

SAT and ACT Analysis

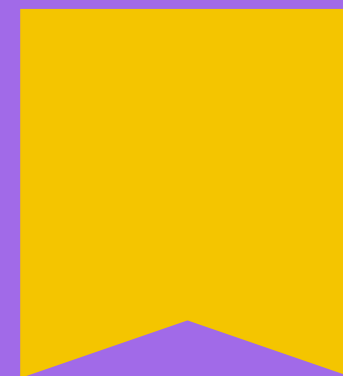
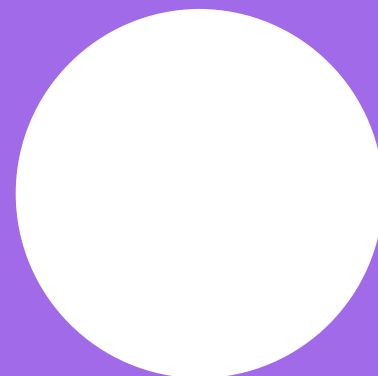
By: Liam Ting Wei





Agenda

- Problem Statement
- Process
- Analyses
- Recommendations



Problem Statement



Background

- Standardized testing is still a topic of controversy today and has been argued as simply being a measure of students' family income.

Relationship

- Do states with higher median family income achieve better scores for the ACT and/or SAT?

Goal

- This project aims to explore trends between family income levels and standardized test scores at an inter-state level to better inform state officials and state administrators.

Process

Data cleaning > Merging > Analyses

Data

1. ACT 2019 Participation and Scores
2. SAT 2019 Participation and Scores
3. US State Income Data

1

Clean and merge

Missing values and odd characters removed from the datasets.
The three datasets were then merged to prepare for analysis.

2

Exploratory Data Analysis

Data was sorted by median family income to identify trends pertinent to the problem statement.

3

Visualization

Relevant trends and interesting findings from the previous step were visualized in scatterplots to for further interpretation.

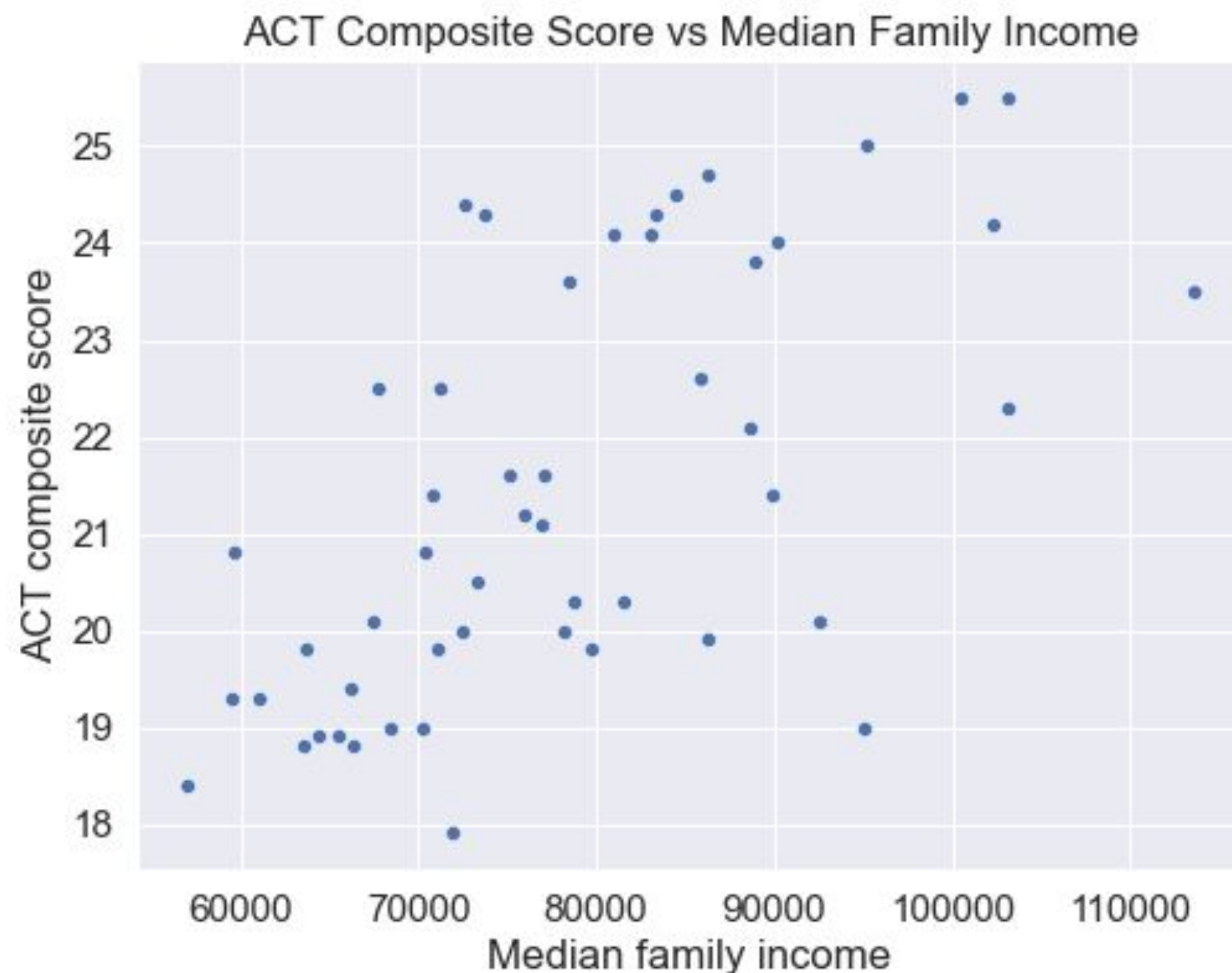
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Key Findings and Recommendations

5

Analysis

Scatterplot of ACT Composite Score against Median Family Income



Relationship

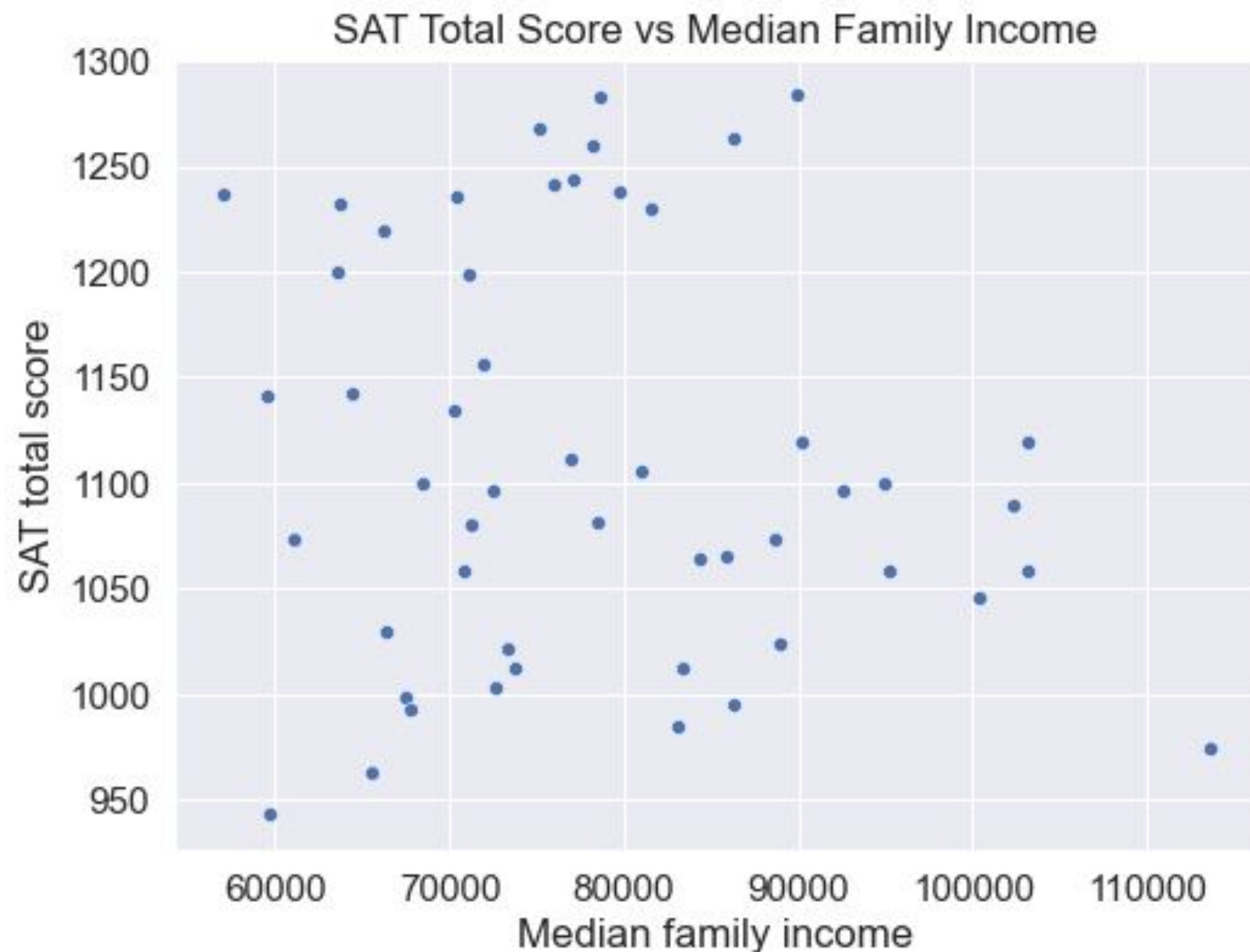
State ACT composite score increases as state median family income increases.

Interpretation

This supports the argument that wealth has a positive influence on ACT test scores, and there might be some issues with fairness in using these scores for admission.

Analysis

Scatterplot of SAT Total Score against Median Family Income

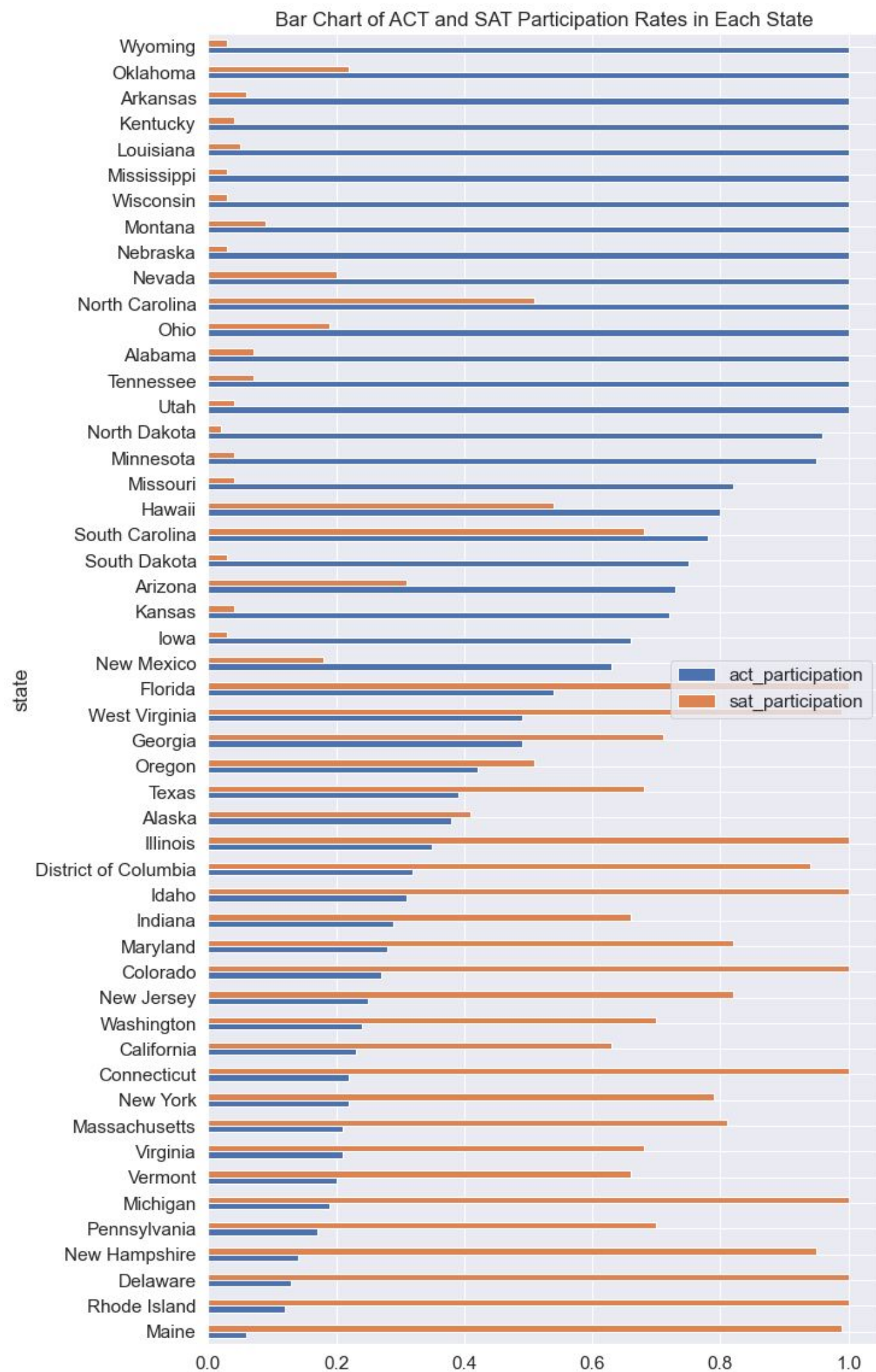


Relationship

There is actually no visible trend between state SAT total score and state median family income.

Interpretation

Suggests that SAT scores might actually be a more equitable measure of aptitude that is less influenced by family income.



Analysis

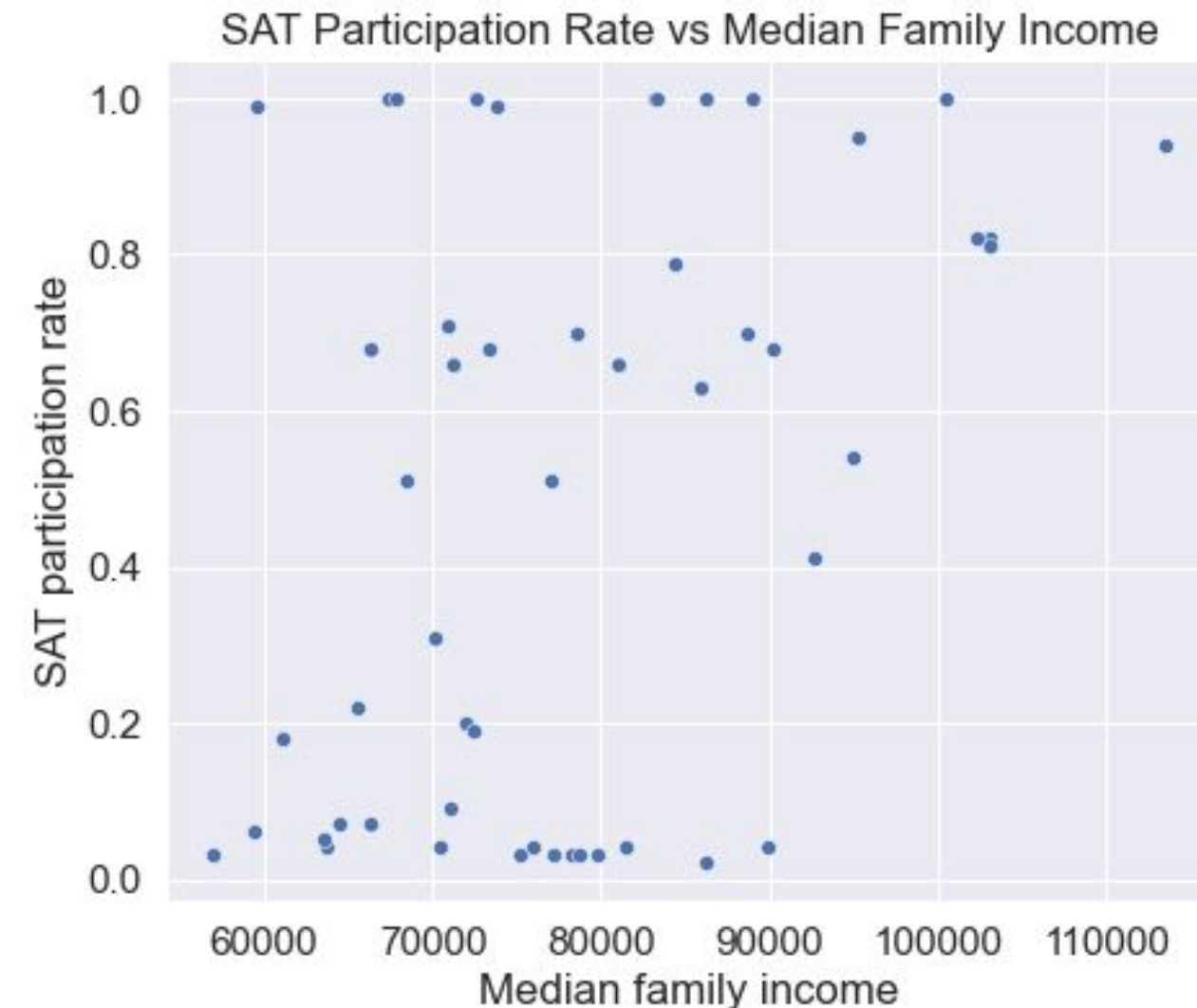
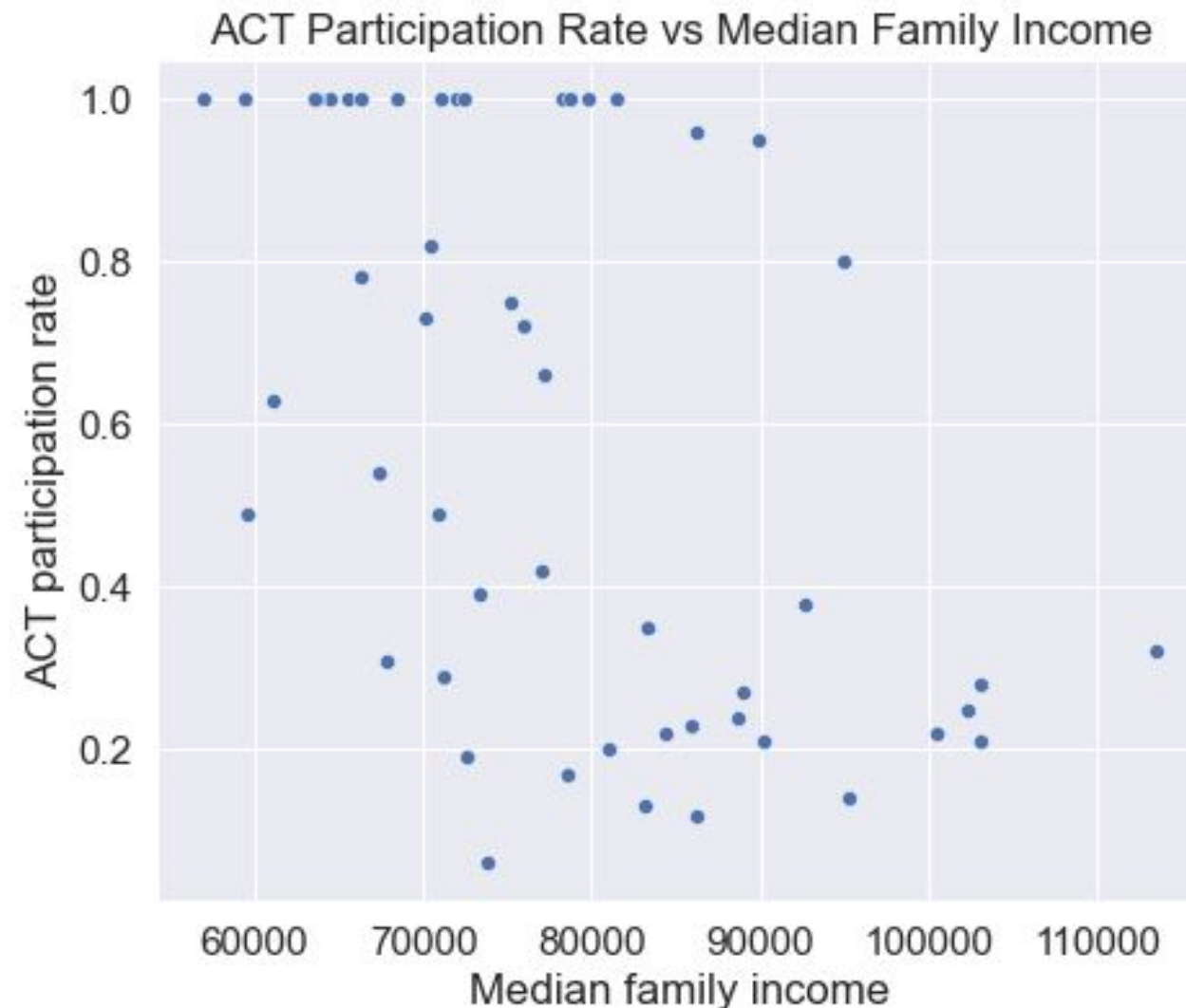
Bar Chart of ACT and SAT Participation Rates in Each State

Negative Correlation

Most states have a much higher participation rate in one test compared to the other.

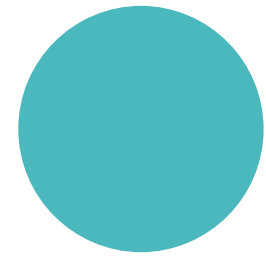
Analysis

Scatterplots of ACT and SAT Participation Rate against Median Family Income



- Removing the states where ACT or SAT participation alone is a graduation requirement showed that states with higher median family income lean more towards the SAT.
- Conversely, ACT participation rate decreases as median family income level increases.

Findings



ACT scores positively correlated to state median family income

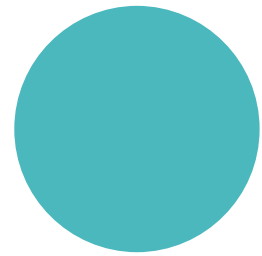


Higher ACT participation rates are associated with lower state median family income



Minimal relationship between SAT total score and state median family income

Recommendations



Bias in the ACT

Re-evaluate the validity of the ACT as an objective measure of academic aptitude or find interventions to uplift lower median income states.



Level the ACT playing field

Change the way schools approach the ACT. Provide more extensive test preparation in the final year of high school across the board.



Use the SAT

Colleges may want to consider using the SAT as part of their admissions criteria.

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Thank you!

Q & A