



# General Assembly Project 1 Presentation

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## Agenda:

- Problem Statement Definition
- Methodology Framework
- Findings
- Recommendation

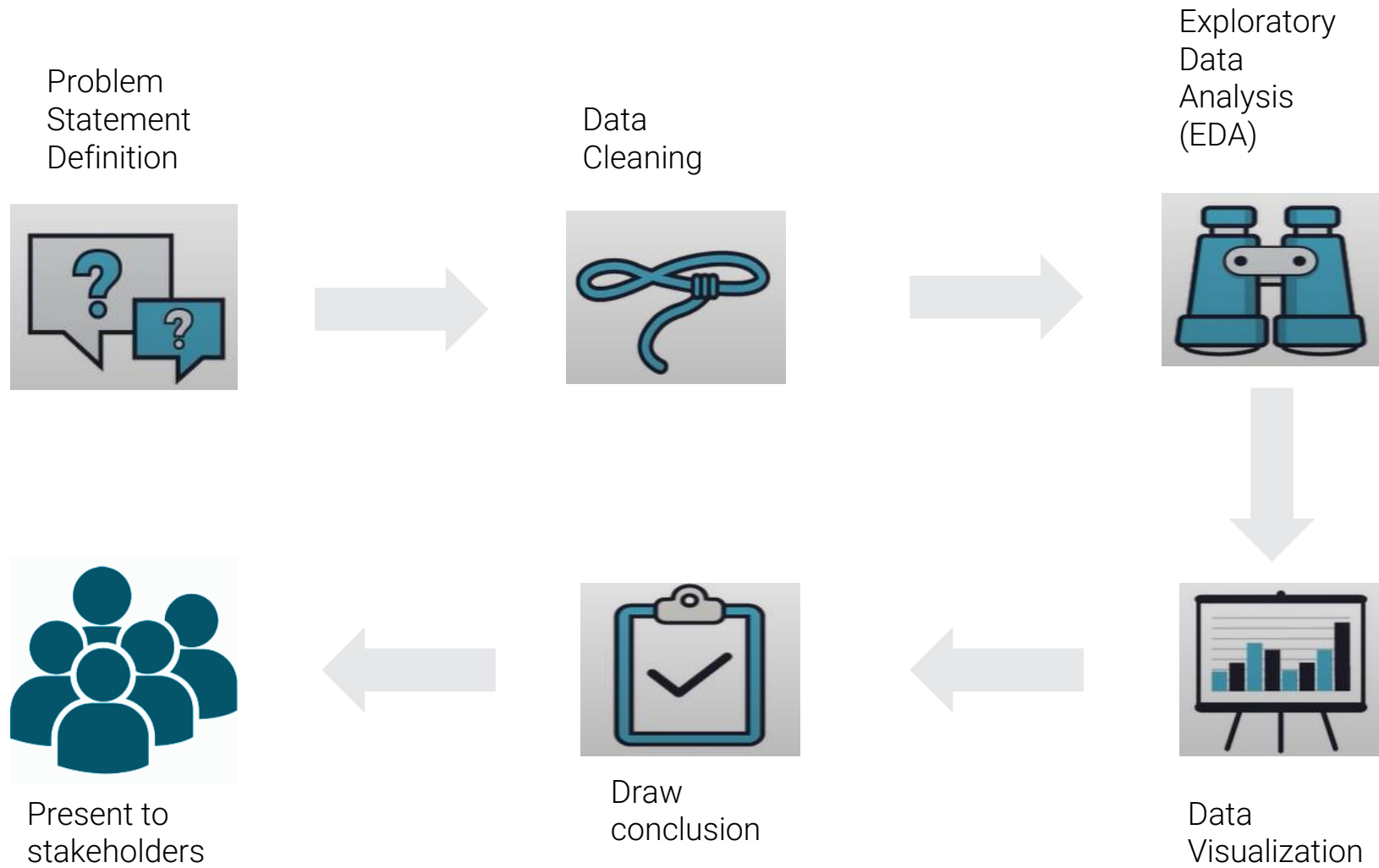
# Problem Statement

## Problem Statement Definition:

***As a philanthropy group in US focused on equal education, the group is actively allocating funds to allow every state to compare up to the national's mean scoring in a standardized test.***

***As part of the team, we are tasked to analyze National SAT data and present our findings to a non-technical audience and provide recommendations on suitable funding strategy.***

# Methodology Framework



# Data Used to Align with Problem Statement

## Data used for our analysis:

- SAT 2017<sup>1</sup> Test Scores
- SAT 2018<sup>1</sup> Test Scores
- SAT 2019<sup>1</sup> Test Scores

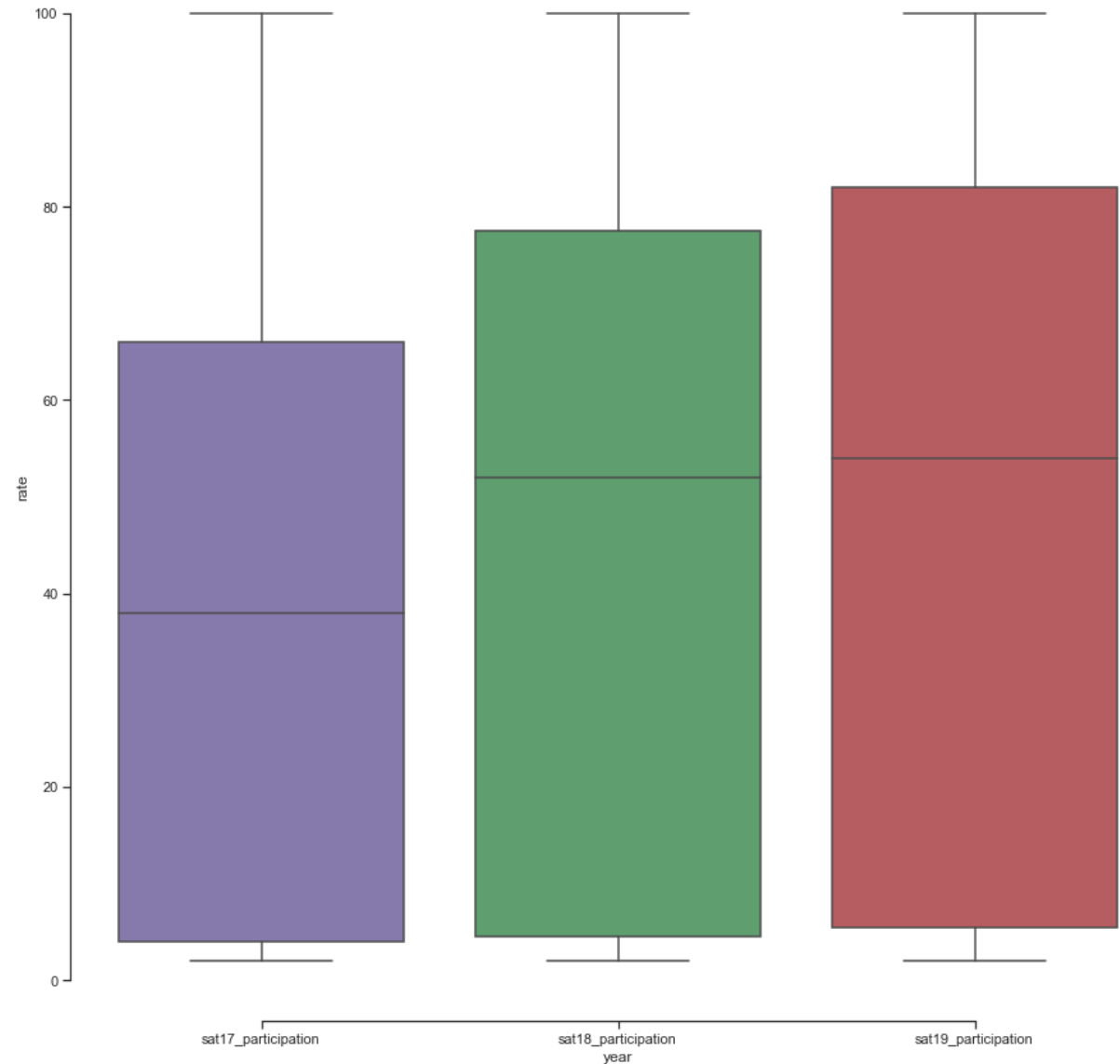
## External source data:

- Public High School Data<sup>2</sup> over years

Source: National Center for Education Statistics

# Why SAT?

- SAT participation rate showed increasing trend over the 3 years.
- Redesigned<sup>3</sup> SAT (2016) serves as an achievement test.



# Why SAT?

- More states making SAT mandatory<sup>4</sup>.
- Pandemic resulted in test being cancelled as use for admission.
- College Board looking into developing a digital test<sup>5</sup>.

	state	participation_17	participation_18	participation_change
13	Illinois	9.0	99.0	90.0
5	Colorado	11.0	100.0	89.0
39	Rhode Island	71.0	97.0	26.0
48	West Virginia	14.0	28.0	14.0
30	New Jersey	70.0	82.0	12.0
32	New York	67.0	79.0	12.0
10	Georgia	61.0	70.0	9.0
12	Idaho	93.0	100.0	7.0
20	Maryland	69.0	76.0	7.0
4	California	53.0	60.0	7.0

Initial Data Analysis – Ranking States YoY



## Overview – Ranking States by Raw Scores

	state	participation_17	participation_18	participation_19	total_17	total_18	total_19	rank_17	rank_18	rank_19	overall_ranking
0	District of Columbia	100.0	92.0	94.0	950	977	975	1	1	3	1
1	Delaware	100.0	100.0	100.0	996	998	985	2	2	4	2
2	Idaho	93.0	100.0	100.0	1005	1001	993	3	4	5	3
3	Michigan	100.0	100.0	100.0	1005	1011	1003	4	6	8	4
4	Maine	95.0	99.0	99.0	1012	1013	1013	5	7	9	5

1. An initial analysis of raw scores ranked by year was first performed
1. Scores were ranked by ascending order, 1 representing the lowest
1. The purpose of the ranking is to determine the state that scored consistently low over 3 years.

## Overview – Ranking States by Raw Scores

	state	participation_17	participation_18	participation_19	total_17	total_18	total_19	rank_17	rank_18	rank_19	overall_ranking
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3	Michigan	100.0	100.0	100.0	1005	1011	1003	4	6	8	4
4	Maine	95.0	99.0	99.0	1012	1013	1013	5	7	9	5

3. A rank revealed changes in trends year-over-year and exhibited states with consistently poor performance:
- District of Columbia – Consistently ranked lowest 3 year-over-year
  - Delaware – Close runner up to District of Columbia in terms of raw score
  - Idaho

# Graphical View of Changes in Rank

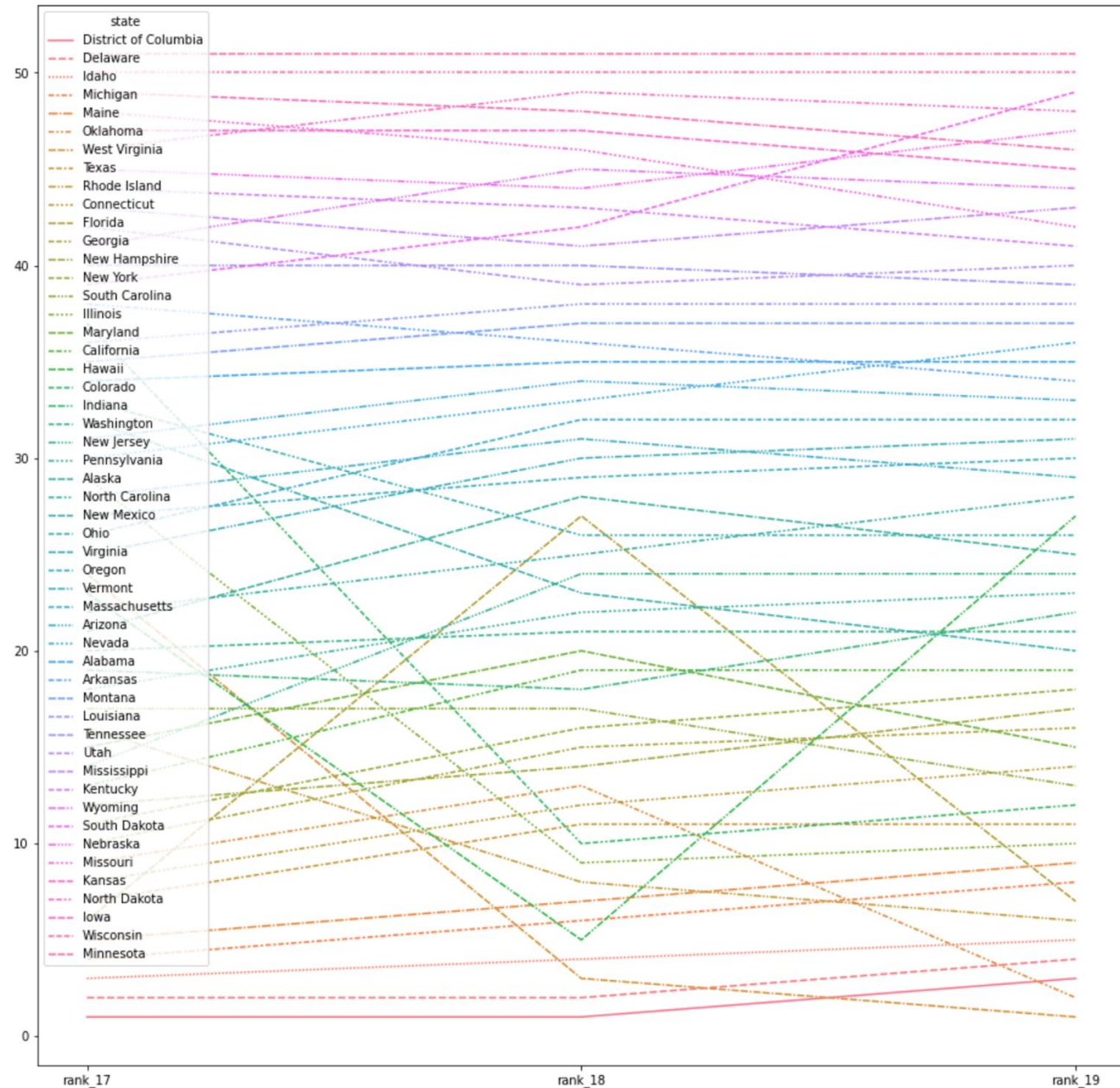
The top 3 states that show a drastic drop in ranking in 2018 are

- Colorado
- West Virginia
- Illinois

The top 2 states that show a drastic drop in ranking in 2019 are

- Florida
- Oklahoma

The rest do not show significant decrease.

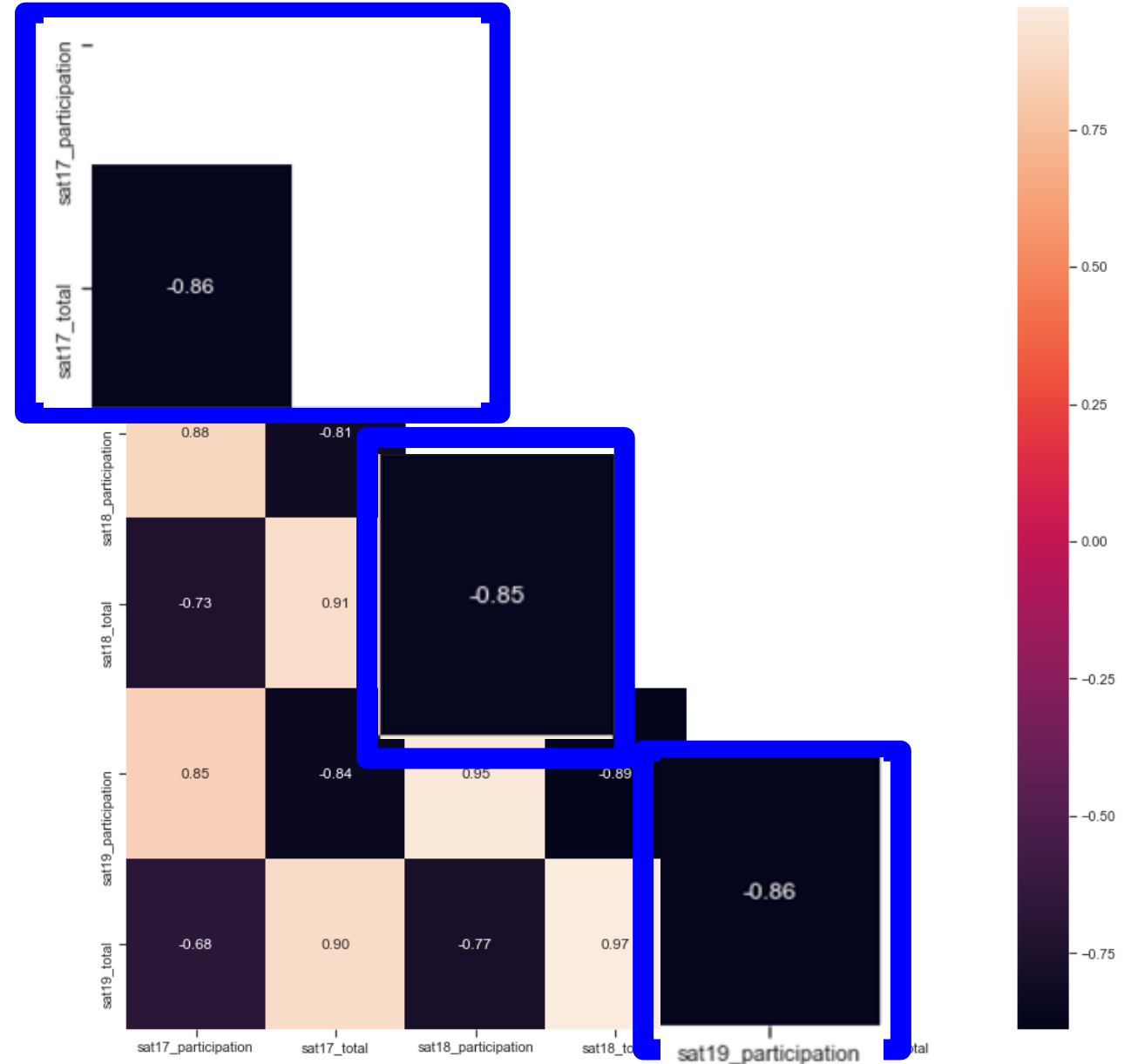


Understanding Bias

# Investigating Bias

Plotting a heatmap of the participation and the SAT scoring:

1. Significant negative correlation between SAT scoring vs participation rate
2. Negative correlation characteristics showed up for 3 years continuously

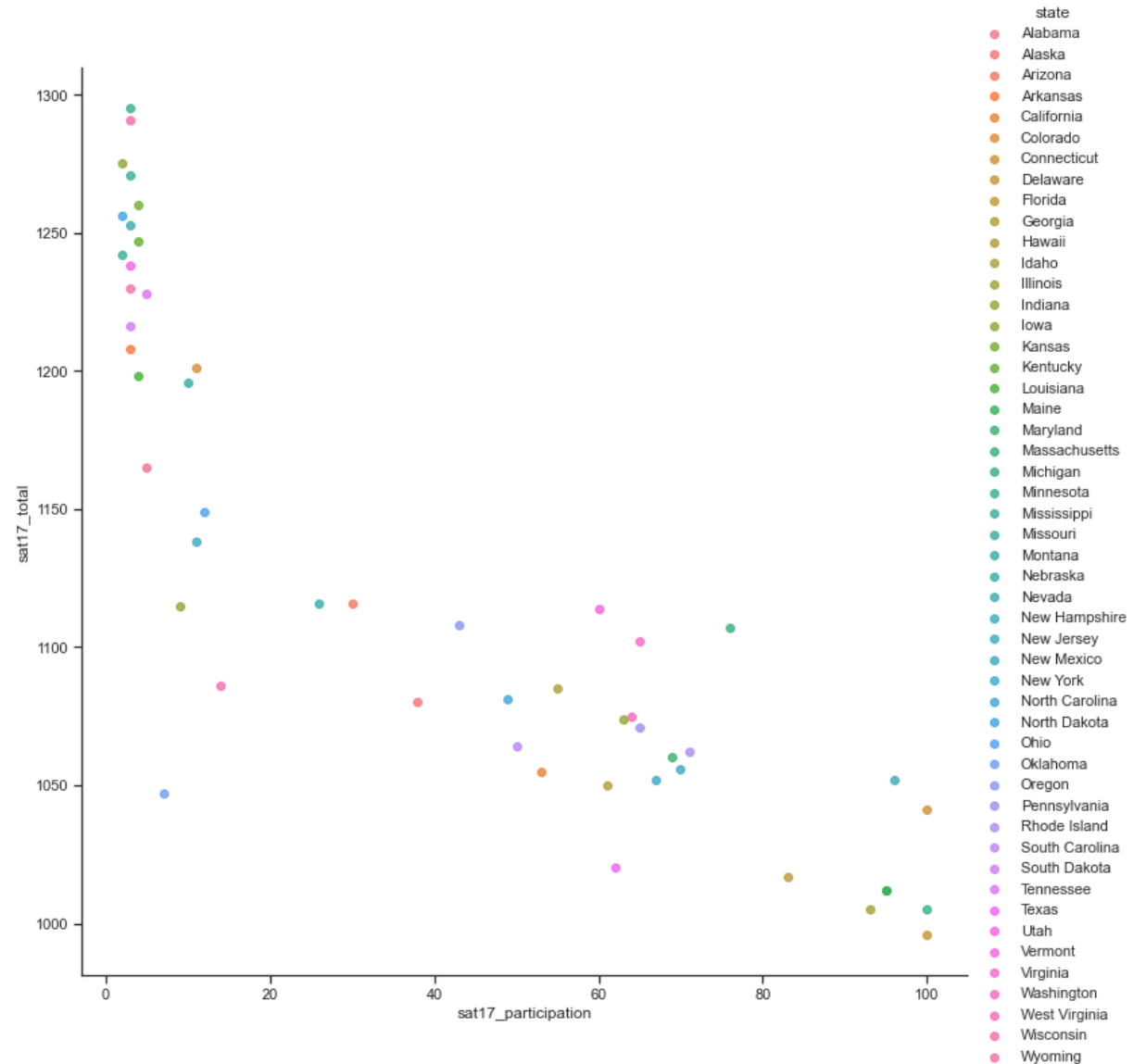


# Investigating Bias

## Understanding Relationship:

Using a scatter plot, we attempt to visualize the relationship between SAT total score and participation rate.

1. Clear negative correlation
2. As the participation rate goes down, the total score goes higher
3. Close to linear relationship

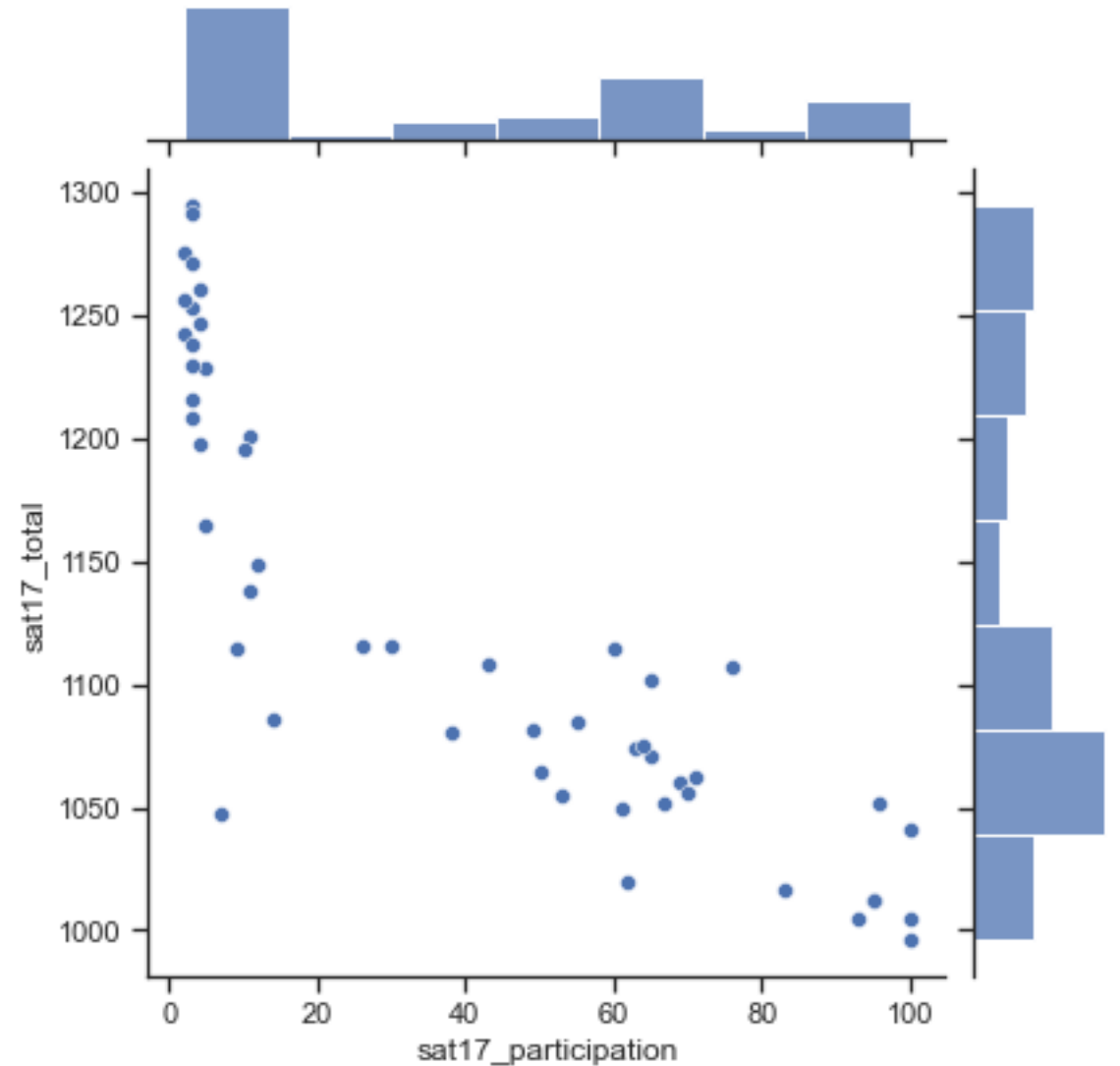


# Investigating Bias

Understanding Distribution:

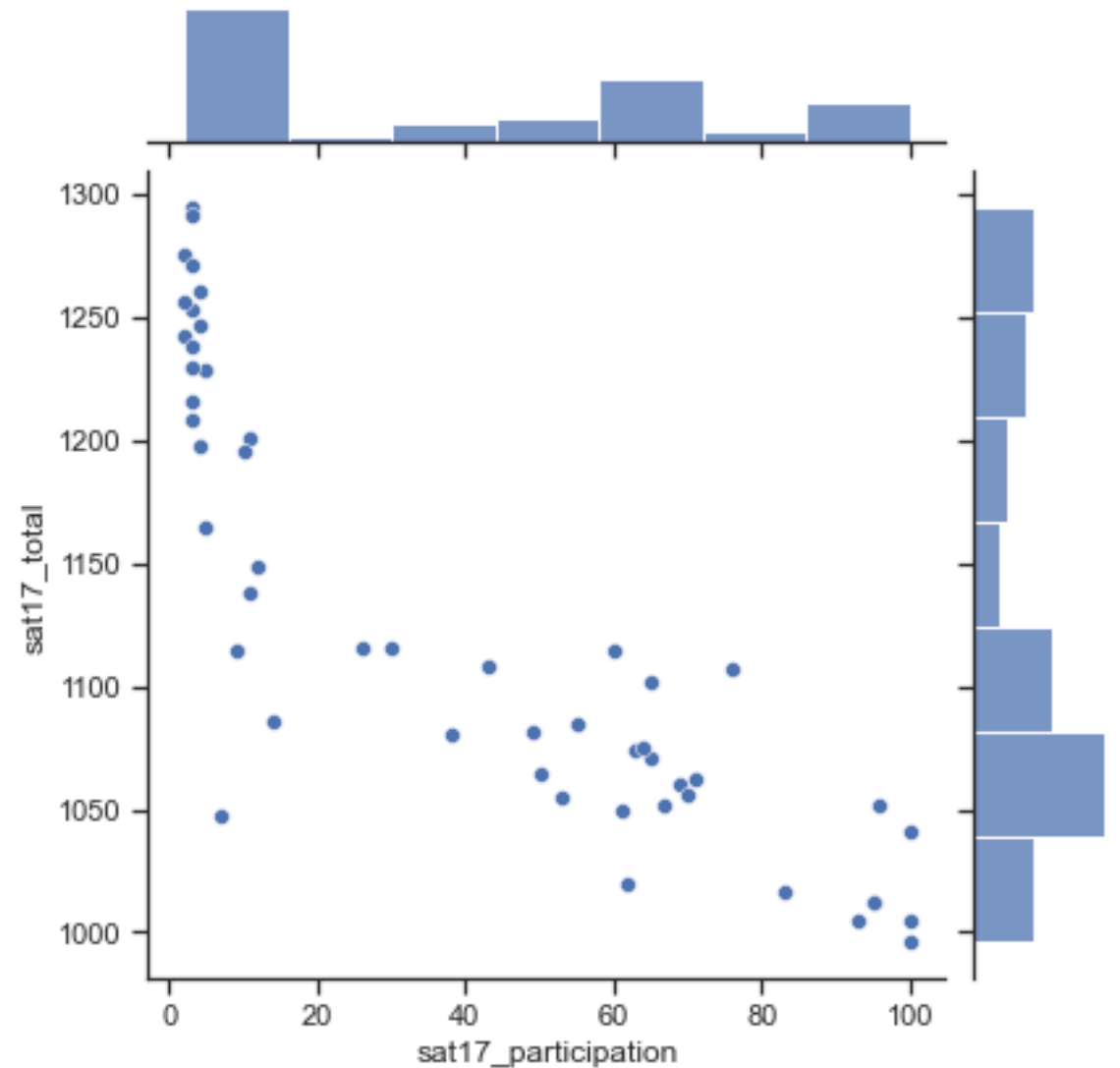
Using a joint plot, we attempt to visualize the distribution.

1. Highly distributed on low participation rates
2. Highly distributed on low SAT scores
3. Not normally distributed
4. Data is not normal and biased



# Investigating Bias

To use data with participation rates above 50% where data is not heavily distributed.



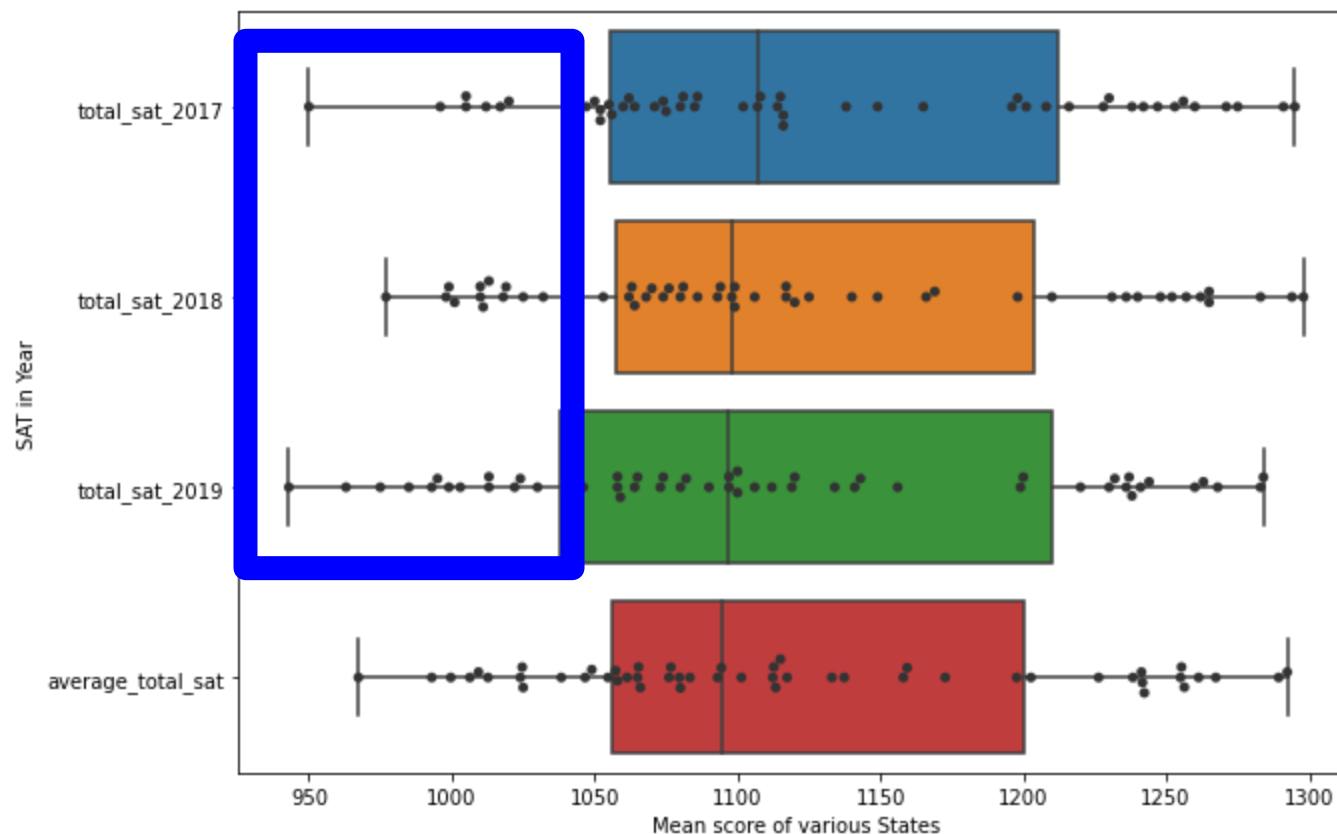


Statistical Significance

# States with lowest SAT scores

States below  
lower quartile

state
Connecticut
Delaware
District of Columbia
Florida
Idaho



Investigating Outside Factors

## Summary

State	District of Columbia	Delaware	Idaho
<b>SAT Avg Test Score Ranking</b>	1	2	3
<b>Avg Participation Rate (%)</b>	95.3	100	97.7
<b>Economically Disadvantaged Students (%)</b>	59	82	73
<b>Students with Disabilities (%)</b>	51	73	56

Recommendations

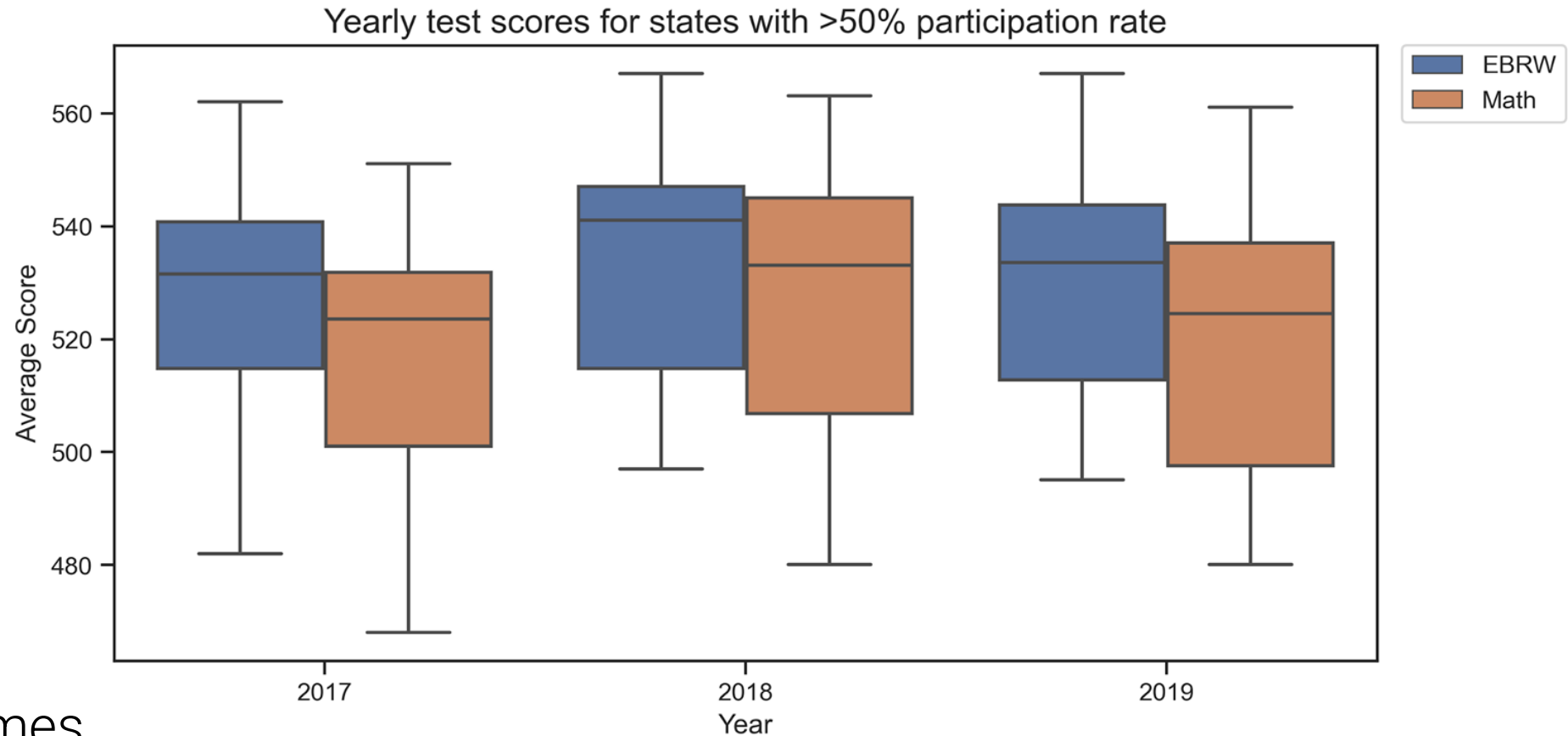
# Financial Aid to Schools

Observation:

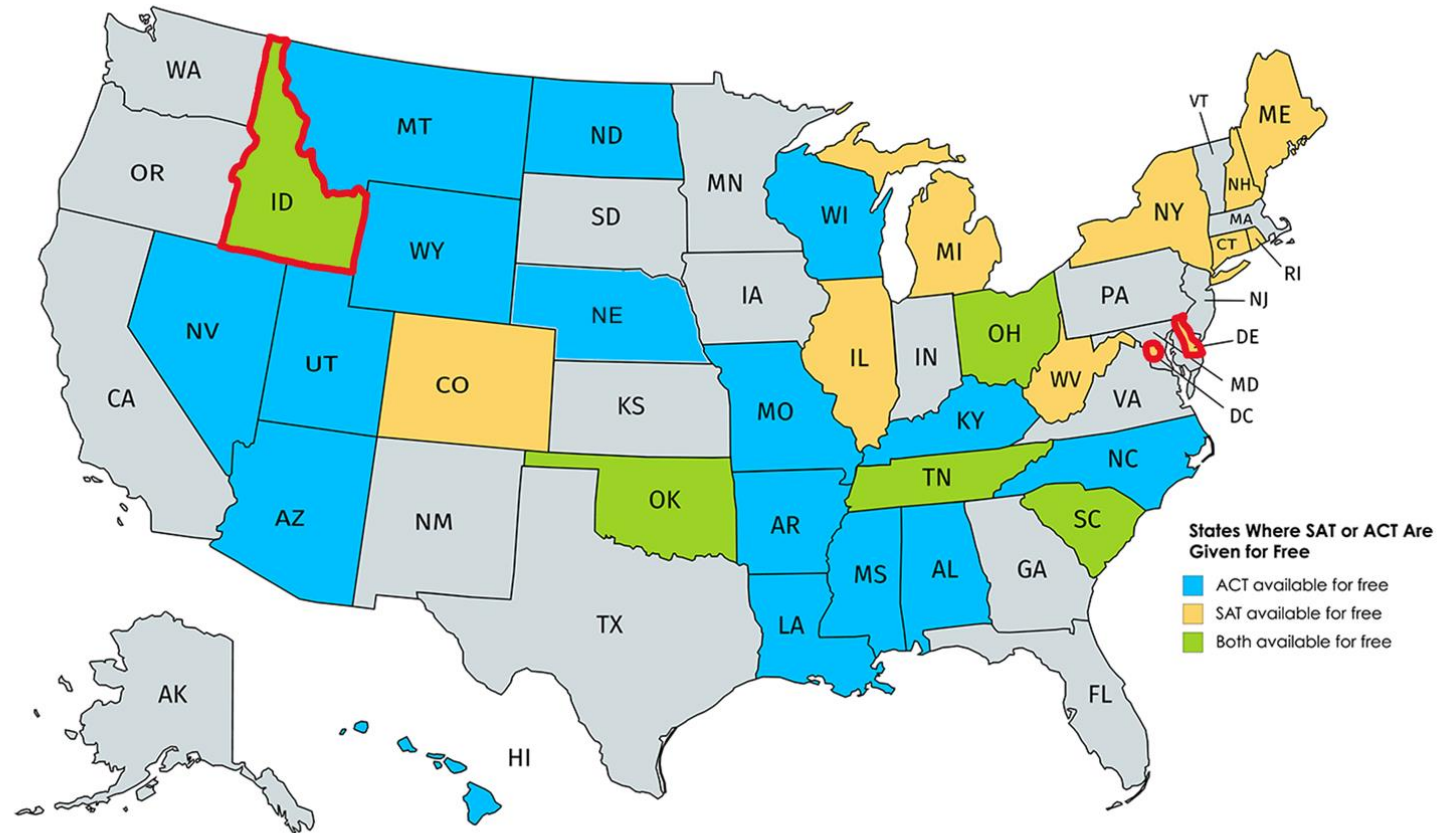
Math score generally lower than EBRW.

Recommendation:

Provide funding specifically on Math enrichment programmes



# Financial Aid to Students



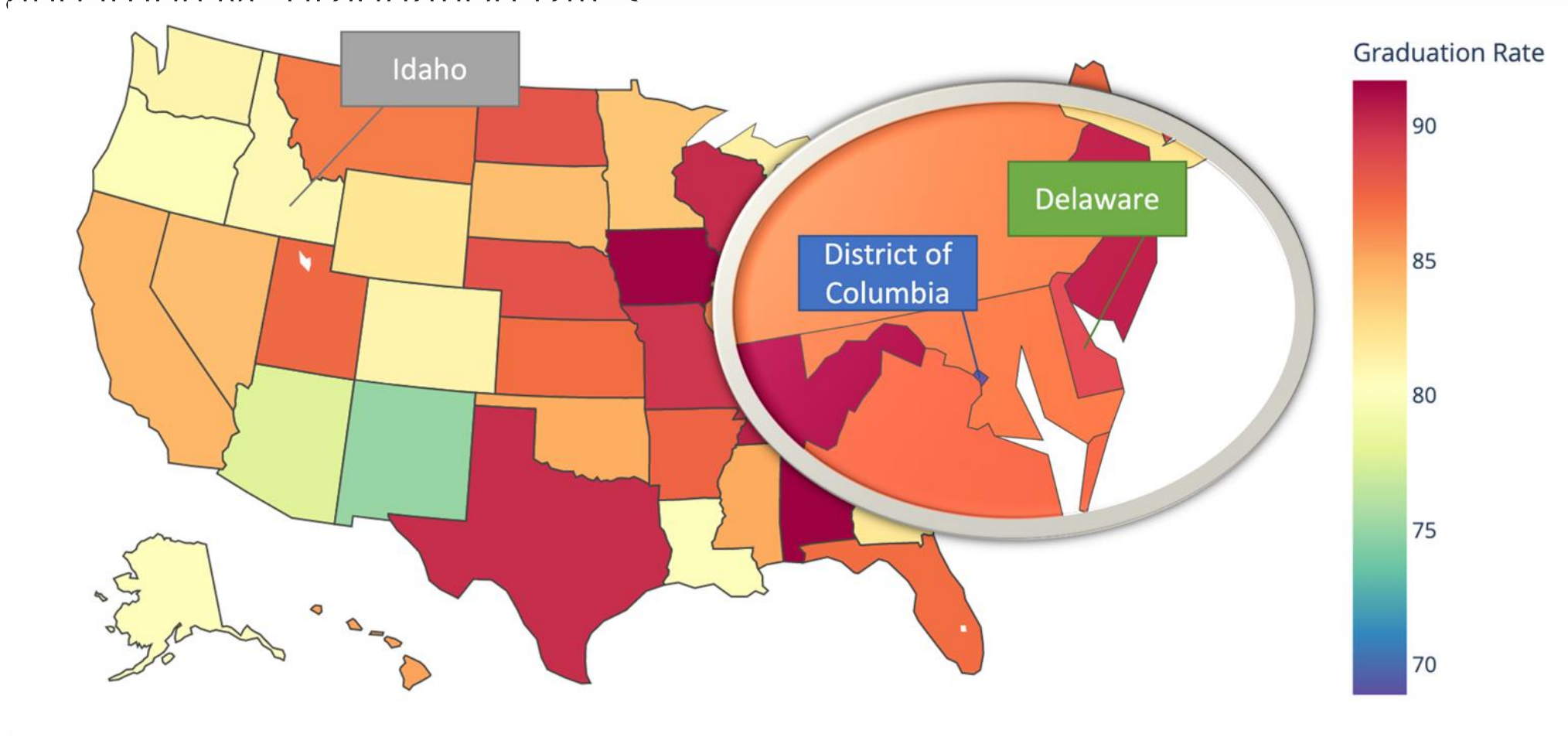
THE OLIVE BOOK 2019

DC, Delaware and Idaho offer free SAT<sup>6</sup> to high schoolers.

**Recommendation:** Our organisation could look into providing financial aid to waive 2nd SAT tests for Students in Delaware and Idaho

## Social engagement programmes for DC

**Recommendation:** Allocate funds for student engagement in DC to reduce dropout rates and improve graduation rates





# Conclusion

Shortlisted states for funding:

- District of Columbia (DC)
- Delaware
- Idaho

Funding strategies include:

1. Direct financial aid to educational institutions
2. Financial aid to students
3. Social engagements



An aerial night view of a dense urban skyline. Numerous skyscrapers are visible, their windows glowing with warm yellow and orange light. The buildings are set against a dark blue night sky. The perspective is from a high angle, looking down on the city. The lights from the buildings create a strong contrast with the dark sky and the shadows between the structures.

Q&A



## Sources:

1. SAT test scores for 2017, 2018 & 2019  
[https://nces.ed.gov/programs/digest/d19/tables/dt19\\_226.40.asp](https://nces.ed.gov/programs/digest/d19/tables/dt19_226.40.asp)
2. Public High School Data by student characteristics  
[https://nces.ed.gov/programs/digest/d20/tables/dt20\\_219.46.asp](https://nces.ed.gov/programs/digest/d20/tables/dt20_219.46.asp)
3. Redesigned SAT <https://sat.ivyglobal.com/new-vs-old>
4. Which states require the SAT? <https://blog.prepscholar.com/which-states-require-the-sat>
5. College Board making SAT digital  
<https://blog.collegevine.com/major-sat-changes-2021/>
6. States offering free ACT and/or SAT  
<https://theolivebook.com/states-that-offer-the-act-or-sat-for-free/>