

GA-DSI -123

## Project 1:

# Standardized Test Analysis

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# Problem Statement

The SAT and ACT are important standardized tests used in the college admissions process throughout the United States. In California, the Department of Education and College Board provide 2019 performance data on these tests at various levels, including schools, districts, counties, and the state as a whole.

The aim of this project is to analyze this data to identify the California counties with the lowest performance on the SAT and ACT exams, and to determine which subject areas require the most attention to improve student performance. Additionally, we will incorporate external data from the US Census to consider the income levels of each county.

Through this analysis, we hope to provide recommendations to the state government on how to allocate additional resources to these low-performing counties, with the goal of improving academic performance and providing students with the necessary tools to succeed. Ultimately, our project aims to make a positive impact on the academic outcomes of students in California.

# Key steps in the research process

01

## Data Import & Cleaning

- Import relevant data
- Remove/ handle missing irrelevant values
- Fix incorrect data types

02

## Exploratory Data Analysis

- Explore clean data
- Investigate trends in the data

03

## Visualize the Data

- Create visualizations
- Translate information
- Observe any relationships between variables

04

## Conclusion & Recommendations

- Summarize findings
- Provide takeaways and recommendations

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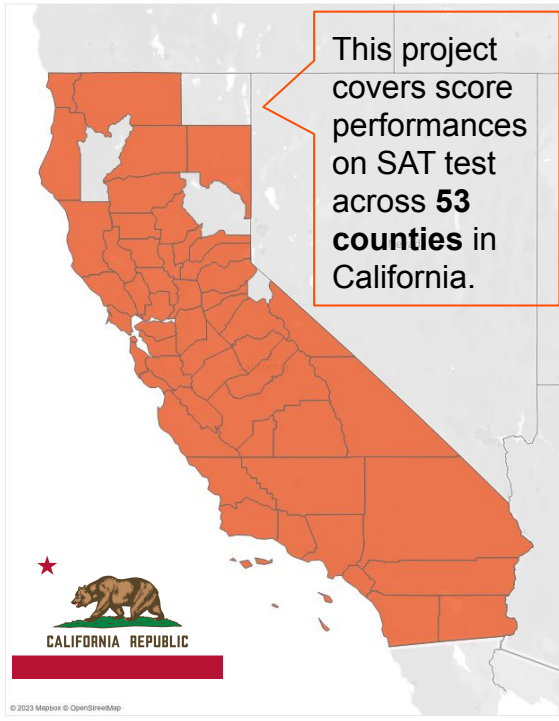
# **SAT Analysis**

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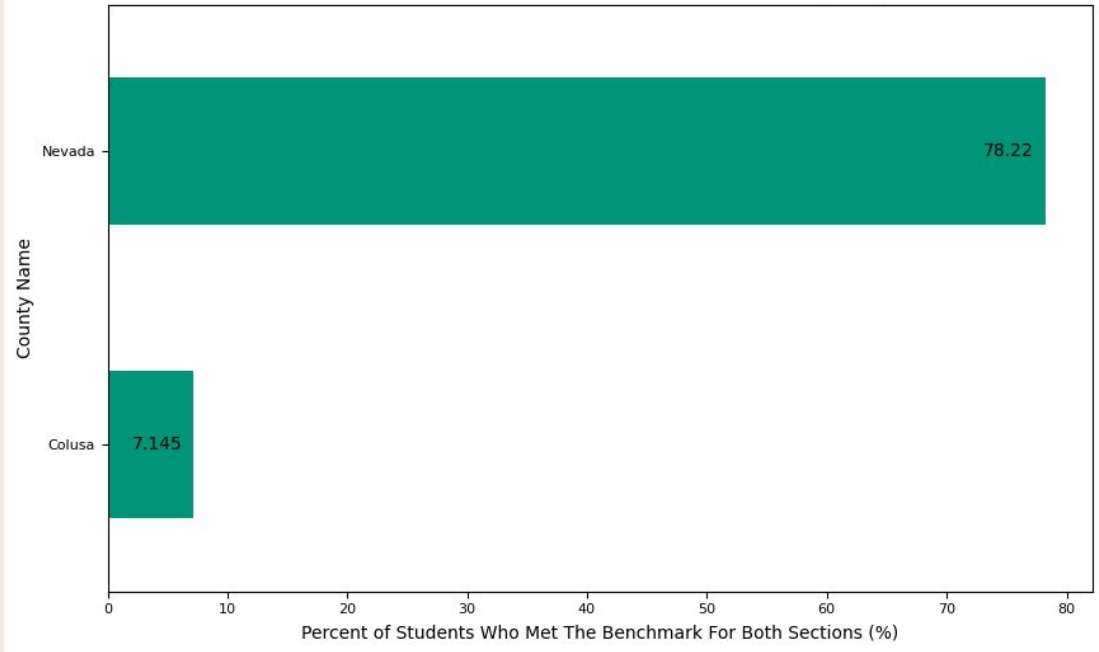


# The difference in score performances on SAT test is massive across 53 counties

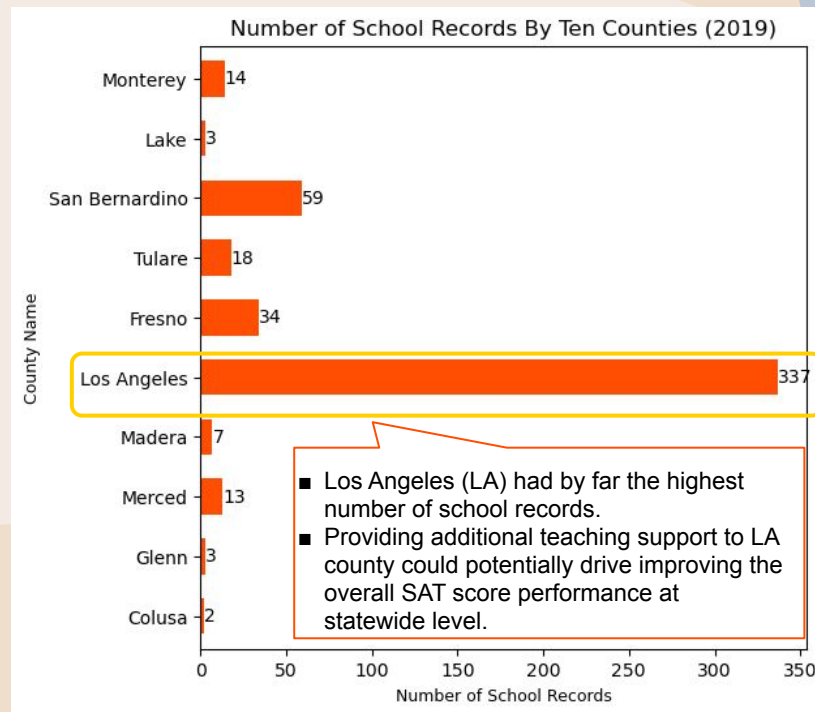
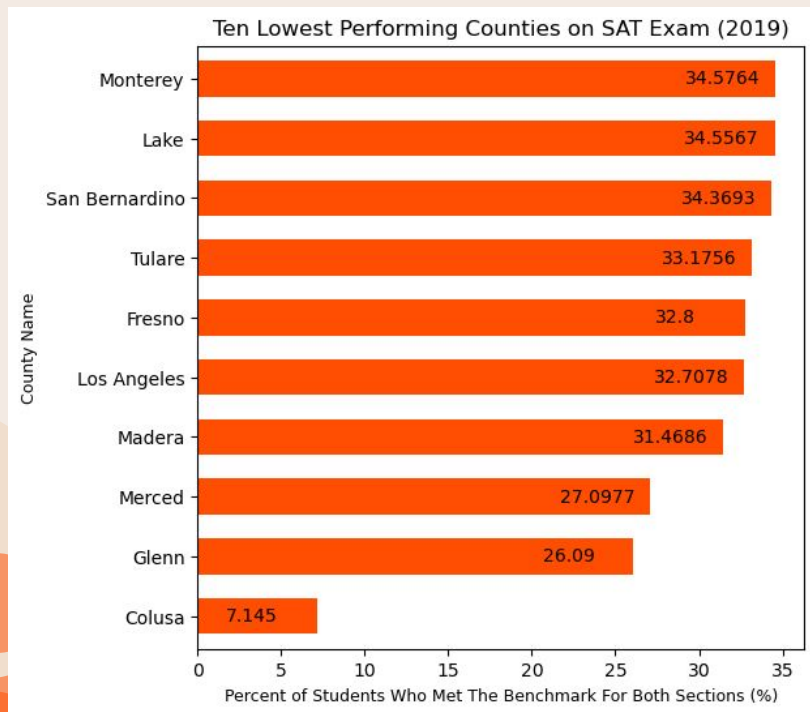
2019 SAT Scores - CA County Coverage



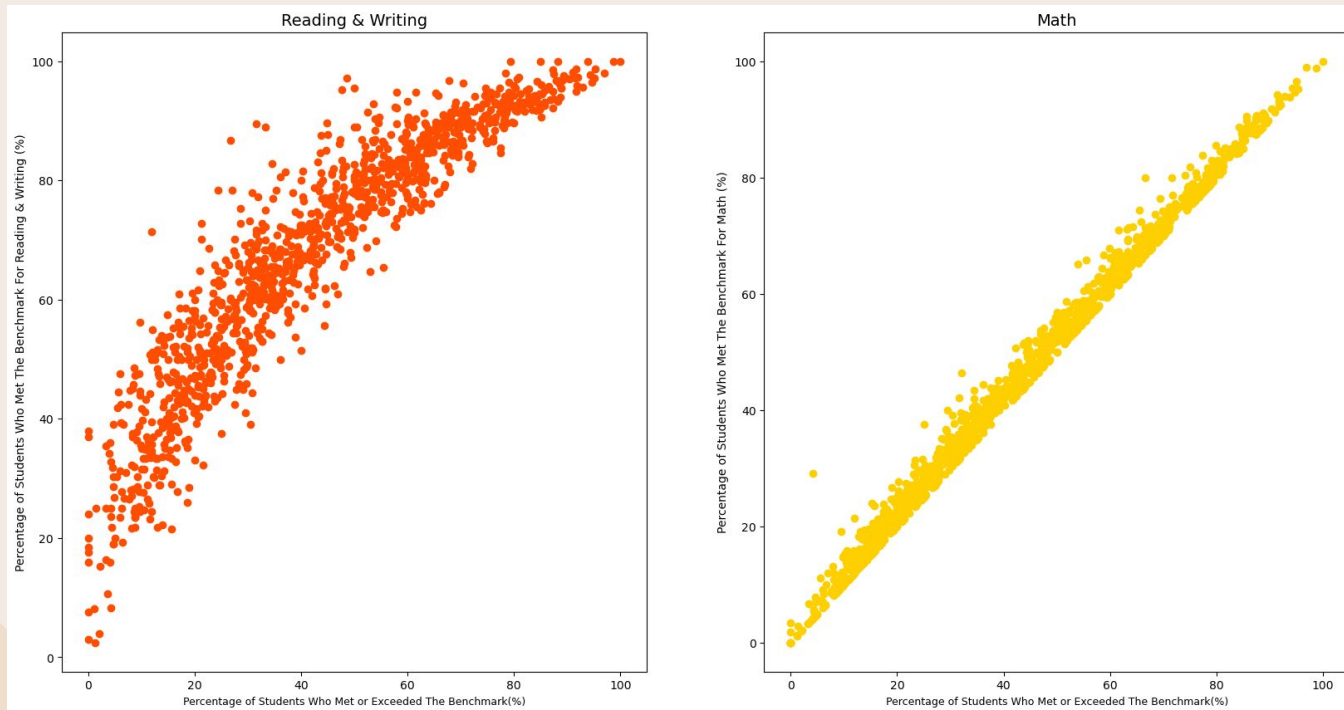
Counties With The Highest and Lowest Percentage Of Students Who Met The SAT Benchmark For Both Sections (2019)



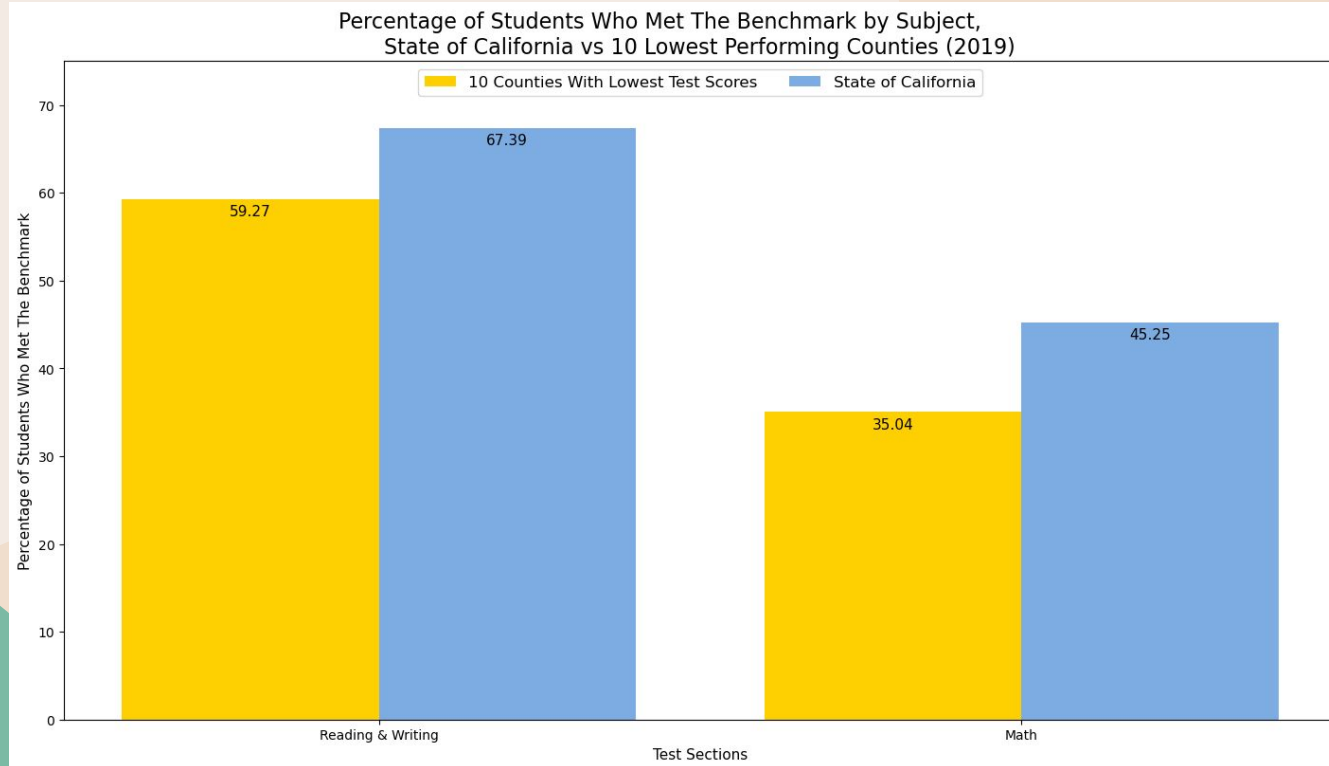
# Los Angeles is among those counties that has the worst performance on SAT exam



# Math has the strongest correlation to the percentage of students meeting the benchmark for both SAT sections



# The low performing counties should encourage their students to improve their Math scores





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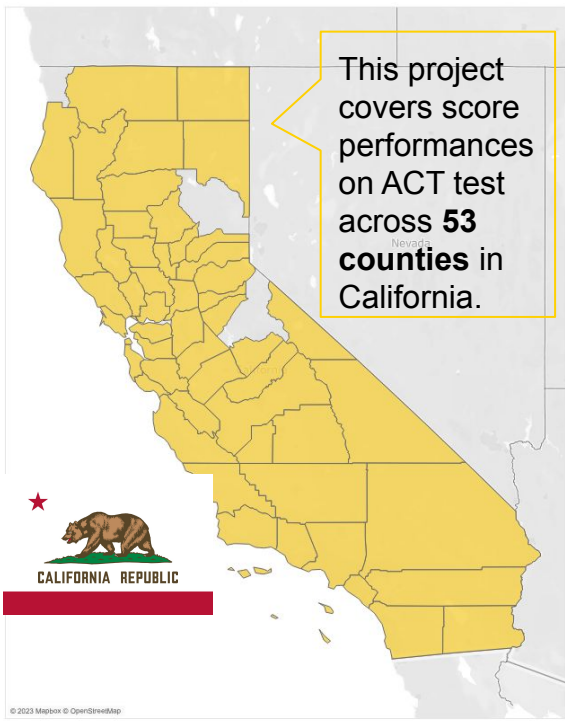
# ACT Analysis

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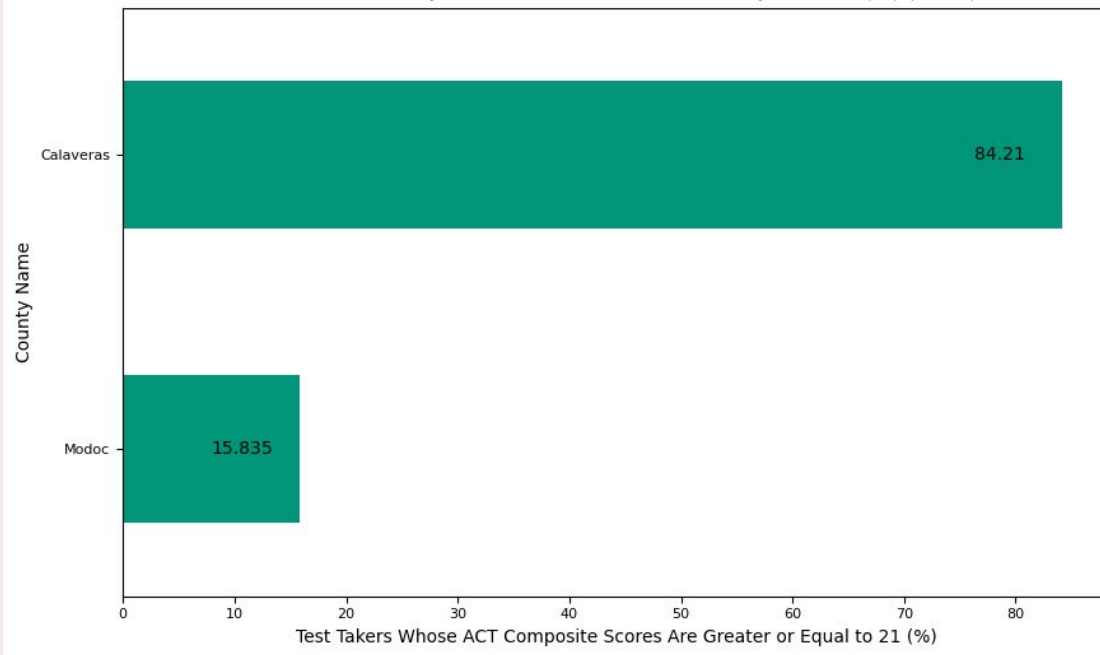
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# Score performances on ACT test also differs by county in California

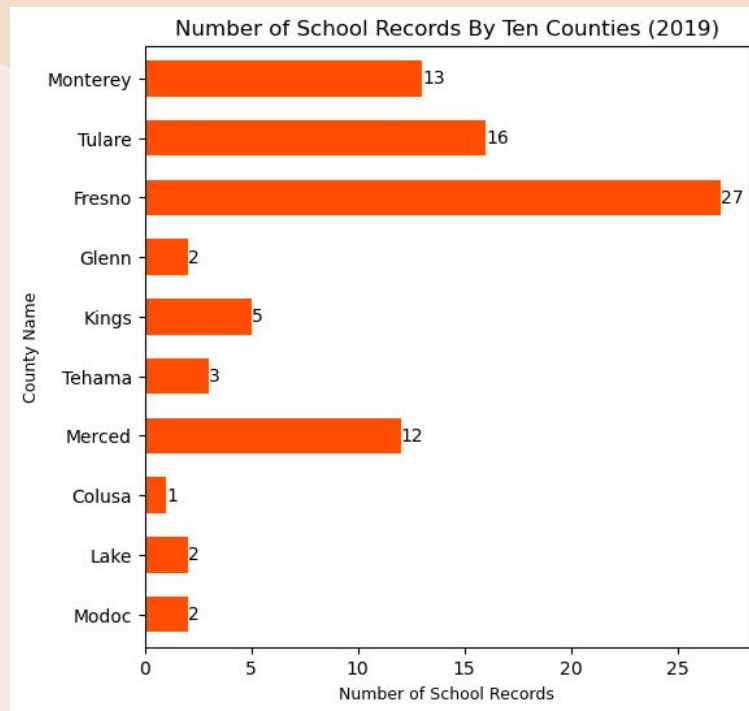
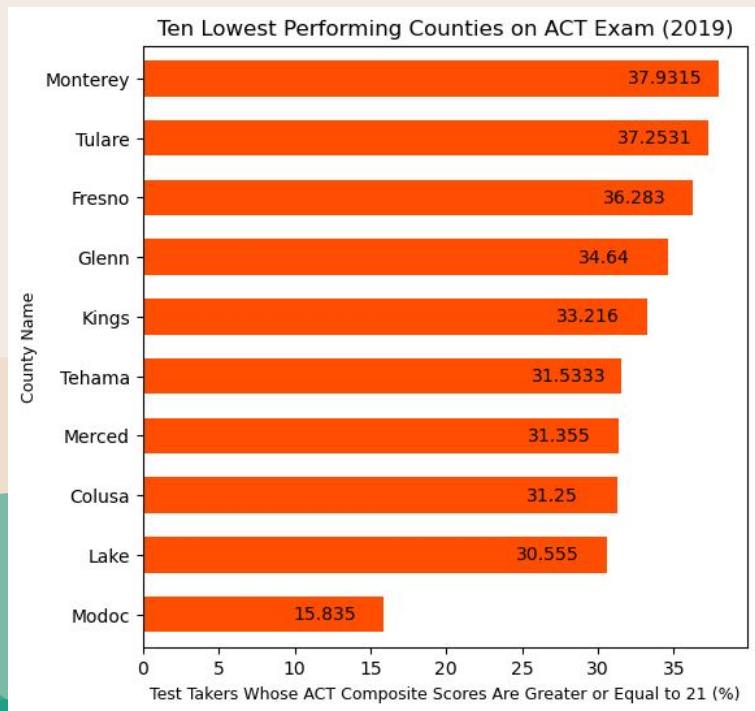
2019 ACT Scores - CA County Coverage



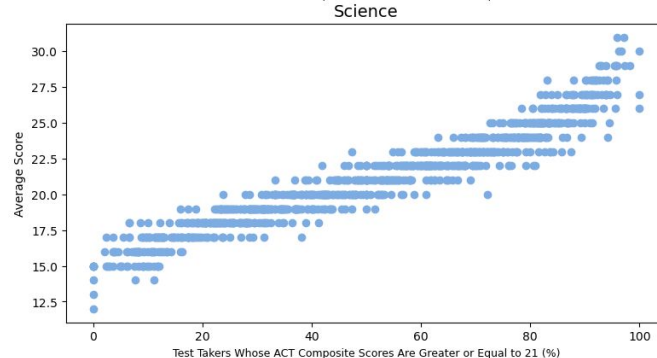
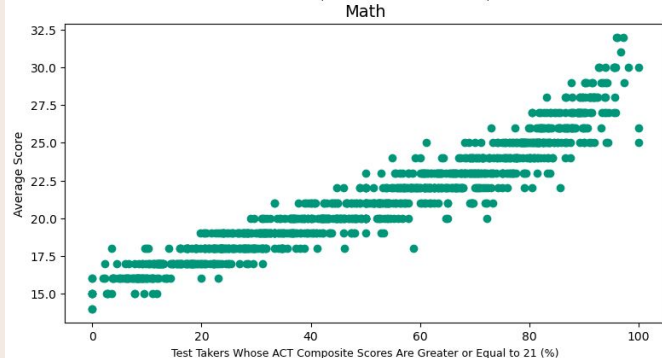
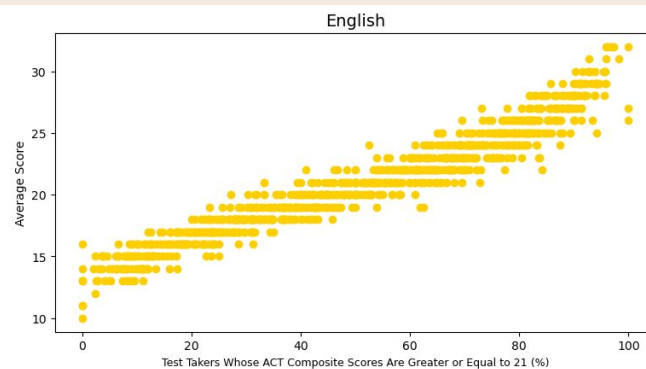
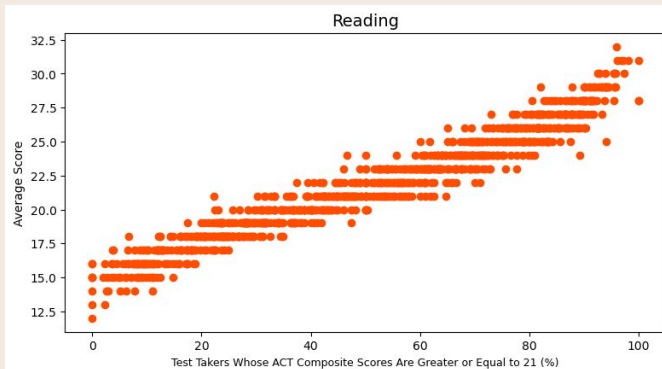
Counties With The Highest and Lowest Percentage Of Test Takers Whose ACT Composite Scores Are Greater or Equal to 21 (%) (2019)



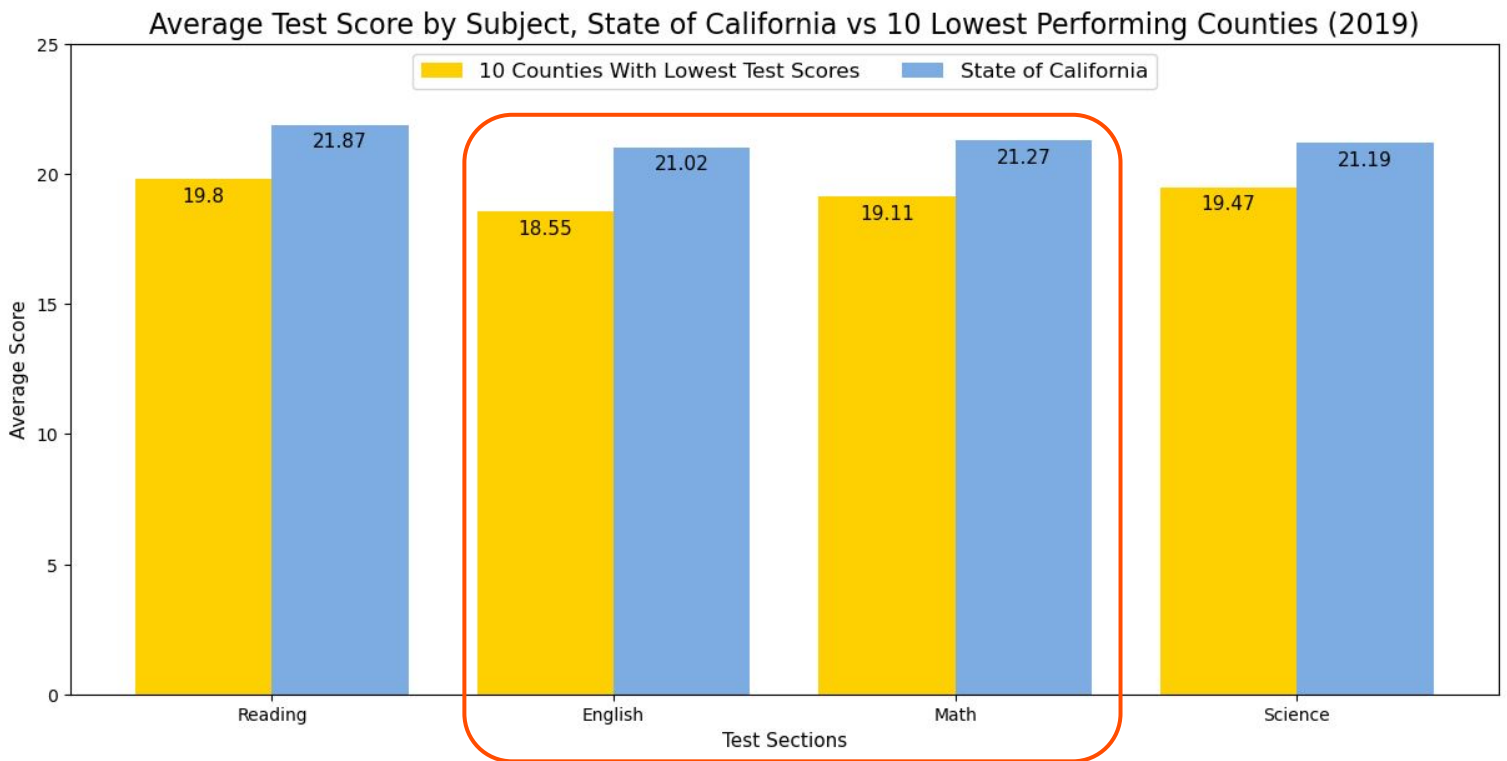
# These 10 counties including Monterey, Tulare and Fresno need ACT test prep resources



# All four subjects are crucial to enhance the percentage of students achieving ACT composite scores of 21 or higher



# 10 counties with low test scores especially need to improve scores in English & Math

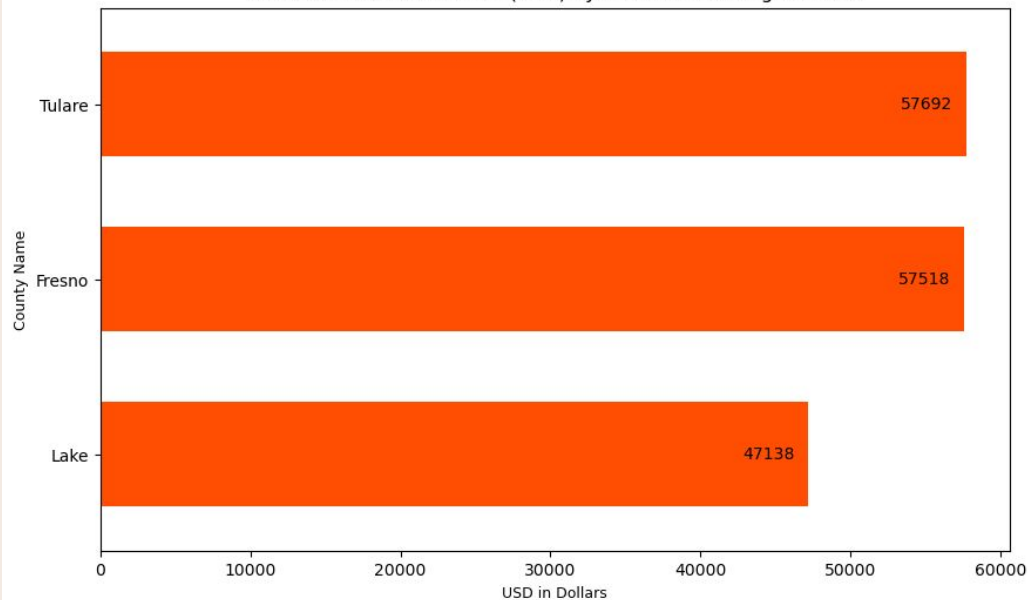
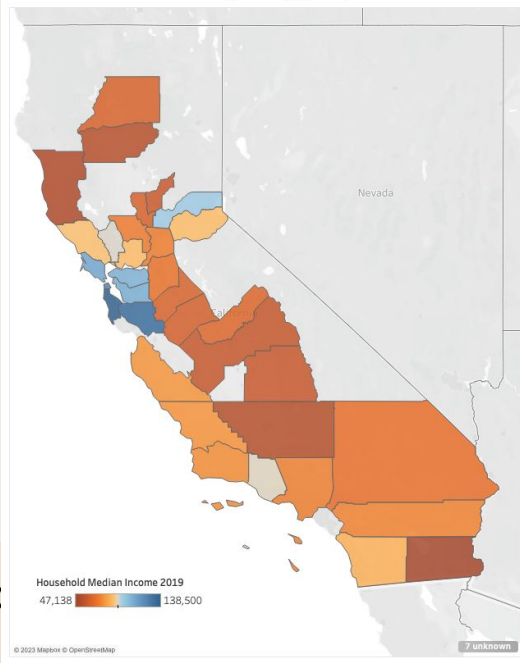


Source: ACT Scores in California by School (2019)



# **US Census Household Median Income by County**

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Source: US Census



# **Conclusion & Recommendations**



# Conclusion & Recommendations

- Based on our analysis, we recommend that the state government prioritize additional teaching resources and exam preparation resources to the ten counties with the lowest SAT and ACT exam scores in 2019, particularly **Colusa, Glenn, Merced, Madera, Los Angeles, Fresno, Tulare, San Bernardino, Lake, and Monterey**.
- We suggest that the state government focus on **improving Math scores** in these counties, as this section has the strongest correlation with overall SAT score performance. Additionally, we recommend **improving scores in English and Math for the ACT exam**. Providing additional exam preparation resources could be beneficial, especially in counties with a high number of schools such as Monterey, Tulare, and Fresno.
- It is worth noting that while income level is not the largest factor in exam performance, there appears to be **some correlation between exam performance and income levels in California**. Therefore, we recommend targeting resources to the counties with particularly low median household incomes, such as Lake, Fresno, and Tulare.
- By implementing these recommendations, we believe that the state government can help improve the academic performance of students in these low-performing counties and provide them with the necessary resources to succeed academically.



# Thank you!

Any questions?

