



# SAT and ACT Test Analysis

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# What we will do

What would the  
analysis be about?

Overview of  
Dataset

Cleaning of Data

Descriptive  
statistics and basic  
analysis

Trends in Data



# What would the analysis deal with?

What are the broad trends in the SAT and ACT participation rates across the various states, years?

Which majors have highest and least participation in SAT?



## Datasets: 9 used out of 10

The data provided pertains to the SAT and ACT scores for years 2017, 2018 and 2019 for the states of the US and school participation in SAT and ACT within California state. There is a dataset for SAT scores by intended majors for year 2019.

Aim is to recommend for increasing education outcomes across states.



# Data Cleaning and Basic Analysis

- Changed Col names to Snake\_Case
- Cleaned missing values to Null values such as '-' and '#VALUE!' to NAN in order to convert Col to Float
- Percentage to float values
- Manual Functions being used most of the times
- Dictionary for standard deviation for a column name
- Descriptive Statistics for each dataframe

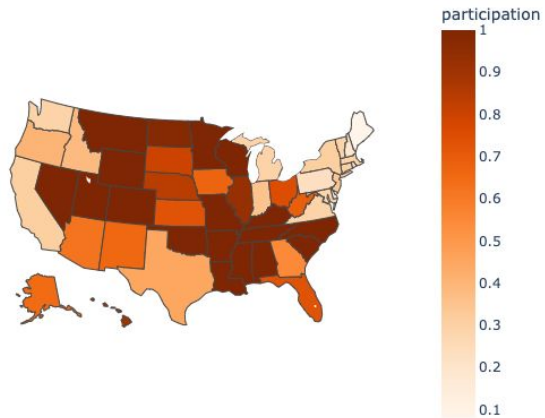
	state	participation	evidence_based_reading_and_writing	math	total
40	Rhode Island	1.00	503	492	995
13	Illinois	1.00	509	504	1013
22	Michigan	1.00	507	496	1003
5	Colorado	1.00	518	506	1024
6	Connecticut	1.00	529	516	1046
7	Delaware	1.00	499	486	985
9	Florida	1.00	516	483	999
12	Idaho	1.00	505	488	993
19	Maine	0.99	512	502	1013
50	West Virginia	0.99	483	460	943

The above cell shows top 10 states with highest SAT participation rate in year 2019

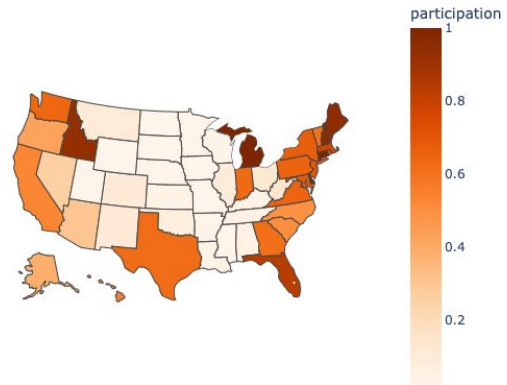


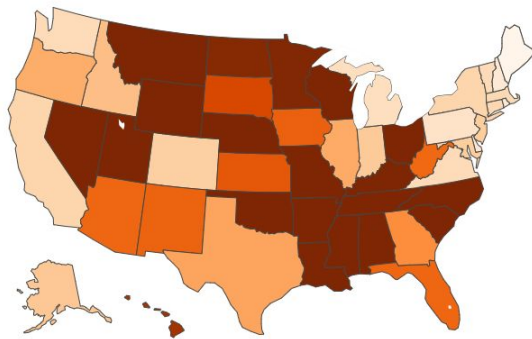
# Trends in Data

ACT Participation Rates across USA in 2017



SAT Participation Rates across USA in 2017

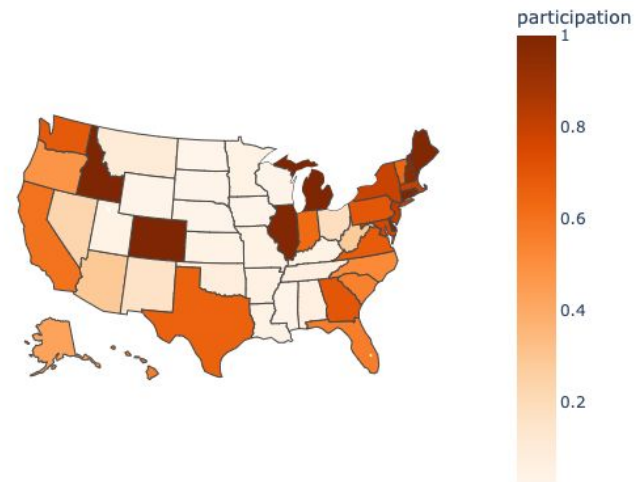




participation

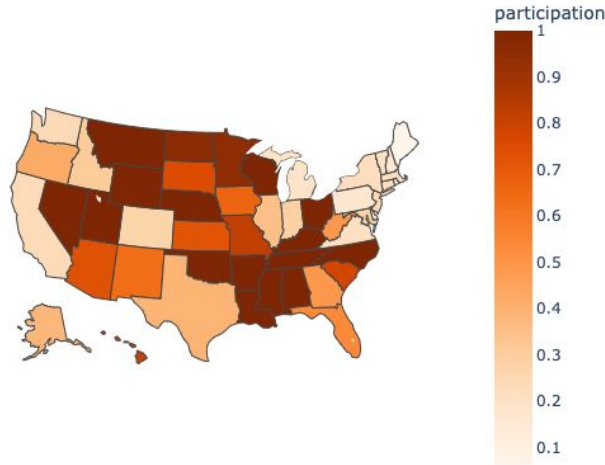
1  
0.9  
0.8  
0.7  
0.6  
0.5  
0.4  
0.3  
0.2  
0.1

### SAT Participation Rates across USA in 2018

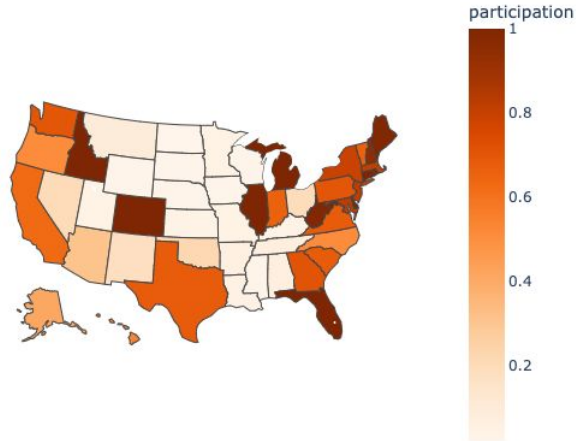




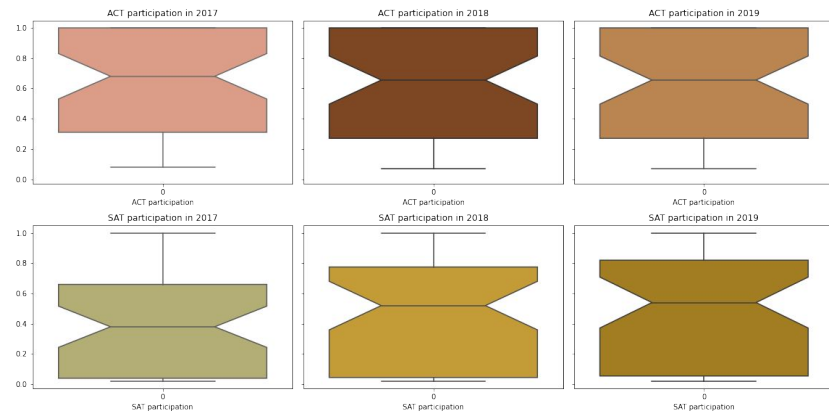
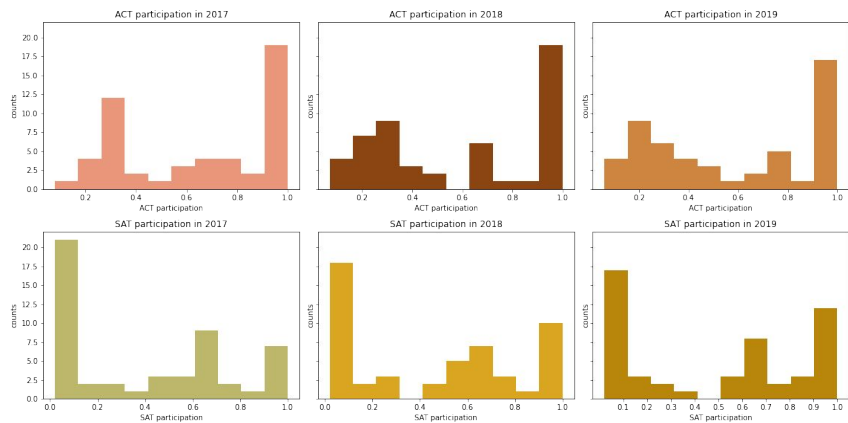
ACT Participation Rates across USA in 2019

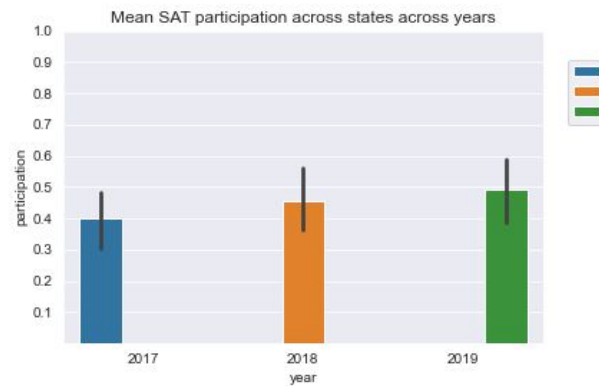
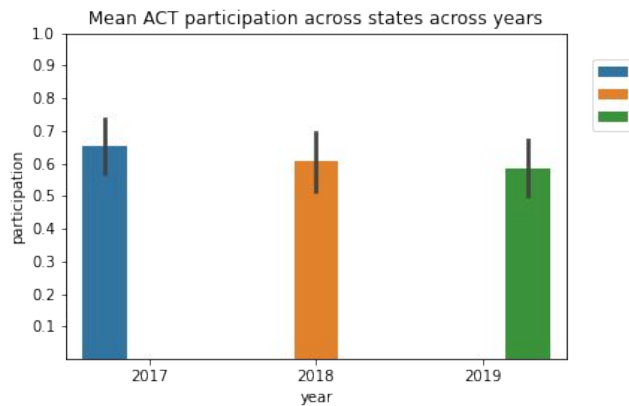


SAT Participation Rates across USA in 2019



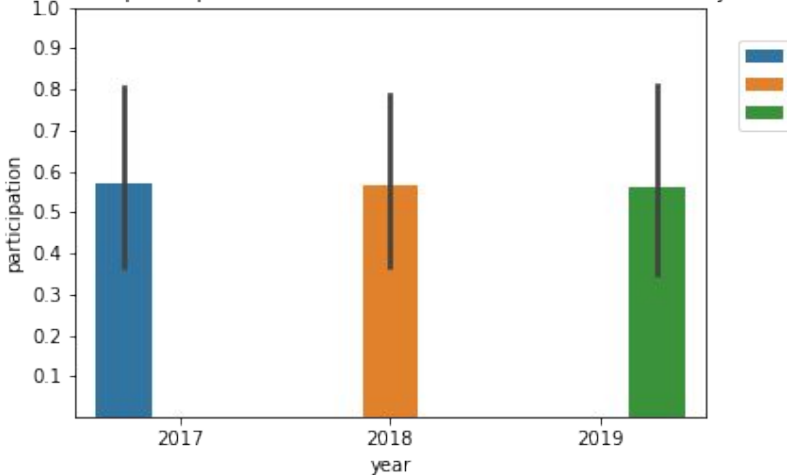








Mean ACT participation across states around California across years



Mean SAT participation across states near California across years

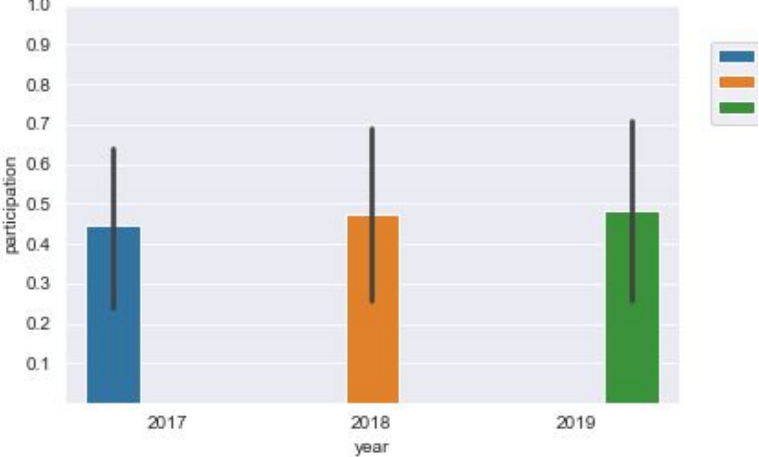


Figure 1. Corr between participation\_SAT and participation\_ACT for year 2017



Figure 1. Corr between participation\_SAT and participation\_ACT for year 2018

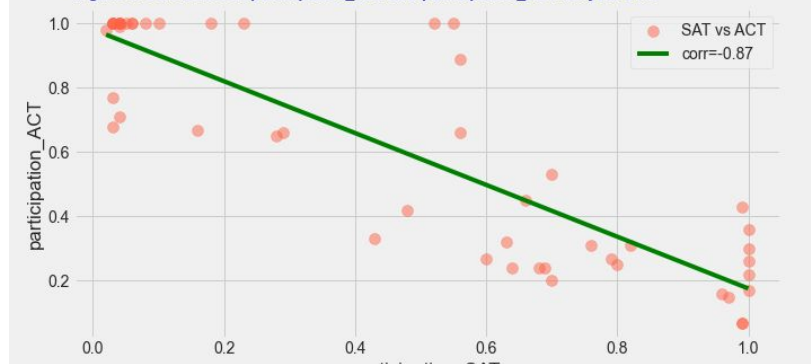
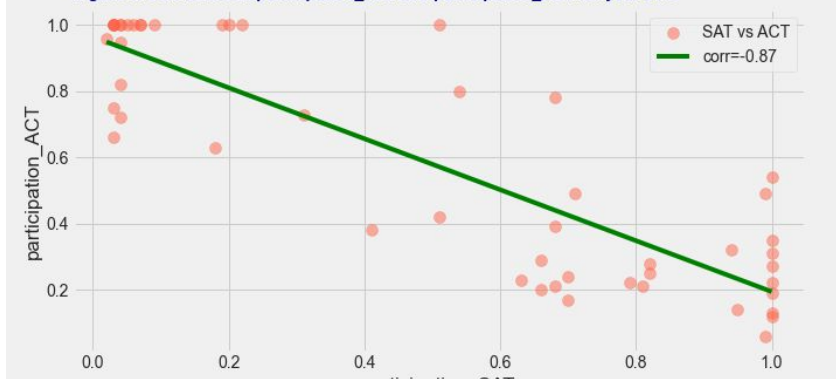


Figure 1. Corr between participation\_SAT and participation\_ACT for year 2019





## Brief Summary of Analysis Results

1. Minnesota consistently has highest composite score for years 2017, 2018 and 2019.
2. Alaska needs to increase its participation rate, probably the occupation opportunities do not require a college degree. this needs to be improved.
3. In general higher SAT participation rates are associated with lower ACT participation rate for a specific state, although this is not a hard rule. e.g., Florida, Hawaii, North Carolina and South Carolina have ACT and SAT participation rates both over 50% for year 2019
4. SAT test is more popular in California
5. Average ACT participation is consistently higher than SAT participation.
6. SAT participation has gone up each year while ACT participation has gone down.



# Recommendations and Direction for Future

SAT or ACT? What really matters is students participation increasing in either or both the exams so that college education increases.

Other factors: Cultural Factors, Socioeconomic factors, Individual proclivity, student to teacher ratios, kind of economic opportunities available in a state

Have data on this, analyse the causation

Improve on these other civic indexes



# Possible Hypotheses

***H1:** Lower participation rates for either SAT and ACT tests are associated with higher score in the respective test.*

***H2:** Sciences and allied fields such as Engineering, medicine among others have a higher SAT participation rate*

***H3:** States with more blue collared jobs are associated with greater SAT participation \*\**