



General Assembly DSI Project 1

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Problem Statement

What we are examining and why

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The effects of family income
on SAT scores... are
substantial, non-linear, and
nearly twice as large for Black
students.

What is the relationship between SAT/ACT scores, participation rates, and economic status?

- ◇ There have been many studies showing the relationship between these two factors
- ◇ But studies from the test administrators deny this
- ◇ We set out to find a correlation between these factors



Datasets Used

2019 ACT scores by state

- ◇ Average ACT scores in each state
- ◇ ACT participation rates (%)

2019 SAT scores by state

- ◇ Average SAT scores in each state
- ◇ SAT participation rates (%)

2019 GDP per capita by state

- ◇ GDP per capita by state



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Data Analysis

Finding trends in the data

What we compared

GDP against scores

- ◆ Examine the relationship between GDP per capita and average scores for both tests

Participation rates

- ◆ Examine the relationship between the participation rates between the two tests
- ◆ This would give insight on the distribution of test takers in the states

GDP against participation rates

- ◆ Examine the relationship between the GDP per capita and the participation rates for both tests

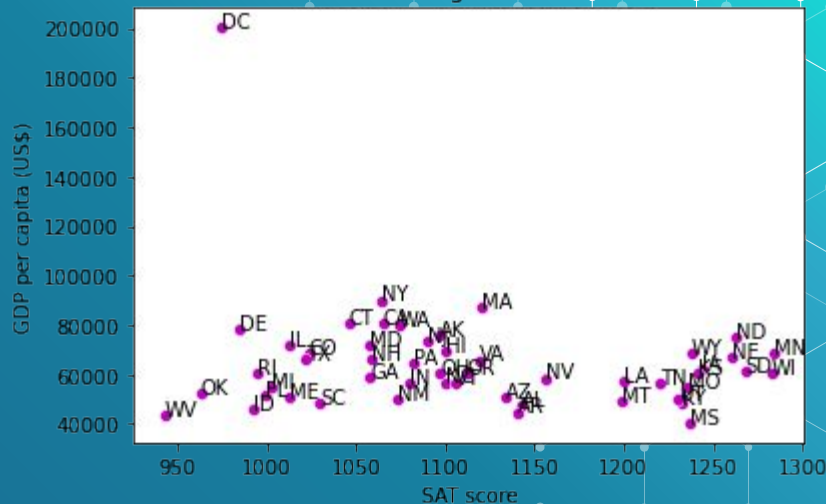
Scores against participation rates

- ◆ Examine the relationship between the scores and participation rates for each test
- ◆ To see how the scores are affected by the participation rates

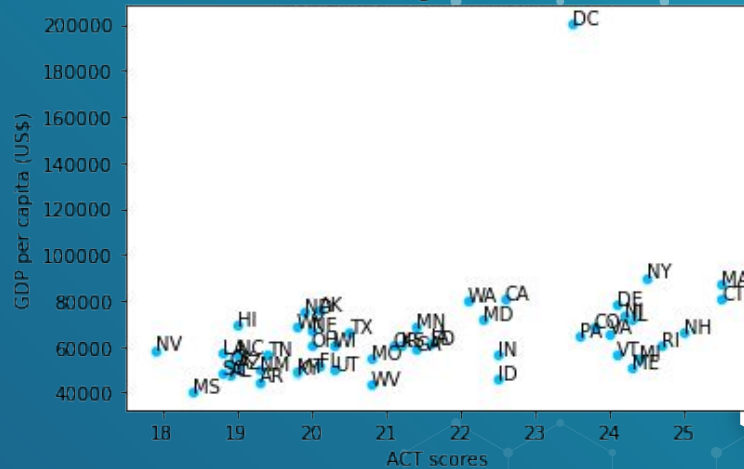
GDP against scores

- ◆ Low correlation
- ◆ Points are scattered

Plot of GDP against SAT score

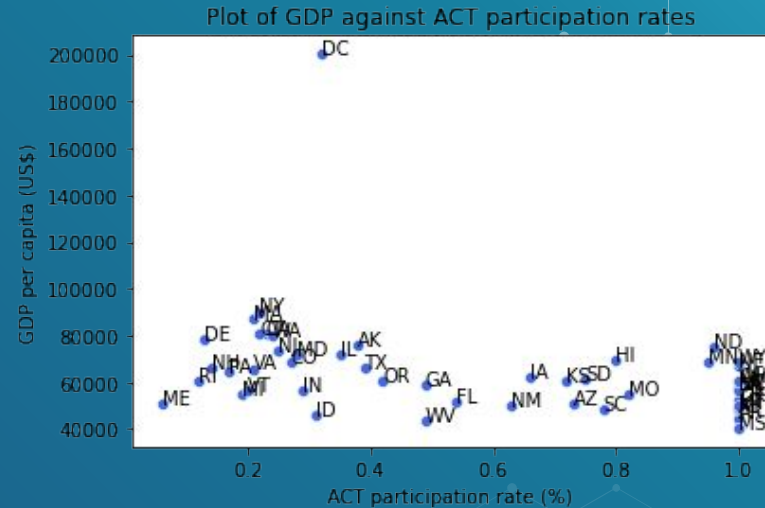
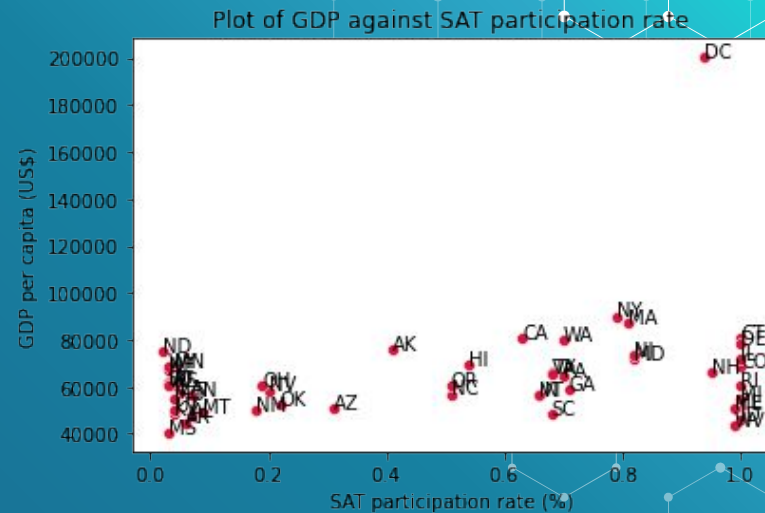


Plot of GDP against ACT score



GDP against participation rates

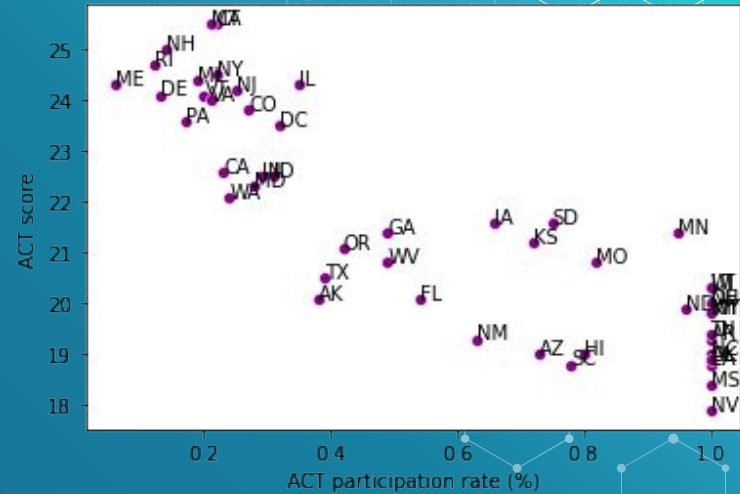
- ◆ Low correlation
- ◆ Points are scattered
- ◆ Clustering at bottom right and left for SAT
- ◆ Clustering at bottom right for ACT



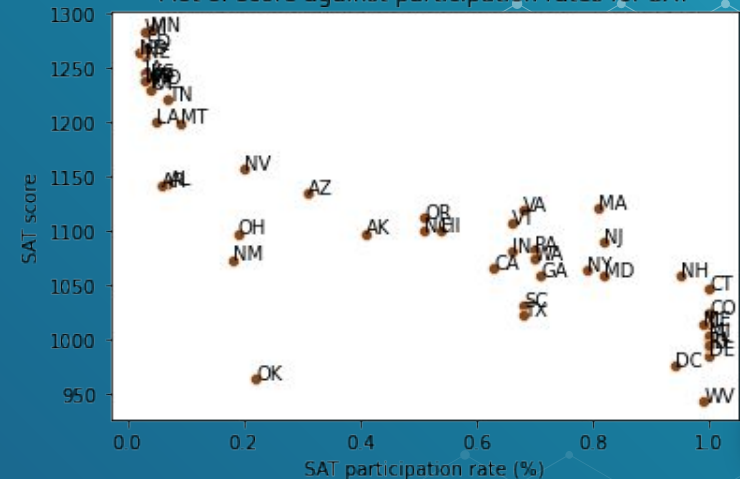
Scores against participation rates

- ◇ Visible decreasing trend
- ◇ Note the cluster in the top right of the SAT graph
- ◇ Shows that low participation rates means smarter students taking tests

Plot of score against participation rates for ACT

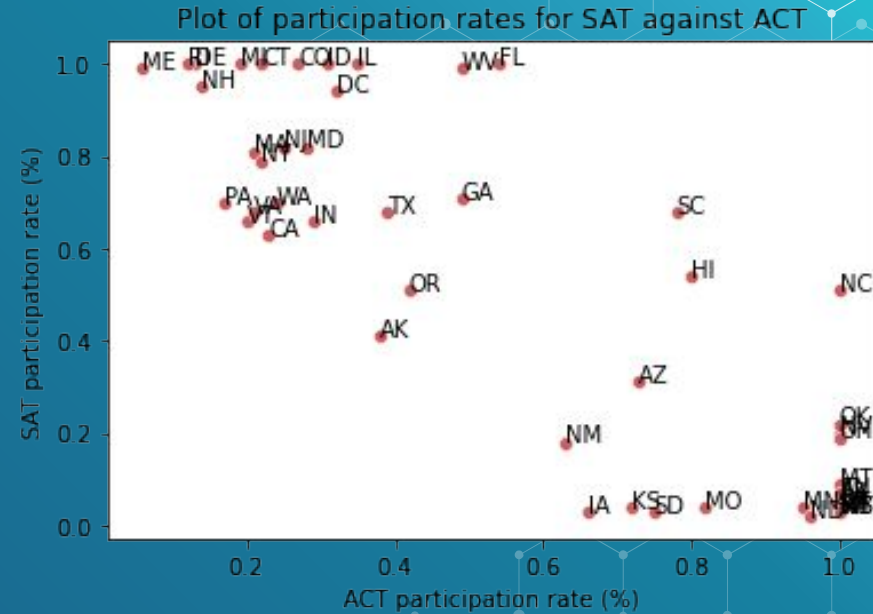


Plot of score against participation rates for SAT



Participation rates

- ◇ Inverse relationship between SAT and ACT participation
- ◇ Students who take one test generally do not take the other
- ◇ Bottom right cluster means more ACT takers





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Conclusion and Recommendations

How can we improve the analysis

Low Correlation

There was a low correlation found between the **scores and participation rates**, and the **GDP per capita**

High Correlation



There was a high correlation found between

- ◆ **participation rates** of both tests
- ◆ the **scores and the participation rates** for each test



Limitations and Recommendations

Other factors to examine for future studies

Economic Metrics

E.g. household income, family income, personal income

More Data

More data could improve the statistics of the trendlines, and could provide better insights

Academic metrics

E.g. student aptitude, teacher training

Participation rates

E.g. school funding, access to resources