

A decorative graphic on the left side of the slide consists of two overlapping parallelograms. The front one is blue and the back one is a light green. They are positioned diagonally, with the blue one partially covering the green one.

Falling ACT Participation Rates in California



Project Overview

The purpose of this project is to analyze the reasoning behind California's low participation rate in the ACT test for 2017 and 2018 and recommend practical solutions for how the College Board is able to increase participation rate amongst graduating seniors in California.

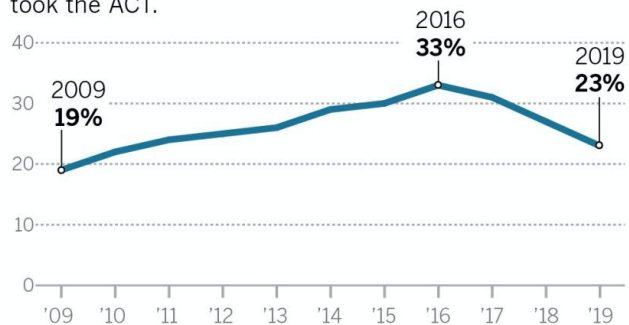
Project Methodology

Based on the datasets provided for SAT & ACT in 2017 and 2018, we will use a combination of inferential statistics, data visualization techniques as well as hypothesis testing to analyze the contributing factors which are statistically significant in explaining California's low participation rate in the ACT test. References will also be made to similar publications and news articles that support our findings and provide reasonable explanations behind this trend.

Background

California ACT participation rates

Percentage of California high school graduates who took the ACT.



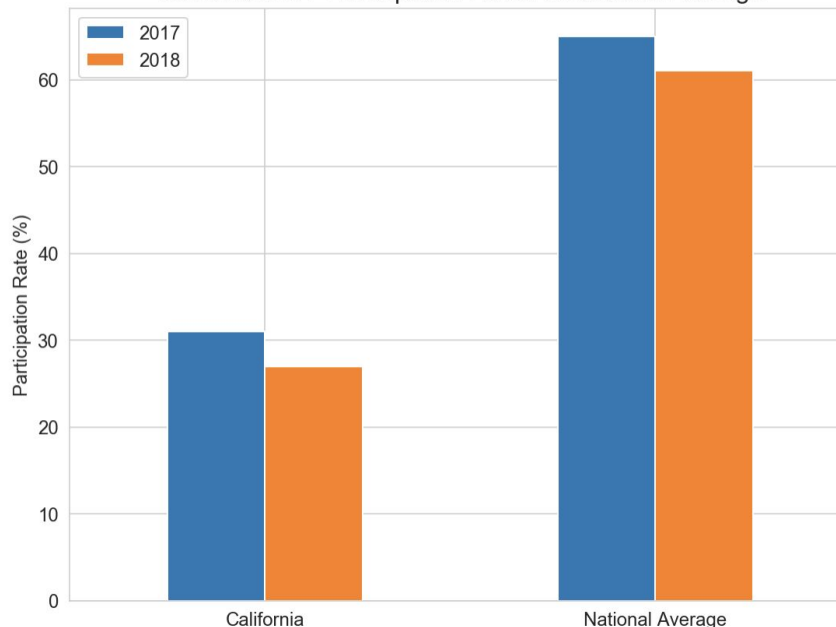
Source: ACT

CRISTINA BYVIK U-T

Reference:

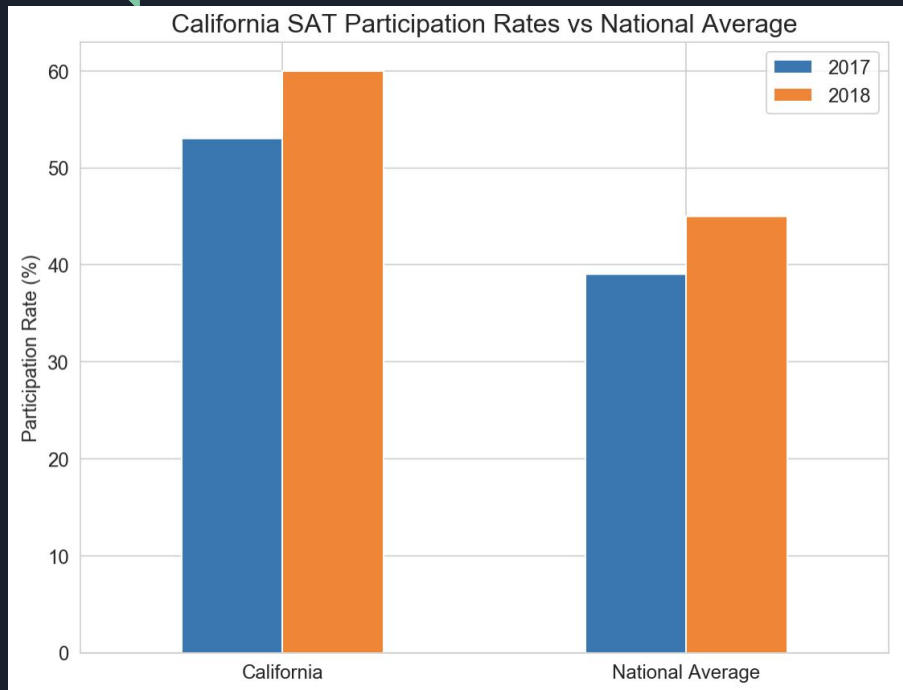
<https://www.sandiegouniontribune.com/news/education/story/2019-10-31/act-scores>

California ACT Participation Rates vs National Average



The ACT participation rates for California is significantly lower than the National Average for both 2017 and 2018. (i.e. 31% - Cali vs 65% - National in 2017 & 27% - Cali vs 61% - National in 2018)

Comparison with SAT Participation Rates

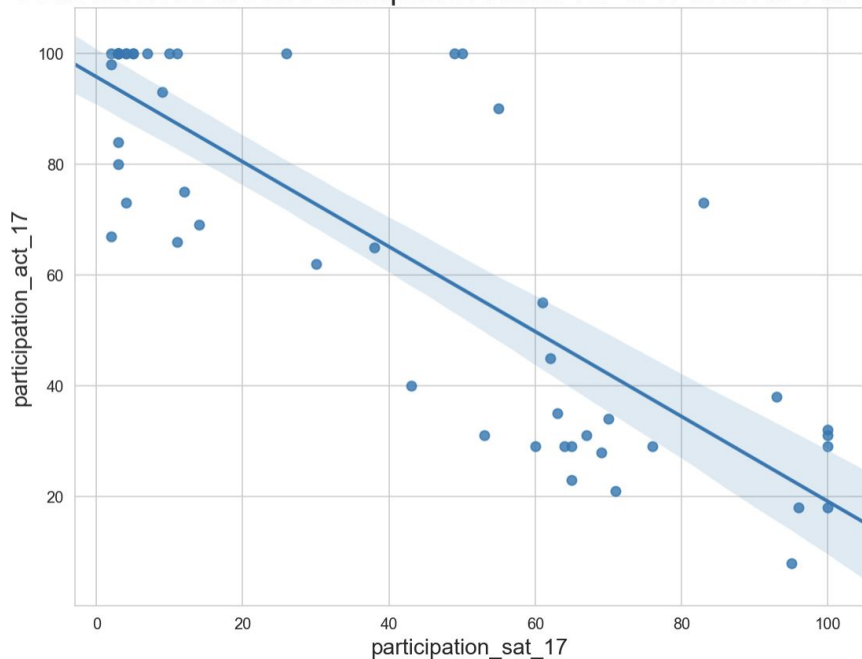


On the other hand, the SAT participation rates for California shows an inverse trend.

It is substantially higher than the National Average for both 2017 and 2018. (i.e. 53% - Cali vs 39% - National in 2017 & 60% - Cali vs 45% - National in 2018)

Possible Correlation between SAT and ACT Participation Rates (2017)

Correlation between Participation Rates for SAT and ACT in 2017

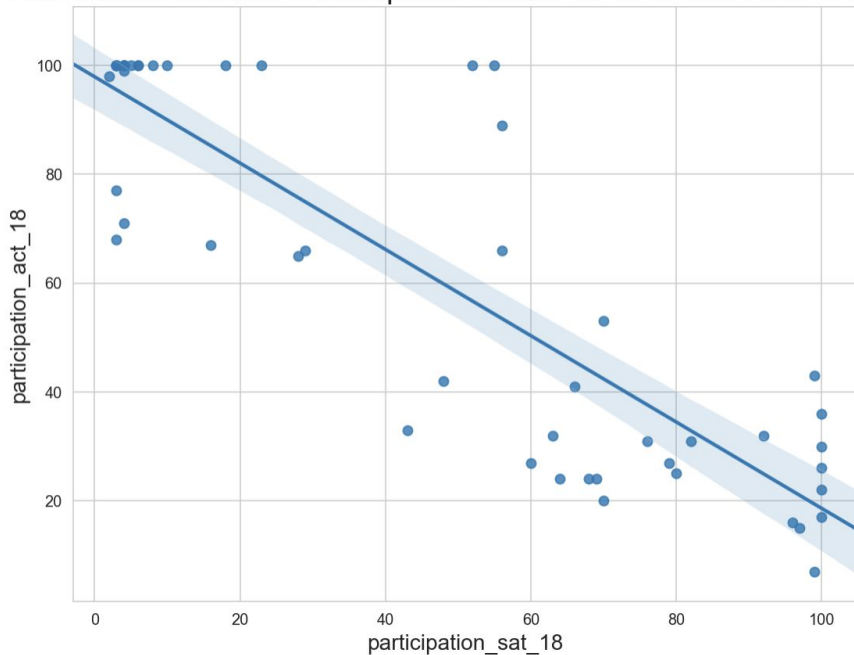


From our testing, there appears to be a strong negative linear correlation between SAT and ACT Participation Rates in 2017.

Based on our educated guess, as both SAT and ACT are college entrance exams which are accepted by all US colleges, most students tend to choose one over the other for their college admissions. The case of a student attempting both tests is generally assumed to be low as they are direct substitutes for one another in most instances.

Possible Correlation between SAT and ACT Participation Rates (2018)

Correlation between Participation Rates for SAT and ACT in 2018



Similarly, the strong negative linear correlation between SAT and ACT Participation Rates was also present in the 2018 Exams.

To substantiate our initial assessment, we will design a hypothesis test to determine whether there is a linear relationship between SAT and ACT Participation Rates and that the Correlation Coefficient is statistically significant.

Hypothesis Testing (Pearson Correlation Coefficient)

Step 1: Determining our null and alternative hypothesis

H_0 : The two variables - SAT Participation Rate and ACT Participation Rate are independent.

H_1 : There is a dependency between the two variables.

Step 2: Specify a level of significance

The value $\alpha=0.05$ will be used for experimental purposes.

Hypothesis Testing (Pearson Correlation Coefficient)

Step 3: Calculating test statistics and p-value

```
# Pearson's Correlation test between SAT and ACT Participation Rate in 2017  
#H0: the two samples are independent.  
#H1: there is a dependency between the samples.  
from scipy.stats import pearsonr  
stat, p = pearsonr(merged_scores['participation_sat_17'],  
                  merged_scores['participation_act_17'])  
print('stat=%.3f, p=%.3f' % (stat, p))  
if p > 0.05:  
    print('Probably independent')  
else:  
    print('Probably dependent')
```

```
stat=-0.841, p=0.000  
Probably dependent
```


Hypothesis Testing (Pearson Correlation Coefficient)

Step 4: Conclusion

As $p\text{-value} < 0.05$, we reject the null hypothesis and conclude that we are 95% confident that there is a linear relationship between SAT and ACT Participation Rates and the correlation is statistically significant.

Also, the Pearson Correlation Coefficient calculated of -0.841 shows that there is a strong negative linear correlation between the two variables - SAT Participation Rate and ACT Participation Rate.

Corroborate our Findings/ Recommended Solutions

1. Mandatory testing/ Free Funding Option for Graduating Seniors

Unlike other states such as Alabama, Kentucky and Louisiana, California neither requires its high school seniors to take a mandatory ACT test nor provides a free funding option should its students choose to do so.

Reference: <https://blog.prepscholar.com/which-states-require-the-act-full-list-and-advice>

2. Statewide Contracts with the College Board

“SAT usage also spiked in Colorado because of a contract with the College Board. There, 58,790 in the Class of 2018 took the test, 10 times the total of the previous year. The SAT also recorded large gains in California... , the College Board said, although those states do not have similar statewide contracts.”

Reference:

<https://www.washingtonpost.com/education/2018/10/23/sat-reclaims-title-most-widely-used-college-admission-test/>

Corroborate our Findings/ Recommended Solutions

3. Provide fee waivers for low-income students and free test-prep materials

"The ACT and College Board say they have taken steps to make tests more accessible. Both provide fee waivers for low-income students and free test-prep materials."

Reference:

<https://www.washingtonpost.com/education/2018/10/23/sat-reclaims-title-most-widely-used-college-admission-test/>

Future Projects Exploration

1. *Correlation between test performance/ participation rates and factors such as family income, parent education levels and race*

“Critics of the standardized tests say test performance is closely correlated with — and therefore likely influenced by — family incomes, parent education levels and race. They argue that using the tests for college admissions discriminates against disadvantaged students, including students of color, poor students and students with disabilities.”

Reference: <https://www.sandiegouniontribune.com/news/education/story/2019-10-31/act-scores>