

# DSIF 4 Project 1

**Members**

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# Problem Statement

You are a **consultant** hired by the **College Board** executives to **evaluate** the current **SAT and ACT scores** as **metrics** for college admission, and suggest ways to improve the current system.

# Contents

1. Introduction
2. Socio-Economic factors influencing the standardized scores
3. Are standardized scores a good metric for academic achievement?
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# Introduction

## SAT/ACT overview

- Standardized tests typically taken in junior/senior year for college admissions
- Additional consideration to admissions committee about their academical capabilities
- Gauge for a student's readiness for college
- Mandatory for admissions at many colleges across US

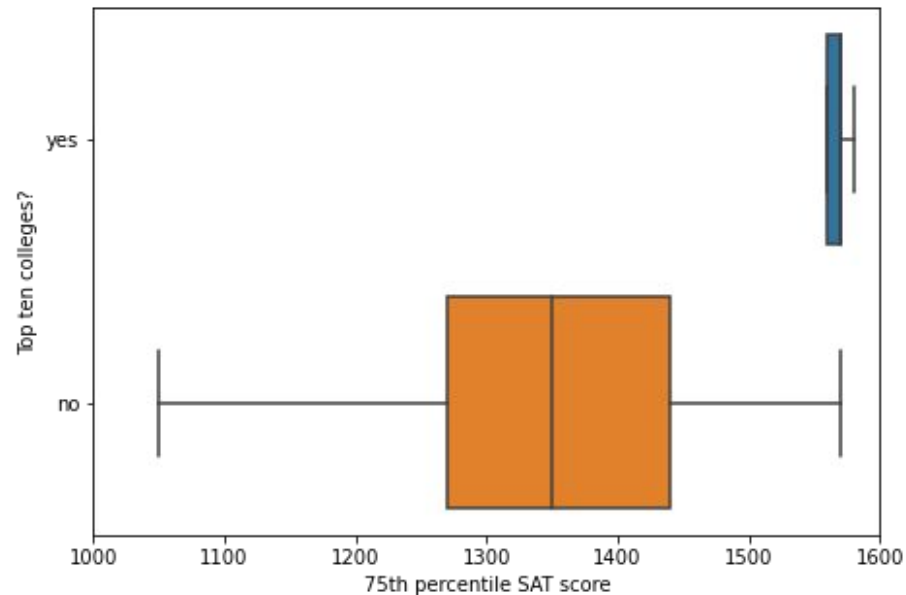
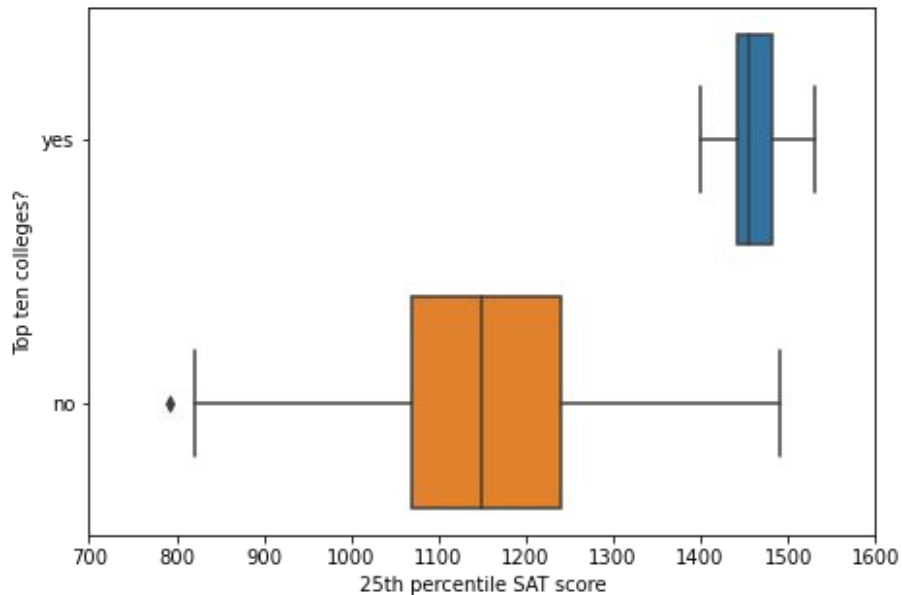


# Introduction

- Growing criticism of SAT and ACT regarding access to higher education in US
- Unfair advantage for wealthy families who can pay for tuition classes and prep tests, which can cost as high as \$1000 an hour
- Able to obtain higher SAT/ACT scores and thus better chances of entering the best colleges/majors.

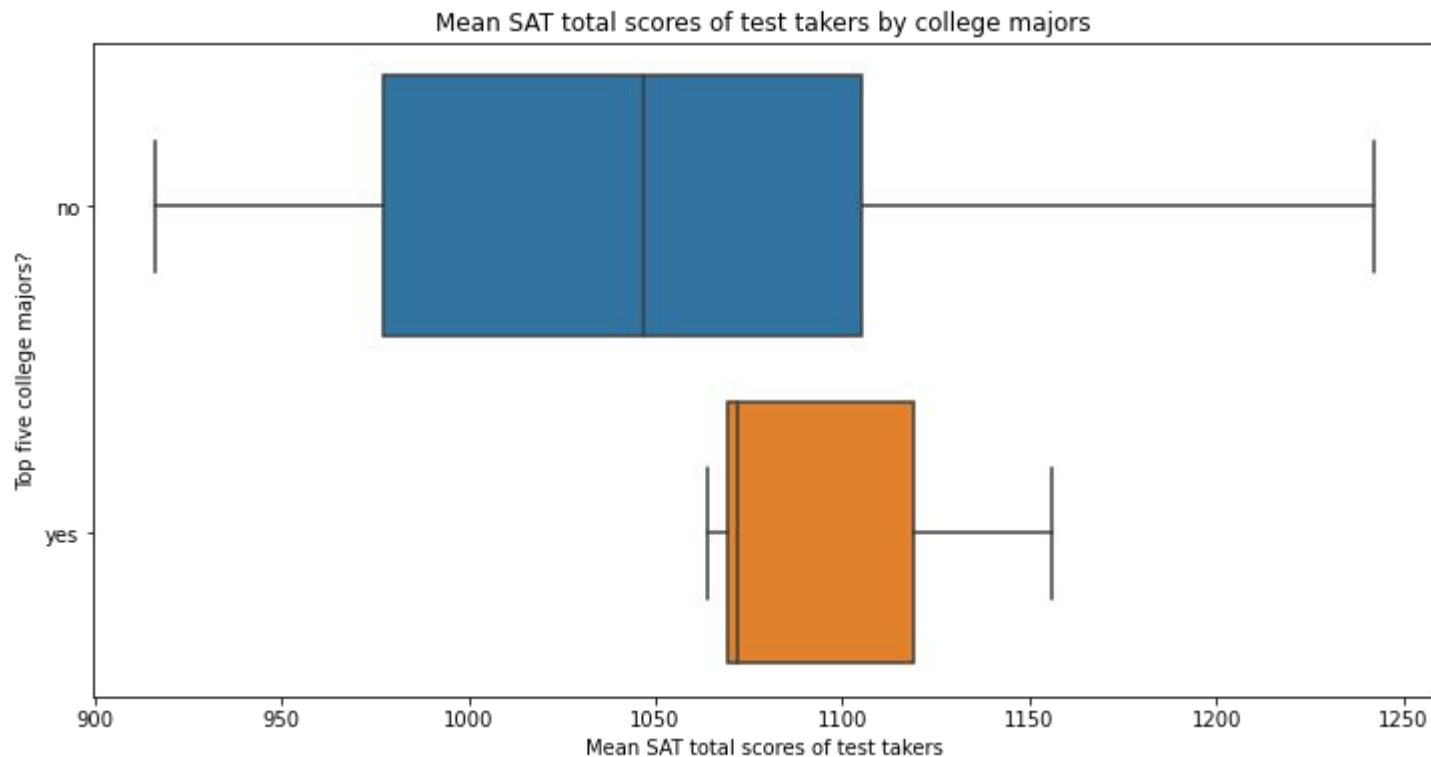
# Introduction

25th and 75th percentile SAT scores by US colleges



Top 10 colleges in US according to QS World University Rankings (as viewed on 8 Jan 2022), which includes Massachusetts Institute of Technology, Stanford University, Harvard University, California Institute of Technology, University of Chicago, Princeton University, University of Pennsylvania, Yale University, Cornell University.

# Introduction



Top 5 college majors according to The Princeton Review (as viewed on 8 Jan 2022), which includes Computer Science, Communications, Business, English Language and Literature, and Psychology.

# Introduction

- Students graduating from top colleges and majors tend to have better career prospects
- Perpetuates wealth disparity and further widens the inequality
- First SAT administered by Carl Brigham, a eugenicist





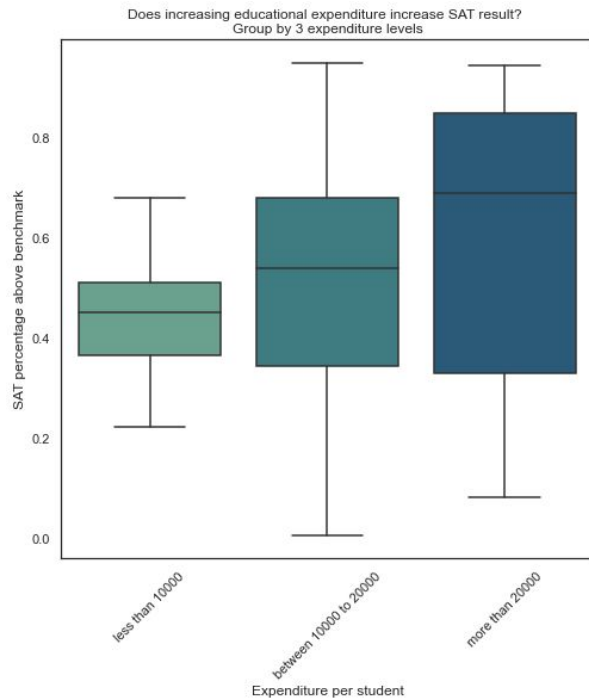
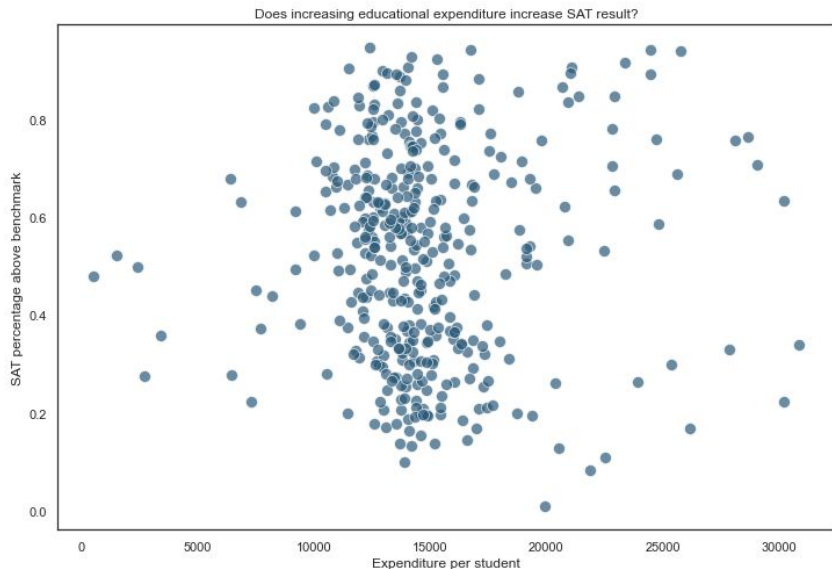
# Introduction

- Socio-economic factors have a role to play in the inequalities of the standardized testing
  - Household wealth
  - Ethnicity
  - Access to broadband
  - Parents' education level

# Socio-Economic factors

## Can money buy results - Expenditure per student

**0.028** - Correlation value

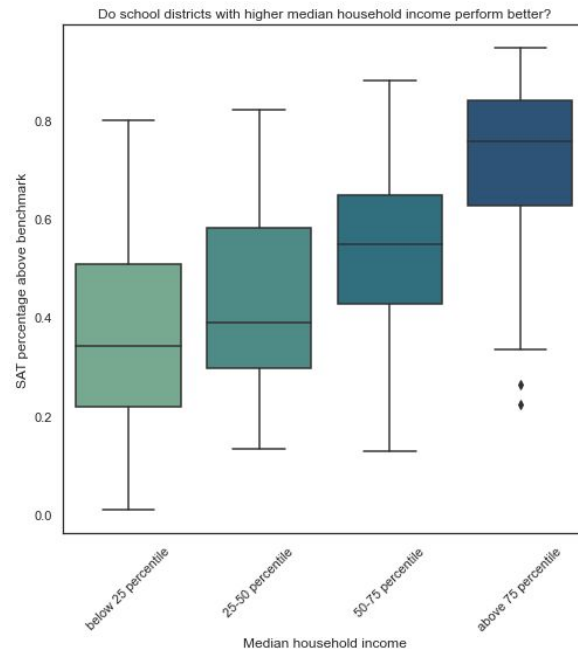
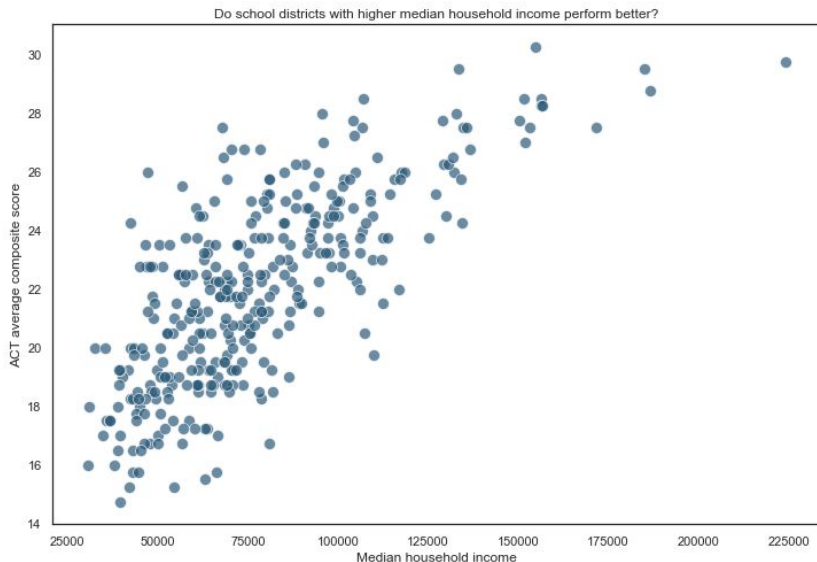


**Yes... To an extent**

# Socio-Economic factors

## Can money buy results - Median household income

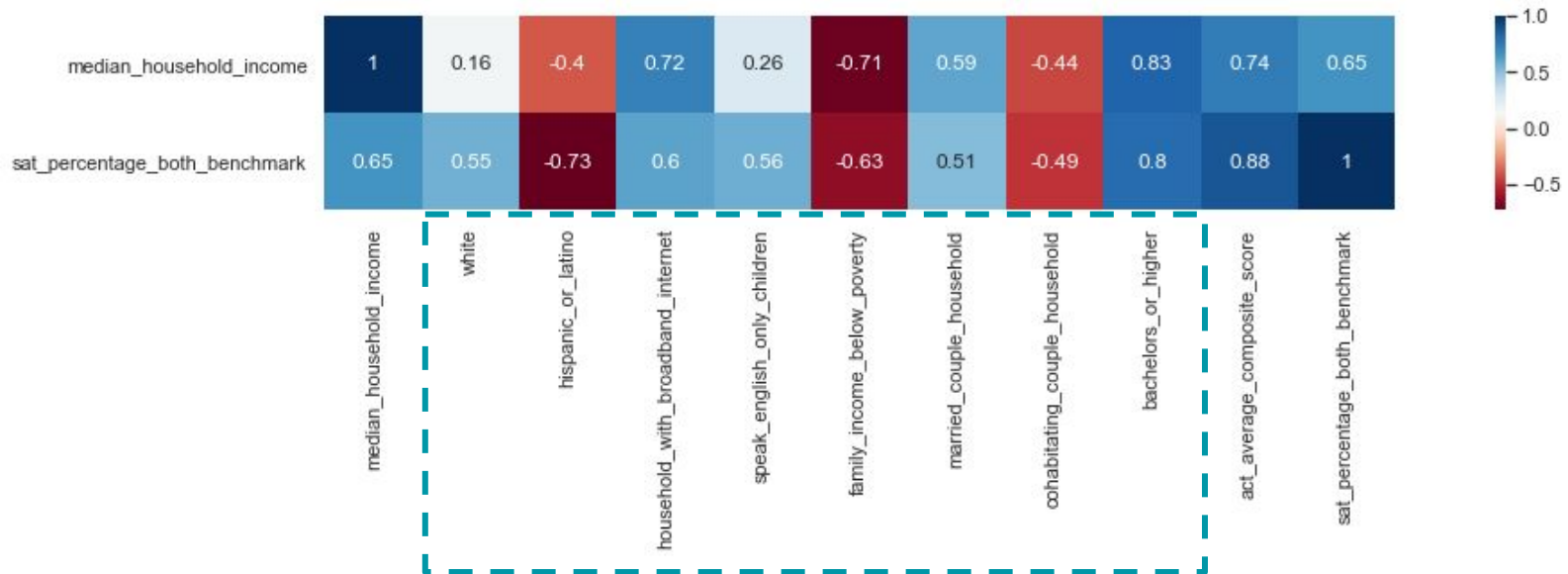
**0.65** - Correlation value



**Yes..A much stronger correlation**

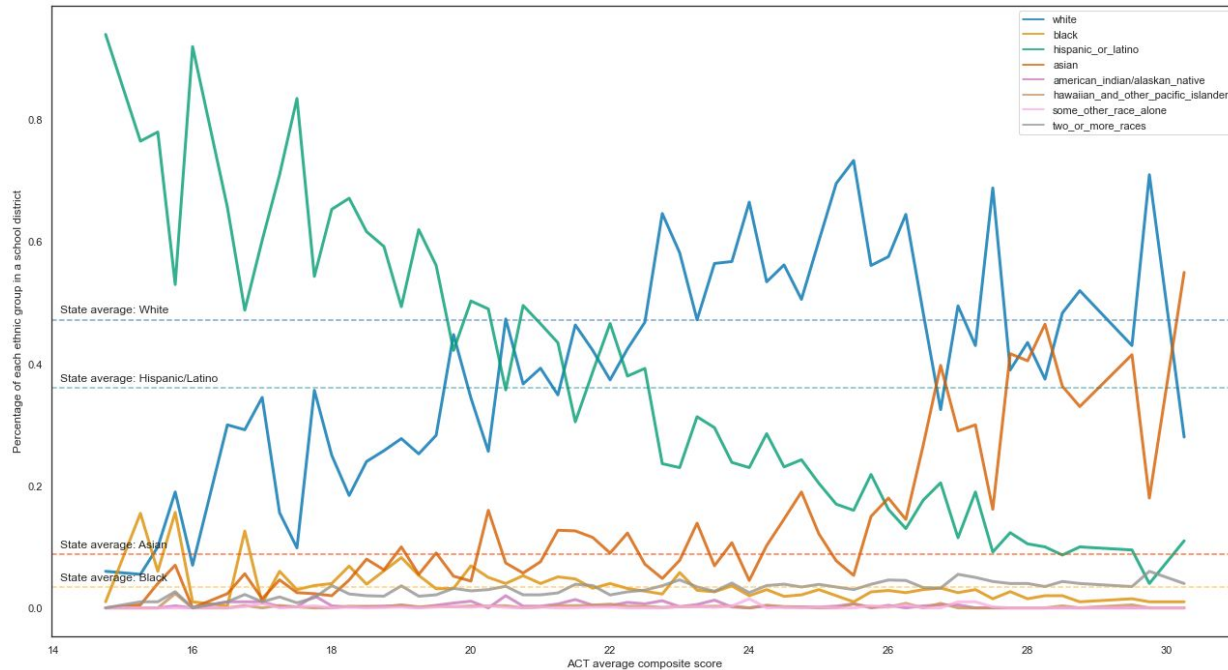
# Socio-Economic factors

## What are some other factors



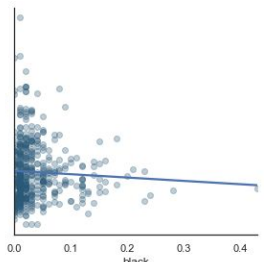
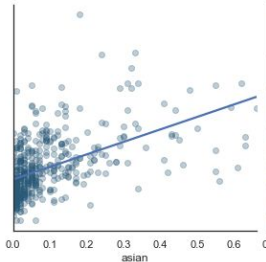
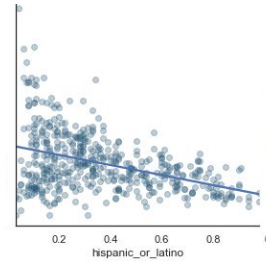
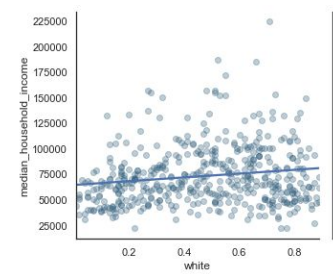
# Socio-Economic factors

## Ethnicity



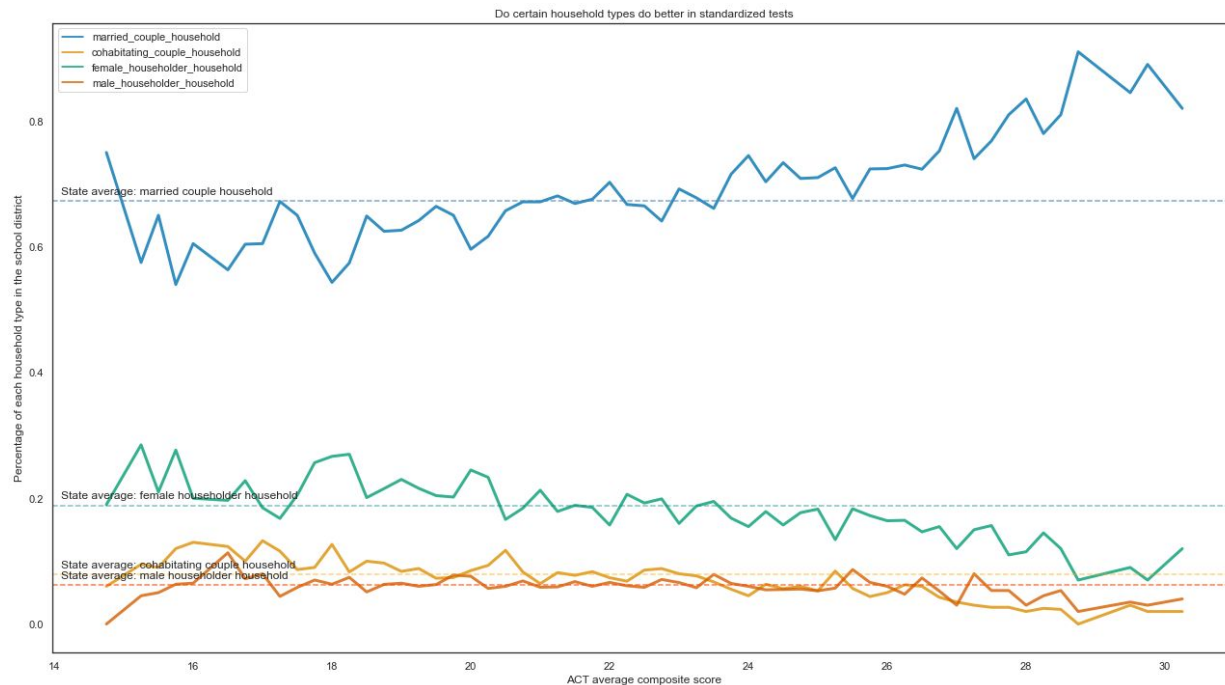
Ethnic group and ACT score

## Ethnic group and Median Household Income



# Socio-Economic factors

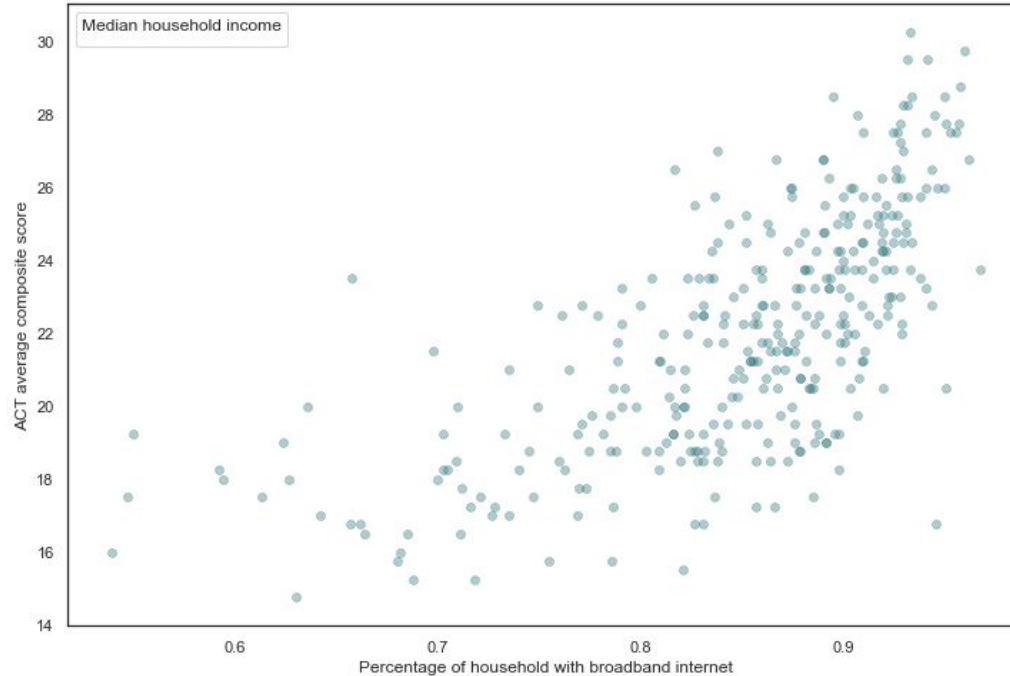
## Type of household



Type of household and ACT score

# Socio-Economic factors

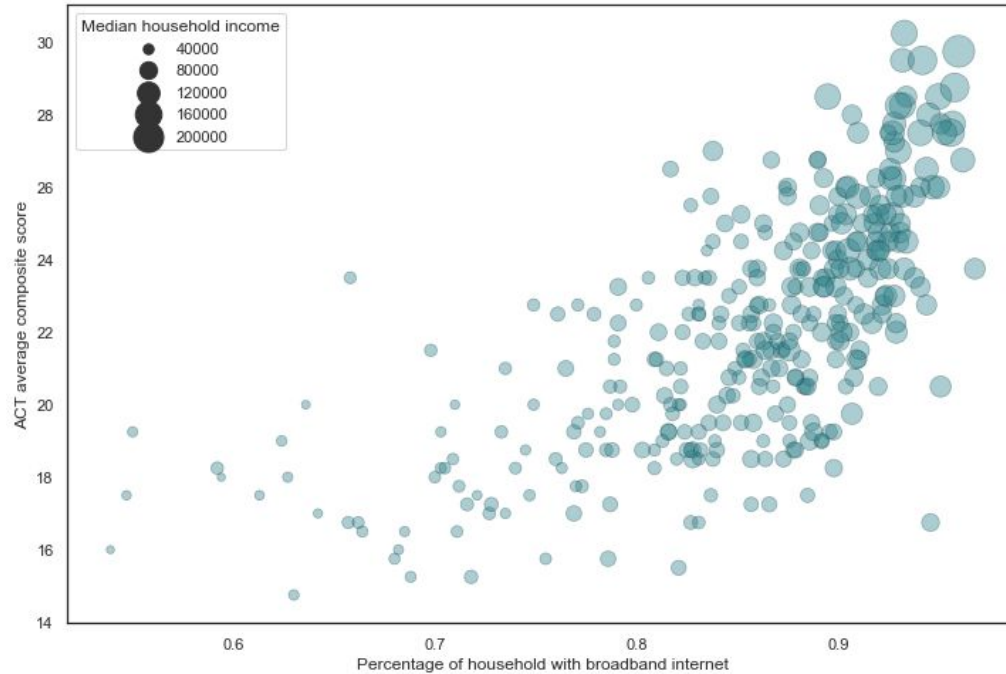
## Broadband Access



**Broadband Access with ACT score**

# Socio-Economic factors

## Broadband Access

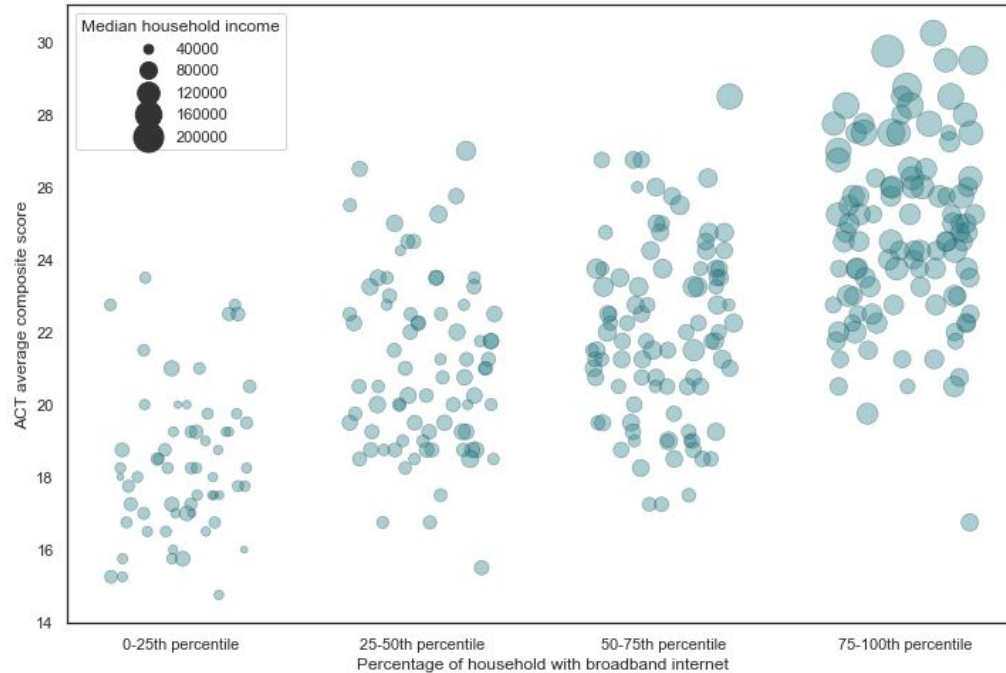


**Broadband Access with ACT score and income**



# Socio-Economic factors

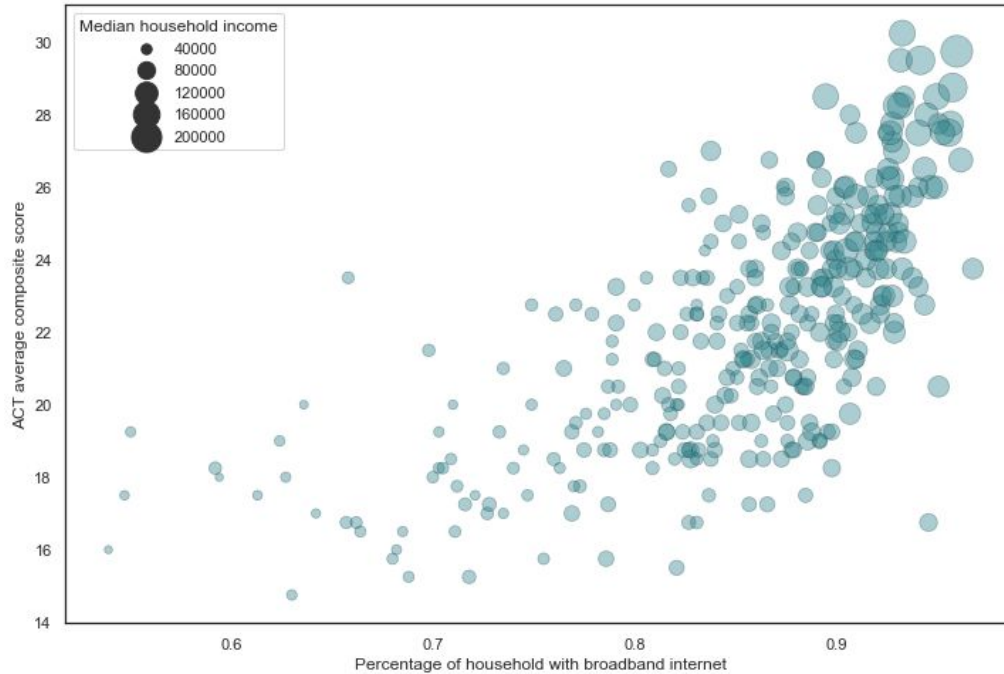
## Broadband Access



**Broadband Access with ACT score and income by percentile**

# Socio-Economic factors

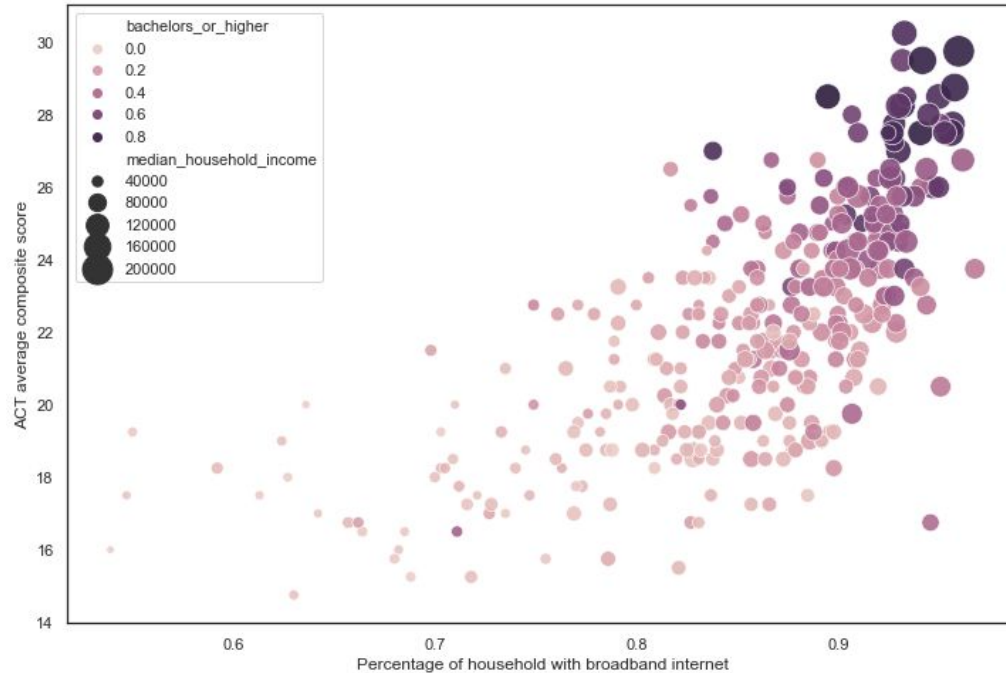
## Parents' education level



**Broadband Access with ACT score and income**

# Socio-Economic factors

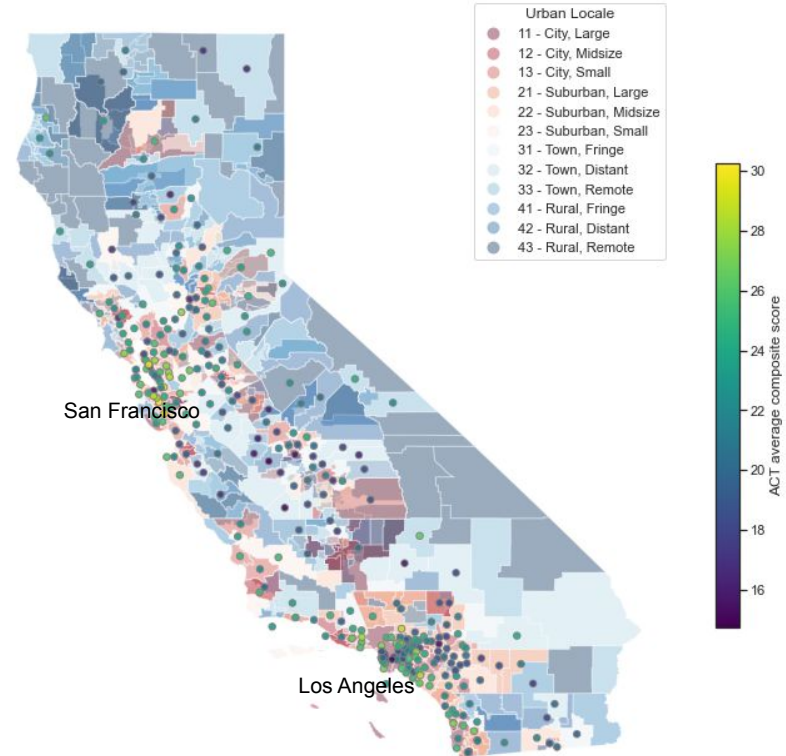
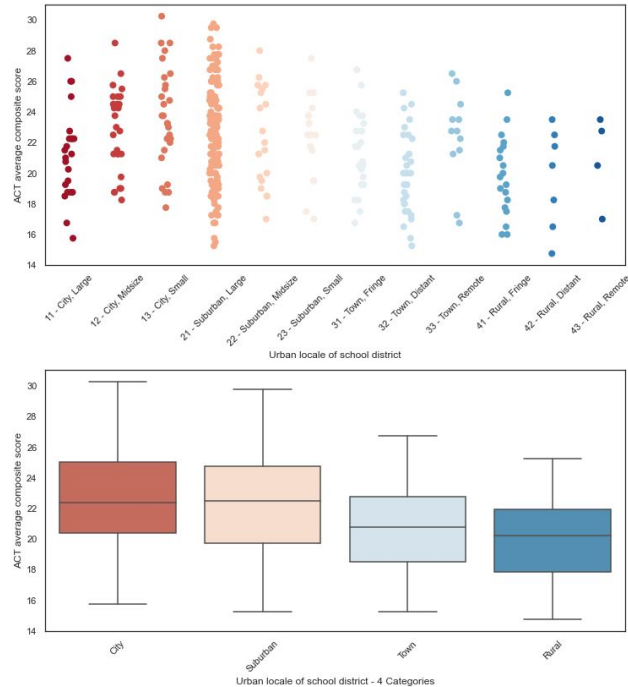
## Parents' education level



Broadband Access with ACT score and income and **parents' education level**

# Socio-Economic factors

## Geographical Distribution



Geographical distribution of urbanisation and test scores

# Are standardized scores a good metric?

## Pro 1

**Standardized tests offer an objective measurement of education and a good metric to gauge areas for improvement.**

Teachers' grading practices are naturally uneven and subjective. An A in one class may be a C in another. Teachers also have conscious and unconscious biases for a favorite student or against a rowdy student, for example. [56] Standardized tests offer students across the country a unified measure of their knowledge.

## Pro 3

**Standardized tests are useful metrics for teacher evaluations.**

While grades and other measures are useful for teacher evaluations, standardized tests provide a consistent measure across classrooms and schools. Individual school administrators, school districts, and the state can compare teachers using test scores to show how each teacher has helped students master core concepts. [63]

Standardized tests have been a part of American education since the mid-1800s. Their use skyrocketed after 2002's *No Child Left Behind Act* (NCLB) mandated annual testing in all 50 states. US students slipped from being ranked 18th in the world in math in 2000 to 40th in 2015, and from 14th to 25th in science and from 15th to 24th in reading. Failures in the education system have been blamed on rising poverty levels, teacher quality, tenure policies, and, increasingly, on the pervasive use of standardized tests.

## Con 1

**Standardized tests only determine which students are good at taking tests, offer no meaningful measure of progress, and have not improved student performance.**

Standardized test scores are easily influenced by outside factors: stress, hunger, tiredness, and prior teacher or parent comments about the difficulty of the test, among other factors. In short, the tests only show which students are best at preparing for and taking the tests, not what knowledge students might exhibit if their stomachs weren't empty. [68] [69] External stereotypes also play a part in scores: "research indicates that being targeted by well-known stereotypes ('blacks are unintelligent,' 'Latinos perform poorly on tests,' 'girls can't do math' and so on) can be threatening to students in profound ways, a predicament they call 'stereotype threat.'" [70]

## Con 3

**Standardized tests are unfair metrics for teacher evaluations.**

16 states and DC have stopped using standardized tests in teacher evaluations. [79] [80] As W. James Popham, PhD, noted, "standardized achievement tests should not be used to determine the effectiveness of a state, a district, a school, or a teacher. There's almost certain to be a significant mismatch between what's taught and what's tested." [81]



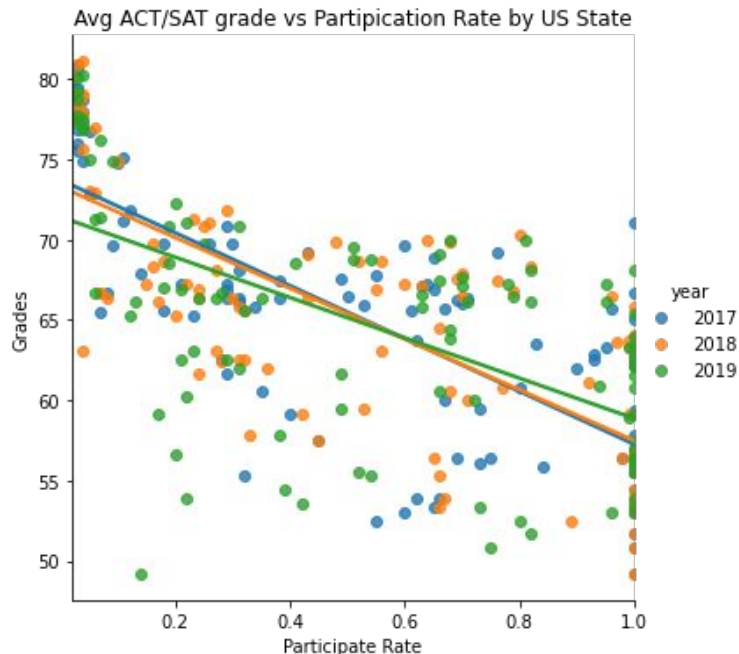
# Are standardized scores a good metric?

## Top 5 States

	act_participation	act_grades	sat_participation	sat_grades	participation	grades
state						
Minnesota	0.98	61.85	0.04	80.77	0.51	71.31
Iowa	0.67	60.37	0.03	78.83	0.35	69.60
Massachusetts	0.25	68.05	0.79	69.83	0.52	68.94
Wisconsin	1.00	56.76	0.03	80.59	0.51	68.67
Kansas	0.72	58.70	0.04	78.46	0.38	68.58

## Bottom 5 States

	act_participation	act_grades	sat_participation	sat_grades	participation	grades
state						
National	0.56	54.31	NaN	NaN	0.56	54.31
Oklahoma	1.00	54.54	0.12	64.00	0.56	59.27
Texas	0.43	56.48	0.65	64.04	0.54	60.26
District of Columbia	0.32	60.42	0.95	60.46	0.70	60.44
West Virginia	0.61	58.15	0.47	63.09	0.54	60.62



# Suggestions and Conclusion

## Suggestions

### **Economic:**

- More education expenditure should be allocated especially to those districts with less than 10,000 USD
- On the short term, more resources should be allocated to lower income families such as subsidies, bursaries or grants

### **Ethnic**

- More help should be focused on Hispanic/Latino as well as Black Americans
- Over time, as results among these groups increase, it may help to counter existing stereotypes these groups cannot perform well in these tests
- investigate what Asian American families are doing right to achieve higher standardized score

# Suggestions and Conclusion

## Suggestions

### Broadband Access

- provide subsidized broadband services to areas with low broadband penetration so that they will have access to education resource

### Household type

- Increase provision of counselling and after school care to areas with lower percentage of married households

### Geographical

- Focus help on town and rural areas, especially inland areas



# Suggestions and Conclusion

Admission base on standardized scores **should not perpetuate existing inequality** in society

# References

1. <https://www.vox.com/the-goods/2019/3/28/18282453/sat-act-college-admission-testing-cost-price>
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