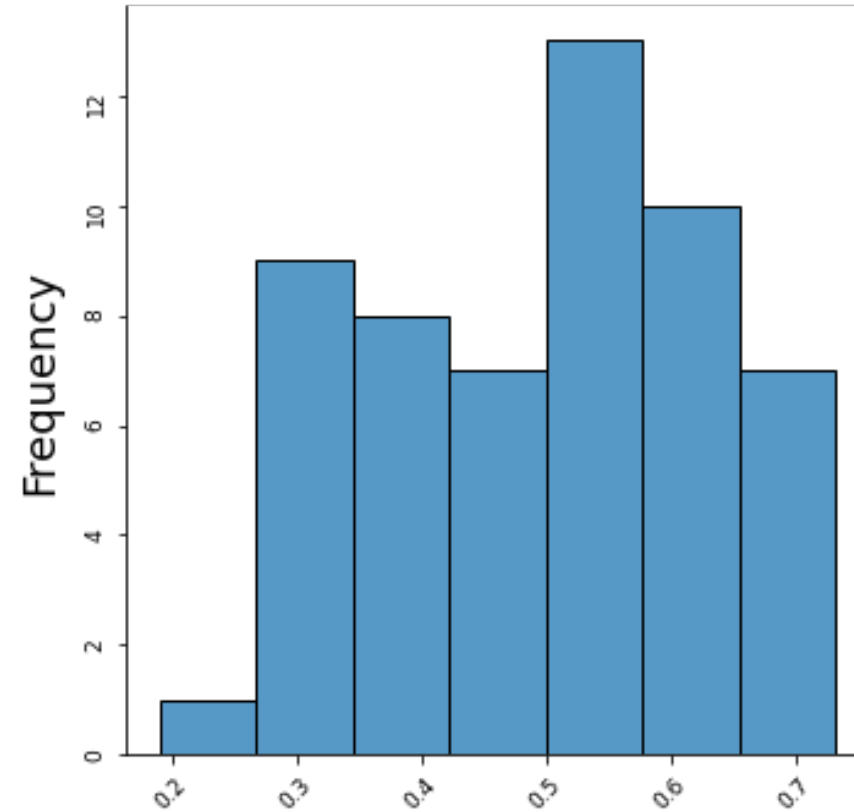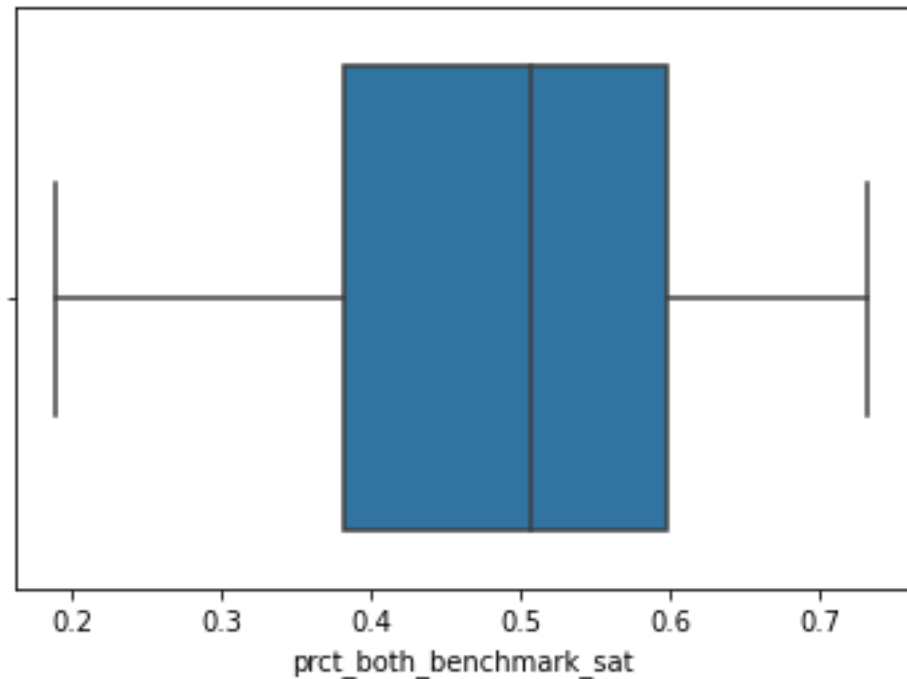- 3. Placer (.69)
- 4. Marin (.69)
- 5. Nevada (.69)

SAT Composite Test Performance Rates by County

Prct Both Benchmark S..
0.1890   0.7320

© 2021 Mapbox © OpenStreetMap

Map based on Longitude (generated) and Latitude (generated). Color shows sum of Prct Both Benchmark Sat. Details are shown for County Name (Sat Census.Csv).

Composite Scores SAT

Distribution of Student Benchmark Achievement Rate per County

Composite Scores SAT

List of best demographic indicators

- 1. Percent Pop. No Diploma (-.83)
- 2. Percent Pop. Hispanic (-.73)
- 3. Percent Pop. Male Age 0-9 (-.67)
- 4. Percent Pop. Below Poverty Line (-.61)
- 5. Total Household Income (.57)
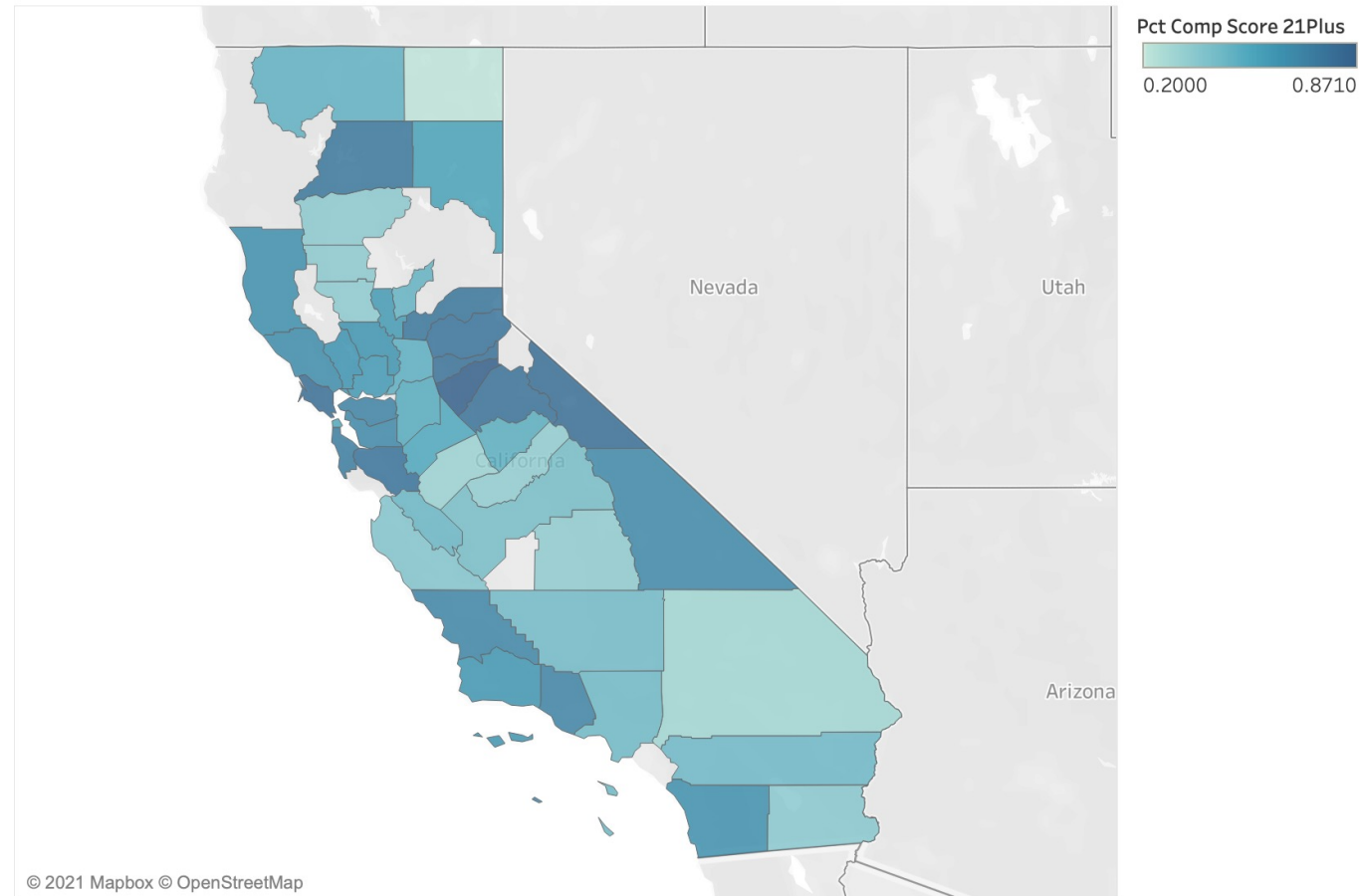
Composite Scores ACT

Counties with lowest composite scores:

- 1. Modoc (.20)
- 2. Kings (.25)
- 3. San Bernardino (.29)
- 4. Merced (.30)
- 5. Madera (.33)

Counties with highest composite scores:

- 1. Calaveras (.88)
- 2. Marin (.80)
- 3. Mono (.70)
- 4. Amador (.78)
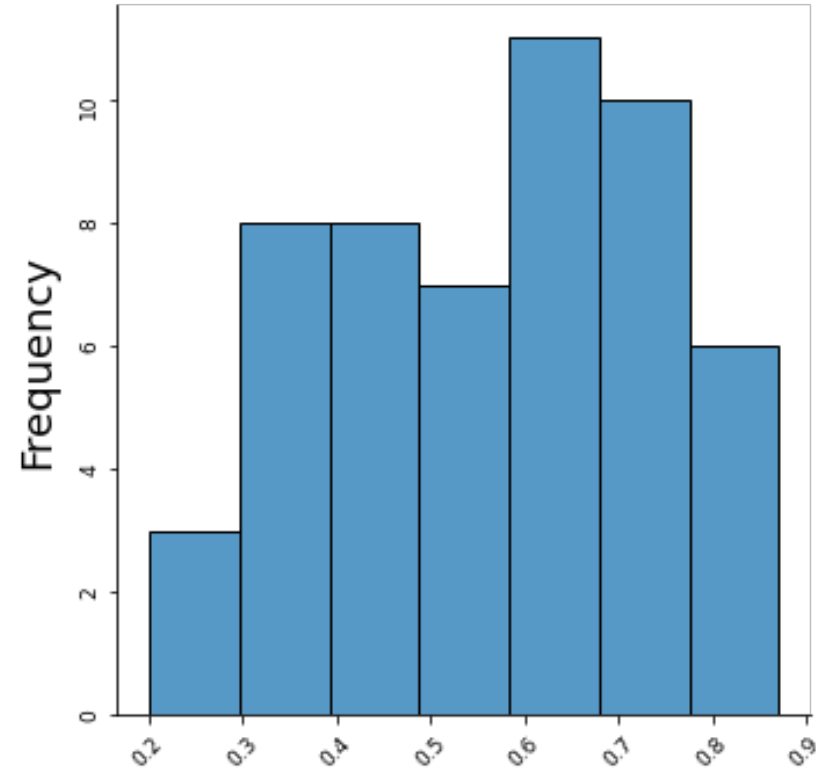- 5. Tuolumne (.78)

ACT Composite Test Performance By County

Map based on Longitude (generated) and Latitude (generated). Color shows sum of Pct Comp Score 21Plus. Details are shown for County Name.

Composite Scores ACT
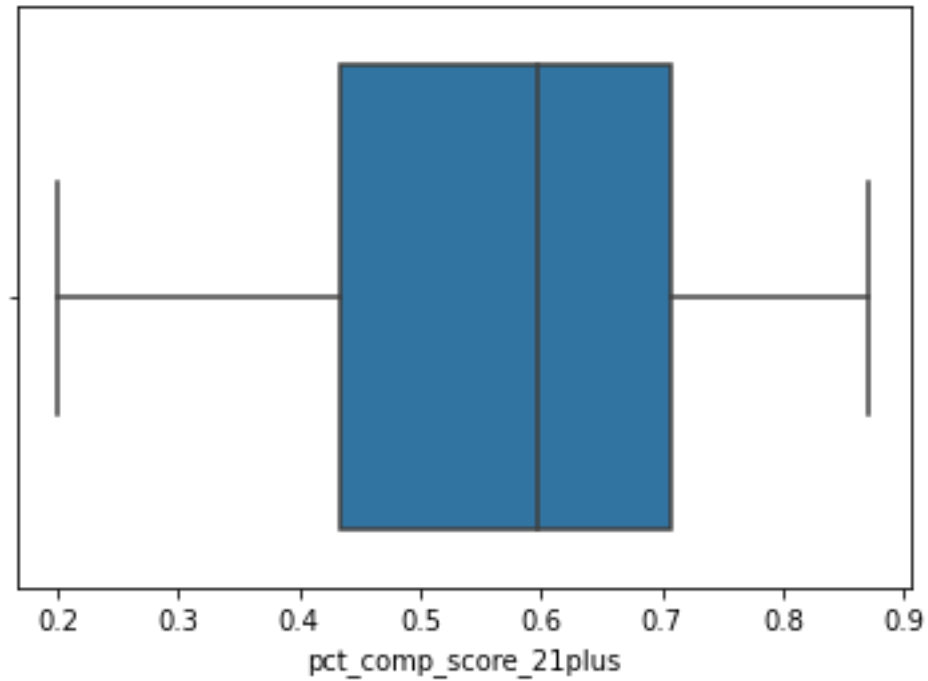
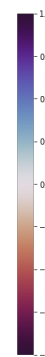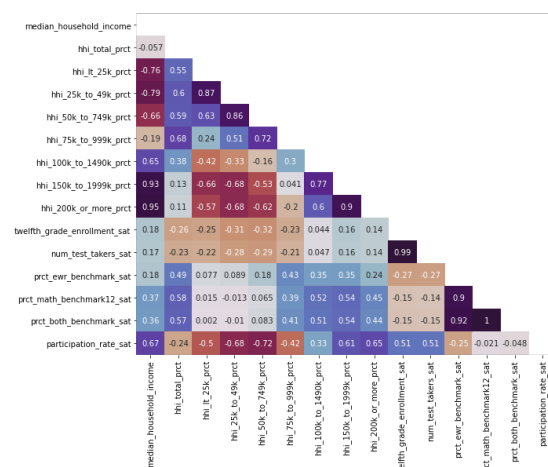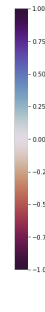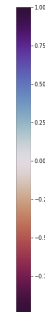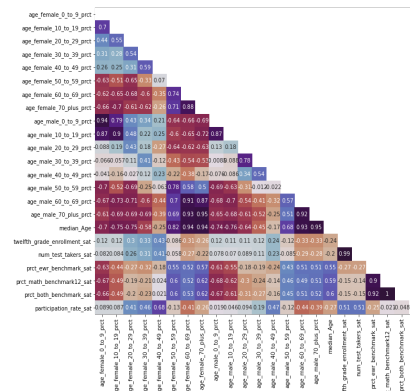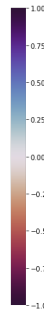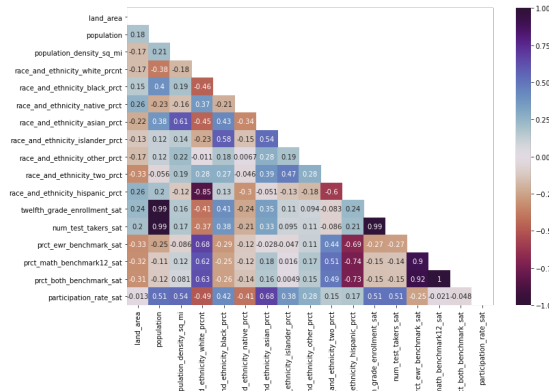Distribution of Student ACT Benchmark Achievement Rate per County
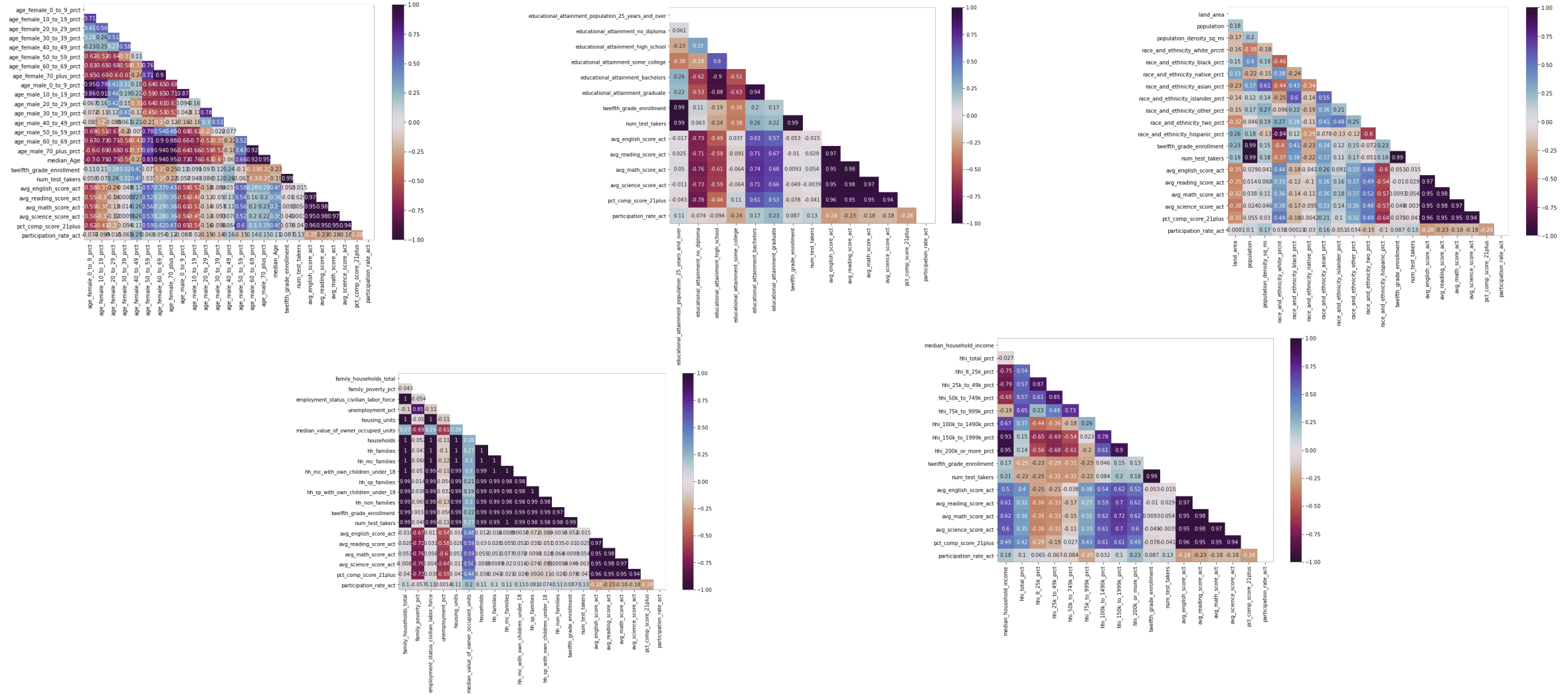
Composite Scores ACT

List of best demographic indicators

- 1. Percent Pop. No Diploma (-.78)

- 2. Percent Pop. Hispanic (-.69)

- 3. Percent Pop. Below Poverty Line (-.73)

- 4. Percent Pop. Male Age 0-9 (-.65)

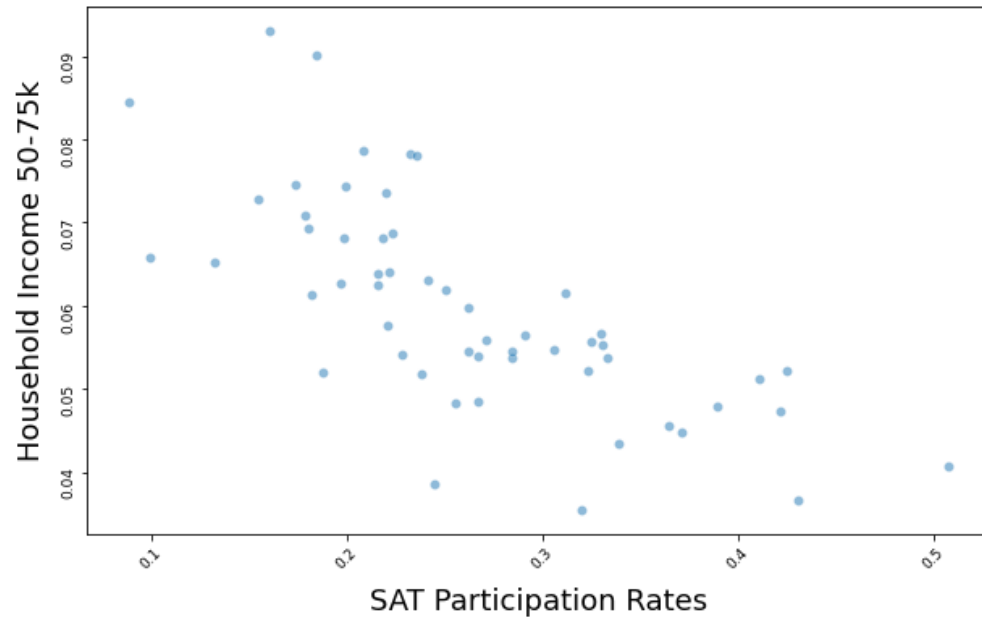- 5. Percent Pop HH Income 100-199K (.57)
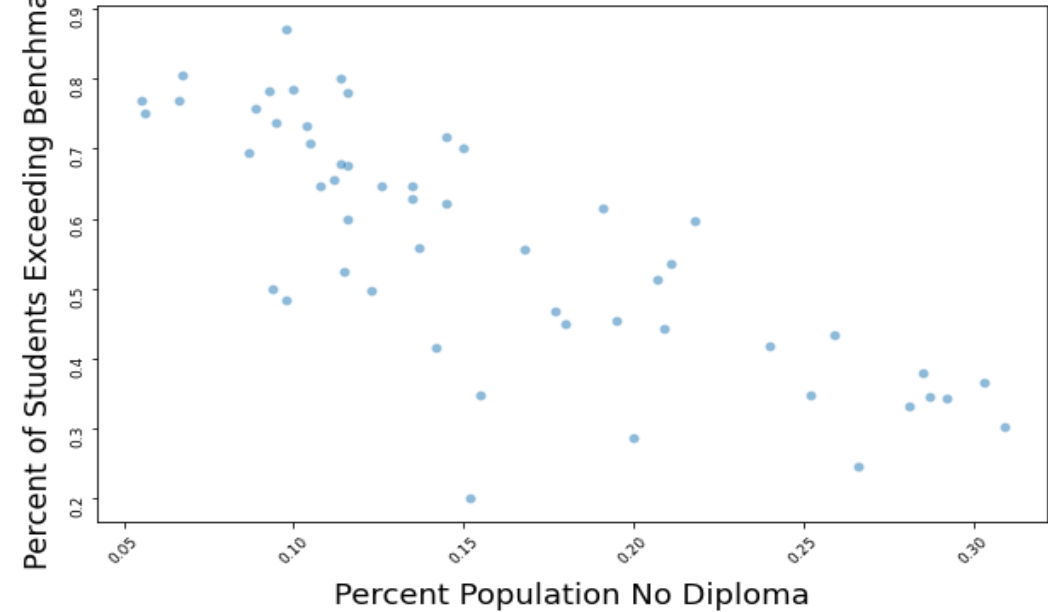
SAT Correlation Matrices
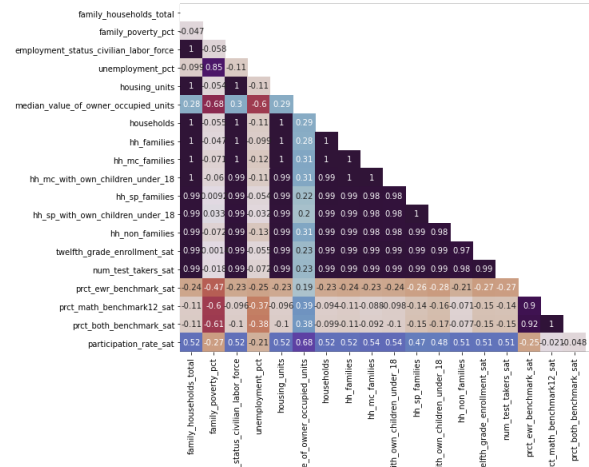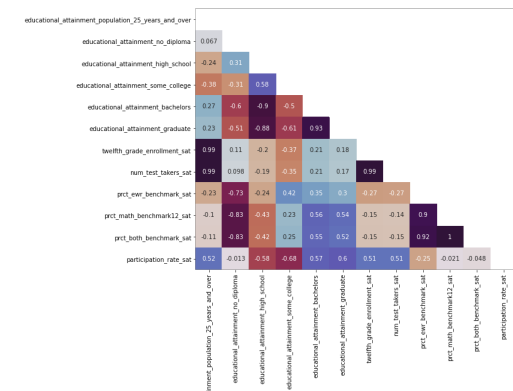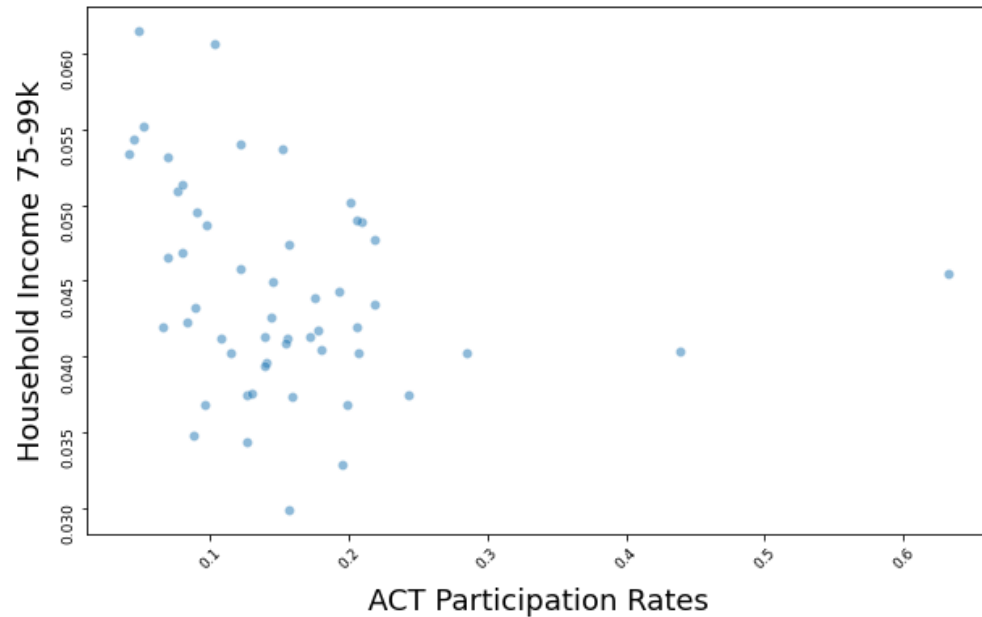
ACT Correlation Matrices

Household Income 50-74k, SAT Participation Rates

Household Income 50-75k vs SAT Participation Rates

Diploma Possession and ACT Benchmark Scores

Percent of Students Exceeding Benchmark vs Percent Population No Diploma

Household Income 75-99k, ACT Participation Rates

Household Income 75-99k vs ACT Participation Rates

Diploma Possession and SAT Benchmark

Percent of Students Exceeding Benchmark vs Percent Population No Diploma
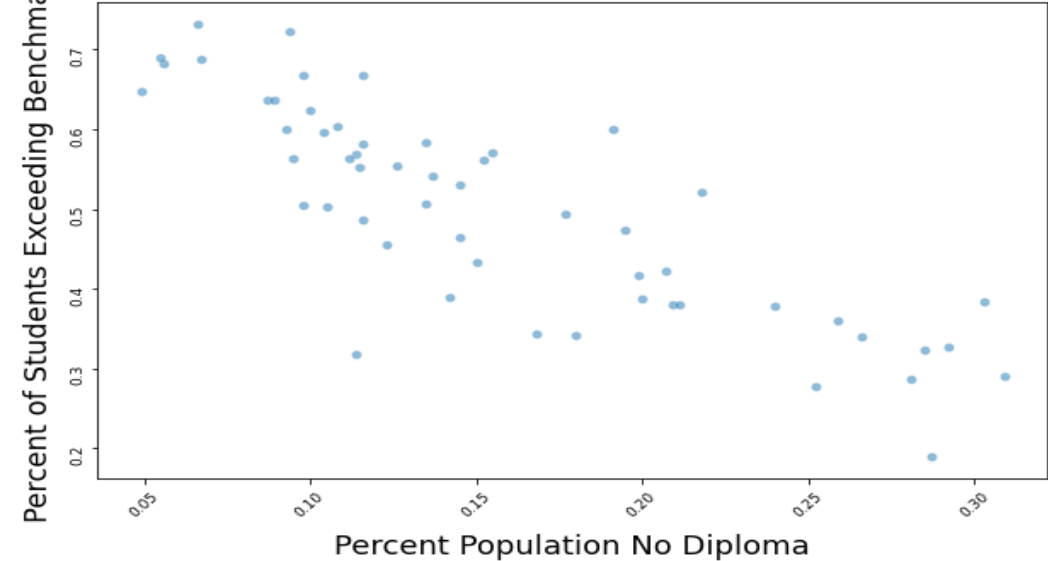
Recommendations

- Nevada, Tuolumne, Mono, and Inyo counties all appear in the top five lowest participating counties, for both tests.

- Merced and Madera counties suffer from lower composite scores on both tests.

- Based on what can be inferred from the strength of the correlation indicators, resources for participation should be focused on communities with lower median values of owner-occupied homes and less educational attainment. Resources for test performance should likewise be focused on younger communities with less educational attainment and larger Hispanic communities.

Thank you!