

# DSI Project 1

An analysis of SAT and ACT (2017/18) Participation and Scores

## Presentation summary

1. **Problem statement**
2. **Data collection and assumptions**
3. **Exploratory Data Analysis (EDA)**
4. **Key trends and findings**
5. **Conclusions & Recommendations**

## Problem Statement

**As a new format for the SAT was released in March 2016, which state should College Board invest its money in to improve SAT participation rate?**

# Data collection and assumptions

## ➤ List of data sets used:

- SAT 2017 and 2018
  - Source: <https://blog.collegevine.com/here-are-the-average-sat-scores-by-state/>
- ACT 2017 and 2018
  - Source: <https://blog.prepscholar.com/act-scores-by-state-averages-highs-and-lows>

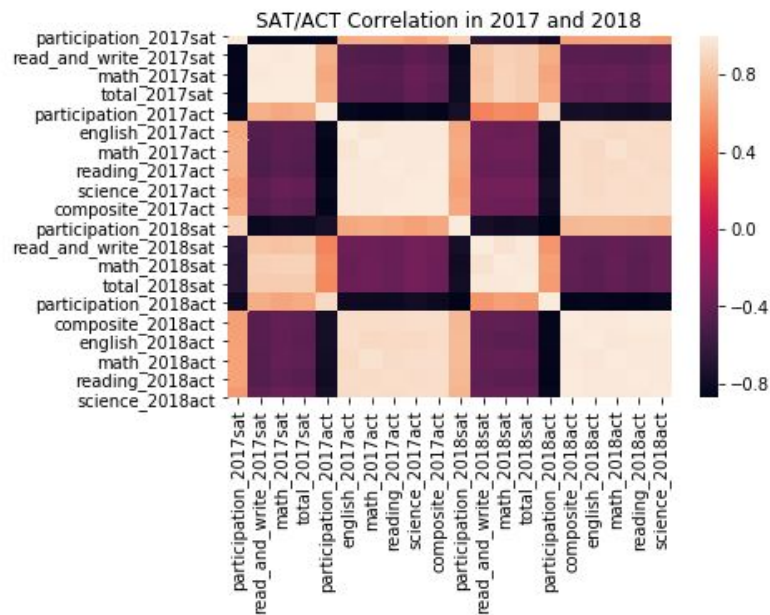
## ➤ Assumption(s) made:

- Population is consistent across all the states
- Population is constraint to each state
- SAT and ACT have similar assessment criteria

## ➤ Limitation(s)

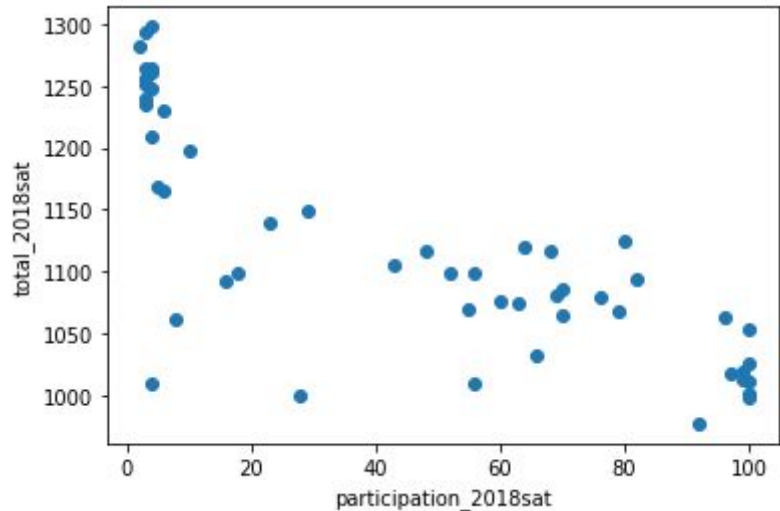
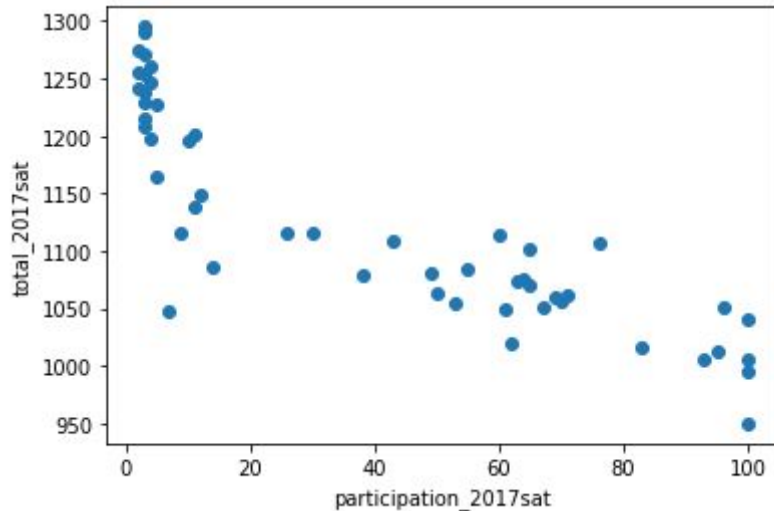
- 2017 and 2018 data used only

# On-hand Data



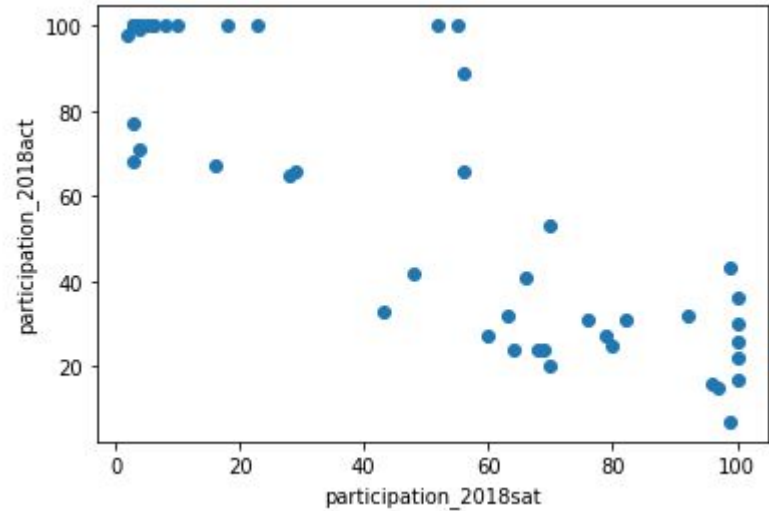
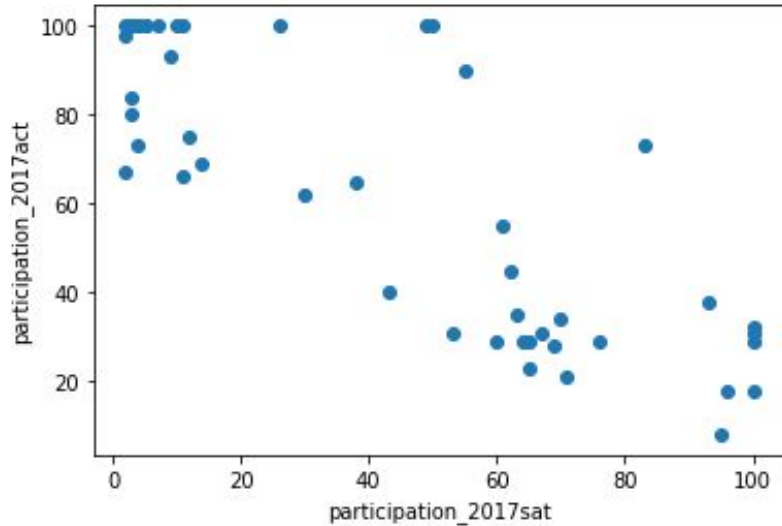
	english_2017act	math_2017act	reading_2017act	science_2017act
english_2017act	1.000000	0.967803	0.985999	0.980042
math_2017act	0.967803	1.000000	0.979630	0.986929
reading_2017act	0.985999	0.979630	1.000000	0.988034
science_2017act	0.980042	0.986929	0.988034	1.000000
composite_2017act	0.990856	0.990451	0.995069	0.995129
composite_2018act	0.932535	0.933247	0.929711	0.934586
english_2018act	0.937173	0.910684	0.916256	0.915850
math_2018act	0.918868	0.948795	0.923622	0.936559
reading_2018act	0.930897	0.924997	0.937214	0.930810
science_2018act	0.922873	0.930087	0.926420	0.939334

# Correlation - SAT Total/Participation%



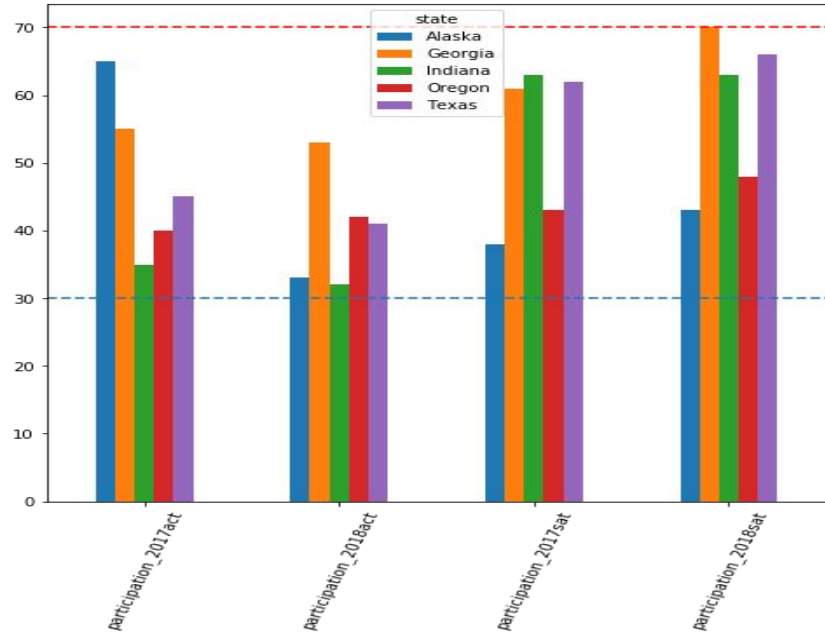
Schmeiser attributed the score drop to the increased numbers of students taking the exam and the growing diversity of test takers. *(Note: This paragraph has been changed from a previous version to correct information attributed to Schmeiser.)*

# Correlation - SAT/ACT Participation%



# Exploratory Data Analysis (EDA)

- Existing Data:
  - SAT & ACT participation rate
    - Range: > 30%; < 70%





# Key findings - State Selection

1. Population - High student density
2. Funding

	State	amountPerPupil	Pop
45	Alaska	17838	734002
22	Oregon	11264	4301089
17	Georgia	10205	10736059
15	Indiana	10045	6745354
9	Texas	9375	29472295

### <SAT Eng & Read Scores>



State: Colorado  
Sat18 Reading And Writing: 519.0

### <SAT Eng & Read Scores>



State: Alaska  
Sat17 Reading And Writing: 547.0

### <SAT Eng & Read Scores>



State: Georgia  
Sat18 Reading And Writing: 542.0

### <SAT Eng & Read Scores>



State: Hawaii  
Sat18 Reading And Writing: 480.0

Correlation  
between good  
English scores  
and SAT exam  
participation?

# Key findings - State Selection

## Score - Total SAT 2018 - sort by highest to lowest

1. Oregon
2. Alaska
3. Georgia

## Score - Total ACT 2018 - sort by highest to lowest

1. Georgia
2. Oregon
3. Alaska

	total_2017sat	total_2018sat	composite_2017act	composite_2018act
state				
Alaska	1080	1106	19.8	20.8
Georgia	1050	1064	21.4	21.4
Oregon	1108	1117	21.8	21.3

## Score - Total SAT 2017 - sort by highest to lowest

1. Oregon
2. Alaska
3. Georgia

## Score - Total ACT 2017 - sort by highest to lowest

1. Oregon
2. Georgia
3. Alaska

	State	amountPerPupil	Pop
45	Alaska	17838	734002
22	Oregon	11264	4301089
17	Georgia	10205	10736059
15	Indiana	10045	6745354
9	Texas	9375	29472295

# Recommendations

1. **Both Colorado and Illinois had government legislation in place which drove up the SAT participation rates**
  - a. Direct efforts towards campaigns to convince educators to adopt SAT
  - b. Drive across the point that college board is taking the digital approach , providing free learning materials with easy accessibility (Khan Academy)
2. **Making use of high turnover rate among teachers in Alaska**
  - a. Relatively high percentage of rural schools compared to its neighbouring states
  - b. Harsh weather conditions and isolation result in high turnover rate of teachers
  - c. Easy accessibility of test material through Khan Academy



# Recommendations

3. **Collaborating with CollegeBoard's other major tests like Advanced Placement(AP).**
  - a. Allows student to clear college credits in advance
  - b. Providing high schools with rebates for taking both tests
  - c. Making SAT a subset of AP
    - i. (E.g. Preparing for AP math essentially prepares you for SAT Math)
  - d. A one stop solution for college admissions and advanced college credits
4. **Be an advocate of creativity and a learning culture**
  - a. Hold frequent competitions and forums to encourage experiential learning and exchange of ideas
  - b. Points from these other activities organised by College Board can be included to the SAT score indirectly
    - i. Similar to Environmental Context Dashboard

# Conclusion

1. Legislation is key but not ideal
2. Adopt Recommendations which gear towards developing a learning culture → Mutual Affinity help drive up the Participation rates.
3. Ideal to do further research based on other factors like ethnicity and socio-economic data and also on a granular level
4. Wider dataset of across a decade may help in providing a more well supported argument or proposal.

# References

1. A Perennial Challenge in Rural Alaska: Getting and Keeping Teachers - Education Week
2. Education Hurdles - Alaska Business Magazine
3. Public education in Alaska - Ballotpedia
4. <https://www.akbizmag.com/industry/education/education-hurdles/>
5. <https://collegereadiness.collegeboard.org/sat>

Q & A



# Key trends and findings

Oregon and Alaska

ALASKA WINS!!!

- Second highest budget
- Youngest population

# Exploratory Data Analysis (EDA)

3 states: (Yan Long/Joyce)

Deciding factor: 1) Participation rate: 35% to 65% for 2017 and 2018 ( >70% overly saturated, <30% could signal entrenched market. 35% to 65% is 'sweet' spot

Student funding from government - Secondary deciding statement - l

- However, low student funding from government

Alaska Georgia , Oregon

Other Research (Joyce)

Population : Focus on states with larger population . Is there an existing correlation also have higher SAT participation rates. Possible +ve correlation lends support to this approach. Any correlation of higher immigration and also poor scores based on ethnicity due to language difficulties . SAT is more linguistic. Less focus on these states

	State	amountPerPupil	Pop
45	Alaska	17838	734002
22	Oregon	11264	4301089
17	Georgia	10205	10736059
15	Indiana	10045	6745354
9	Texas	9375	29472295

Geographical location : Target states with a 'younger' demographic . Is there an existing correlation between states with

# Exploratory Data Analysis (EDA)