
SAT/ ACT Participation Rate Analysis

Jefferson
General Assembly DSI20

Problem Statement

To recommend of a way to allocate resources to improve SAT participation rate within the states.





1. Intro

ACT and SAT are the two **most popular** university admission test in the US. They share many **similarities**:

→ **Subject being tested**

Math, Reading in both tests. ACT has Science and English subjects too.

→ **Similar price point**

ACT costs \$70, SAT costs \$68*.

→ **Available in all states**

All states provide the test with some provides free tests.

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What is the distribution of participation rate of the tests?

Which test is more popular?

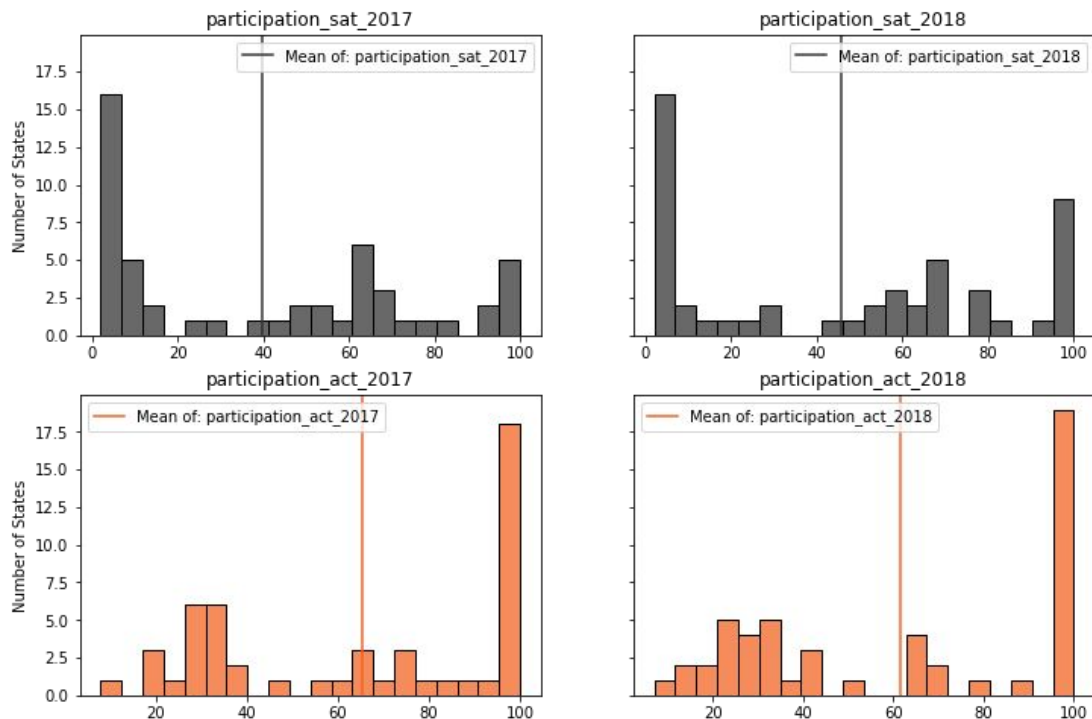
Any trend?



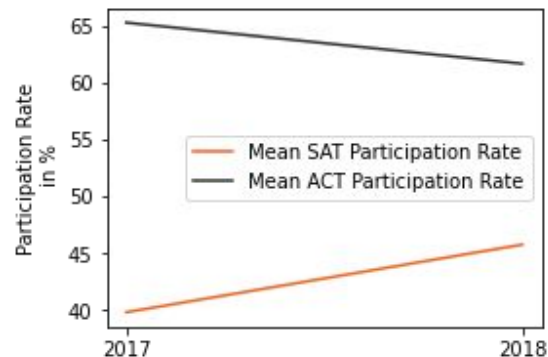
Where is the data from?

- SAT original data is available to download from *(2017 SAT Suite of Assessments Annual Report)*
- While ACT Data can be obtained from act.org own website

Participation Rate Distribution



ACT has a higher participation rate than SAT with clear bimodal distribution.



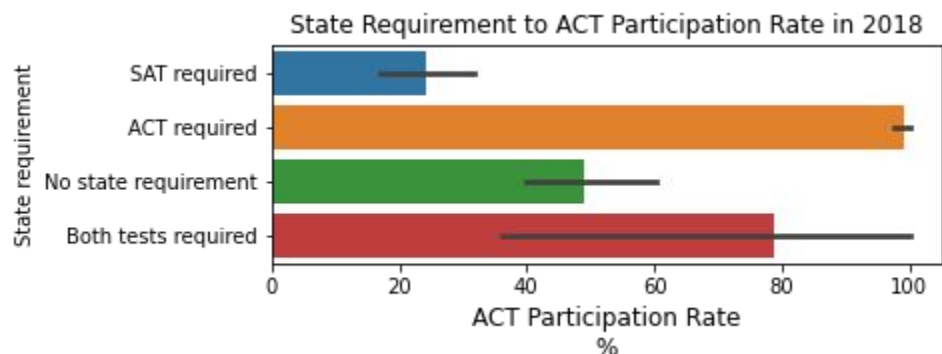
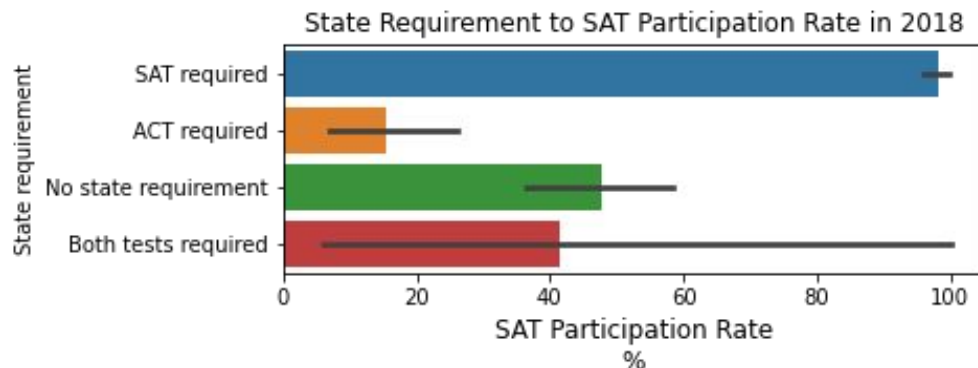
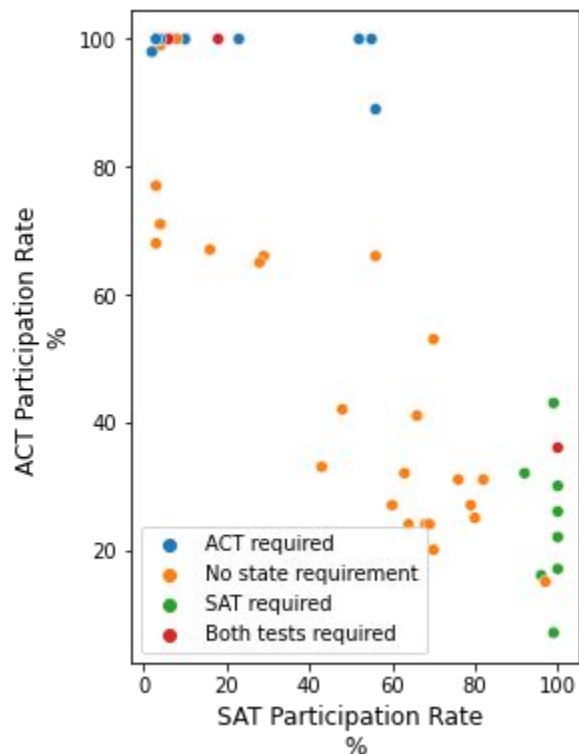
However, there is an **improvement** of SAT participation rate while opposite is true for ACT.

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Is there any pattern here?

**Or test popularity is totally
random?**

(or dare I say it if there is no pattern ;))

States Requirement and Participation Rate



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What factor may relate to the test preference?

Is there any relation between state wealth and test preference?



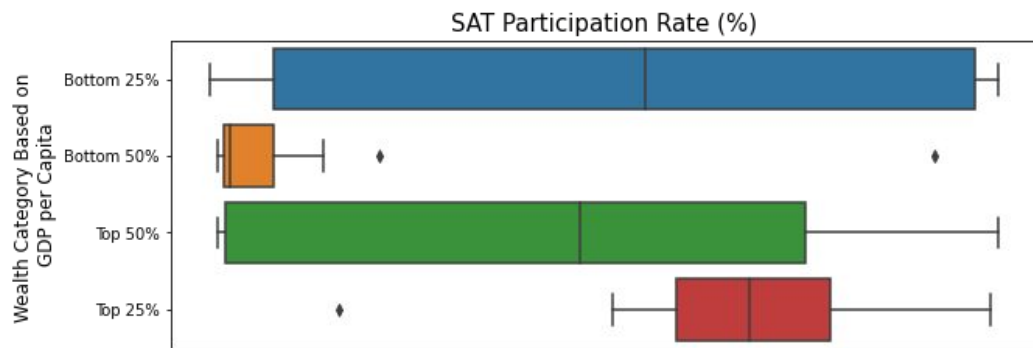
Note

GDP per capita is used as a gauge of states wealth

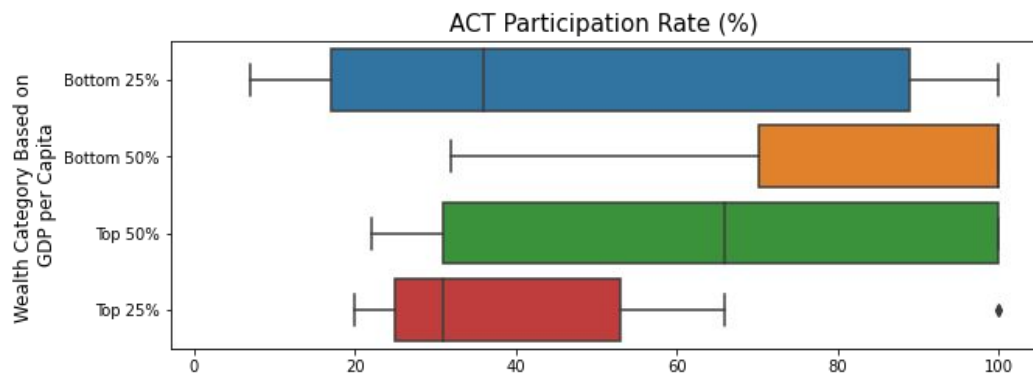
States are divided into:

- Top 25% (13 states)
- Top 50% (12 states)
- Bottom 50% (13 states)
- Bottom 25% (13 states)

States Wealth and Participation Rates

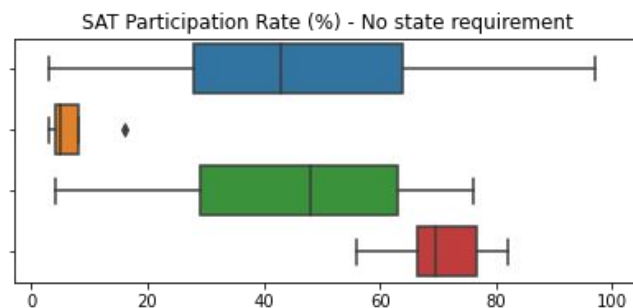
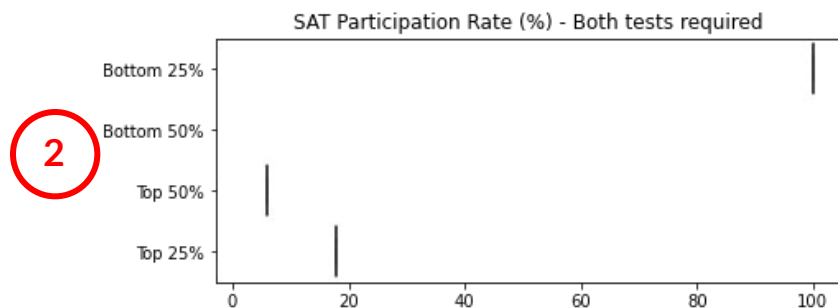
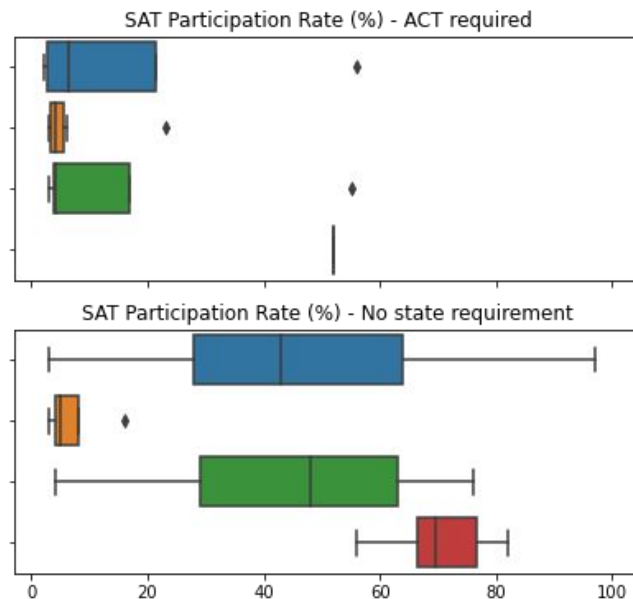
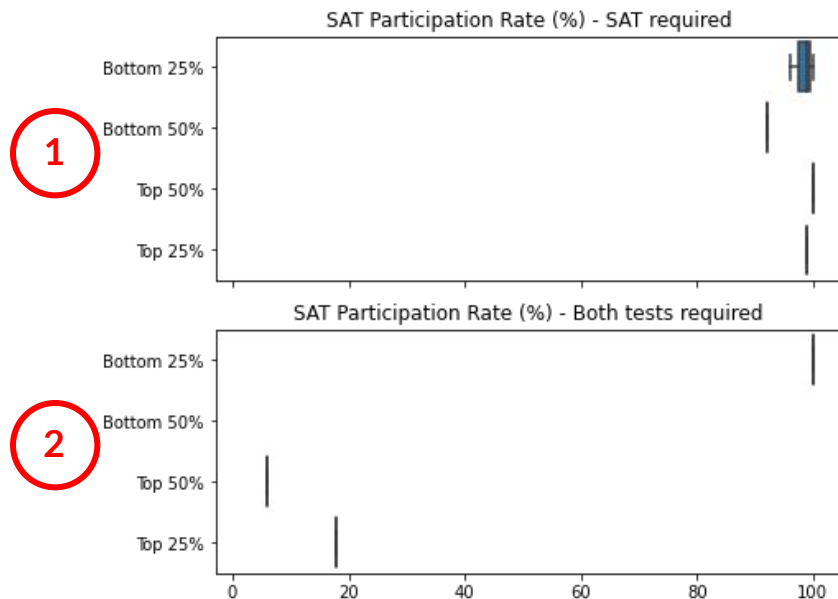


Despite being equally popular on states within bottom 25% bracket, SAT is significantly **less popular** on the states within bottom 50% wealth bracket.



What if we include **states requirement** into the equation?

States Wealth and Requirement Effect



1. For states with only SAT requirement, SAT is the **preferred choice** regardless the wealth status.
2. For states with both SAT and ACT requirement, SAT is only preferred when state is less affluent.
3. For states with ACT requirement, SAT is significantly less popular if state is not at the Top 25%.
4. When there is no state requirement, SAT is **significantly less popular** especially within the **Bottom 50% bracket**

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Hmm interesting

What should we do next then?

in case anyone forgets the problem statement:

To recommend of a way to allocate resources to improve SAT participation rate within the states.





Conclusion

In short,

→ **Distribution**

Bimodal.

ACT is more popular, SAT is catching up

→ **State Requirement Effect**

State requirement plays a huge role in determining test preference

→ **Wealth Effect**

More affluent states prefers SAT
SAT is significantly less popular in poorer state without SAT requirement

Recommendation

- To focus on resources to **less affluent state** (bottom 50%) with **no SAT requirement**.

Case on point: **New Mexico**

- Less affluent (bottom 50%)
- High inequality (gini coefficient)
- No SAT requirement
- 2018 SAT participation rate : 18%

Also,

to adjust SAT format to be more accessible and practical in the times of pandemic.

References

Template of
Presentation by:

[Made to Stick](#)

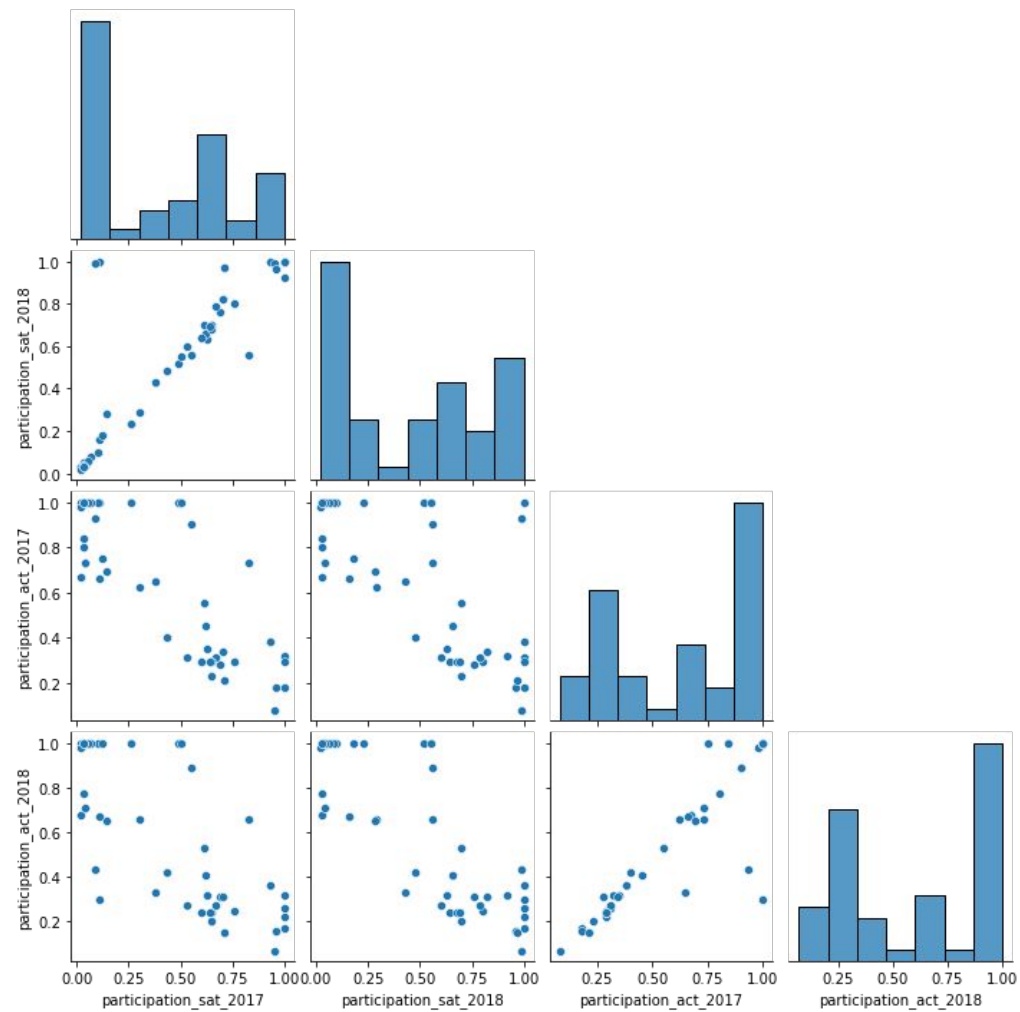
Original Data:

- [SAT](#)
- [ACT](#)
- [GDP](#)

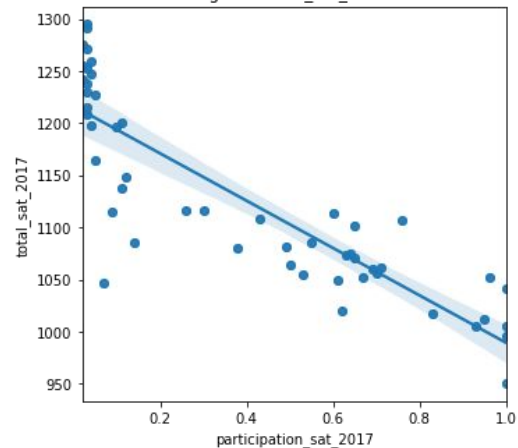
Thanks for the
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- Jireh Tan
- Ryan Chang
- Zaini Chia

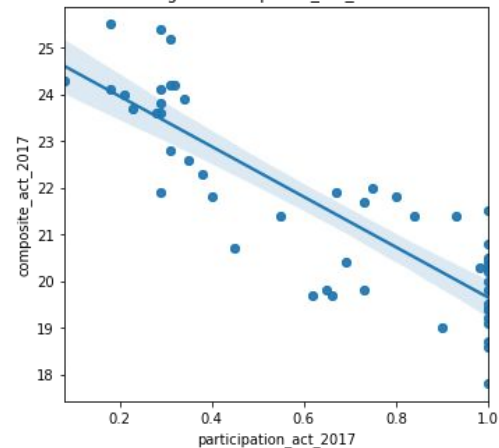
Appendices



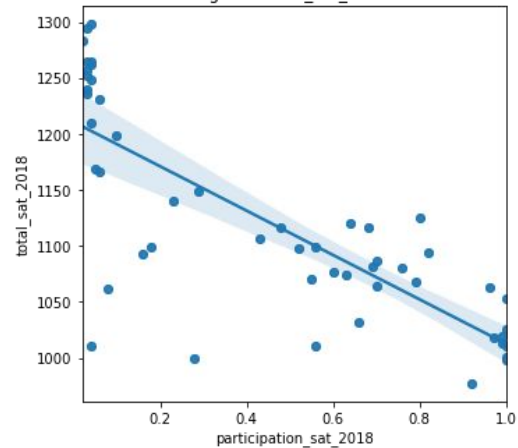
Scatter plot of participation_sat_2017
againts total_sat_2017



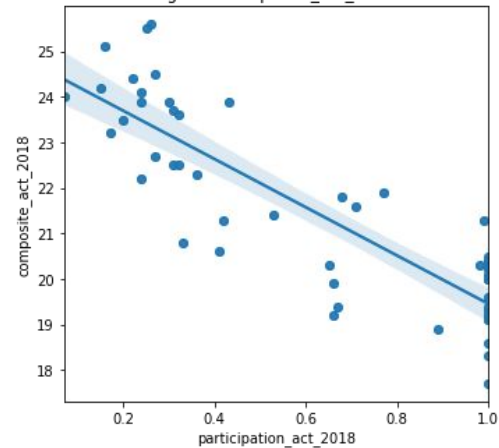
Scatter plot of participation_act_2017
againts composite_act_2017



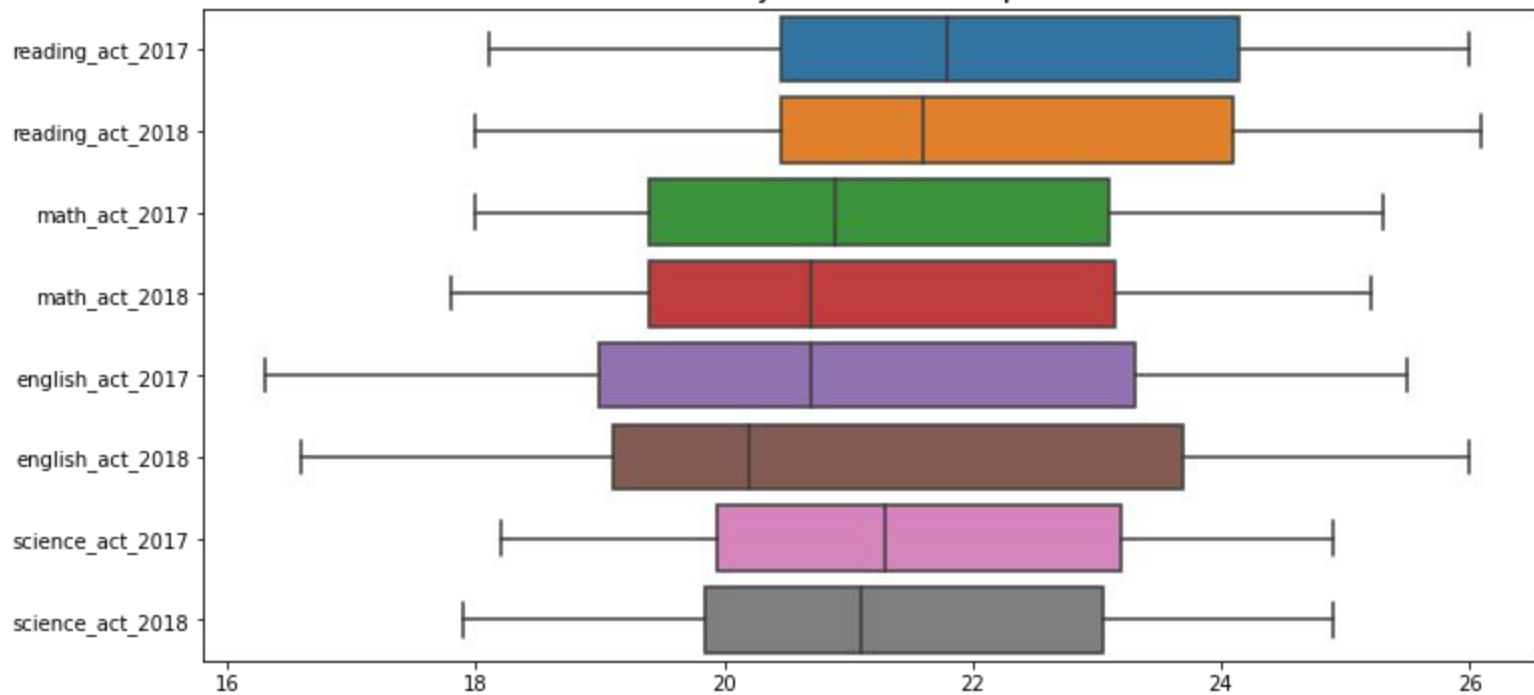
Scatter plot of participation_sat_2018
againts total_sat_2018

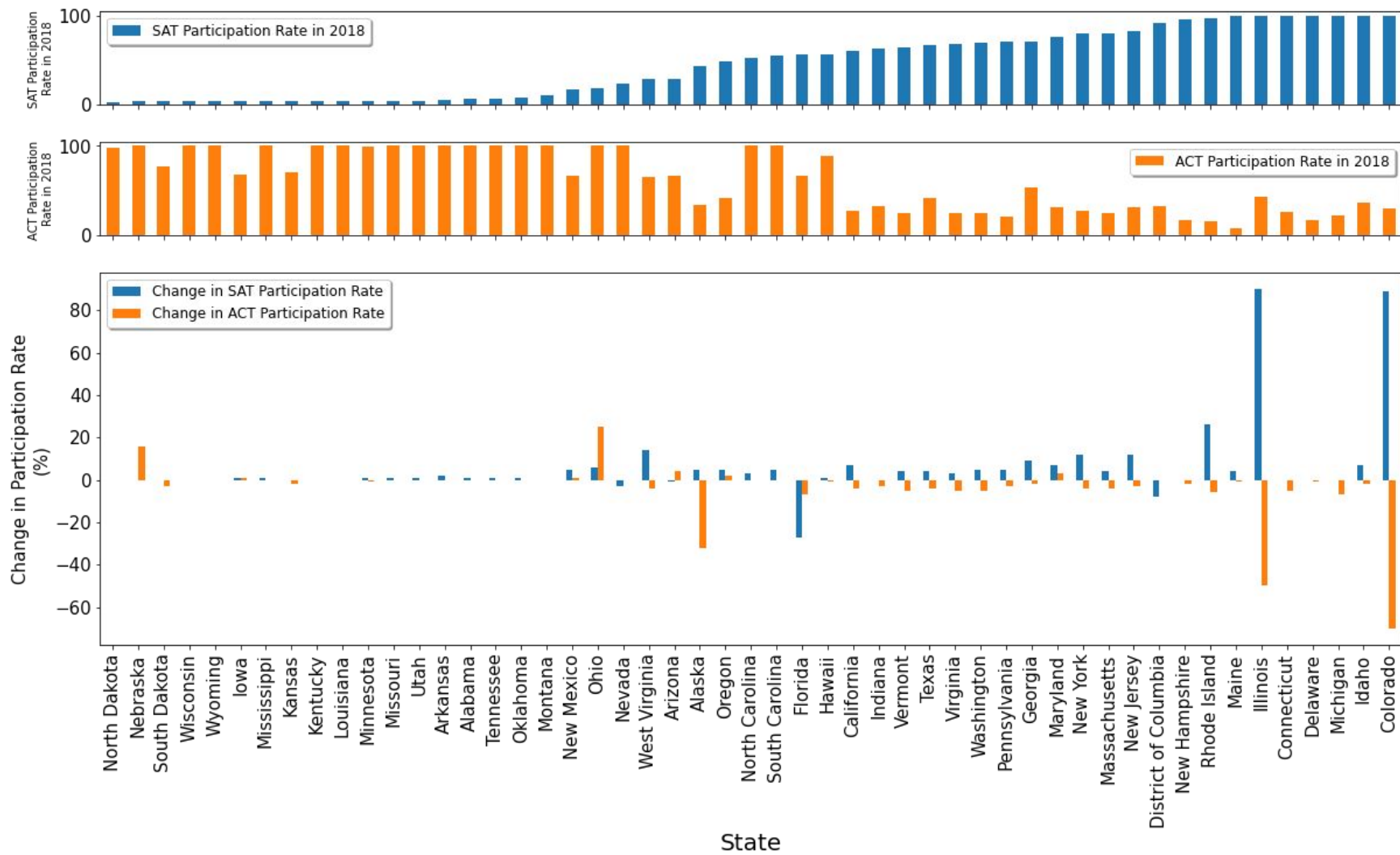


Scatter plot of participation_act_2018
againts composite_act_2018

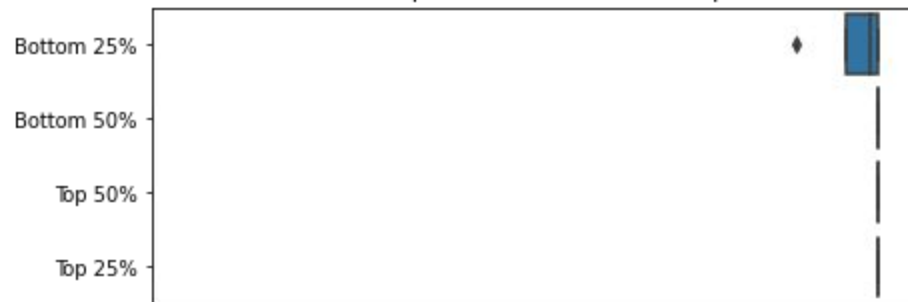


ACT Subject Score Comparison





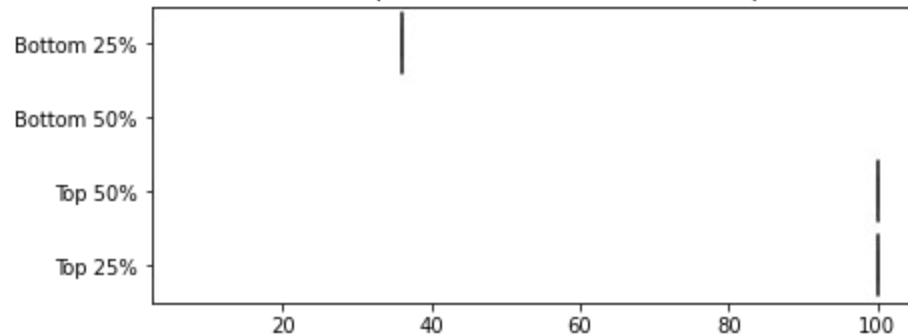
ACT Participation Rate (%) - ACT required



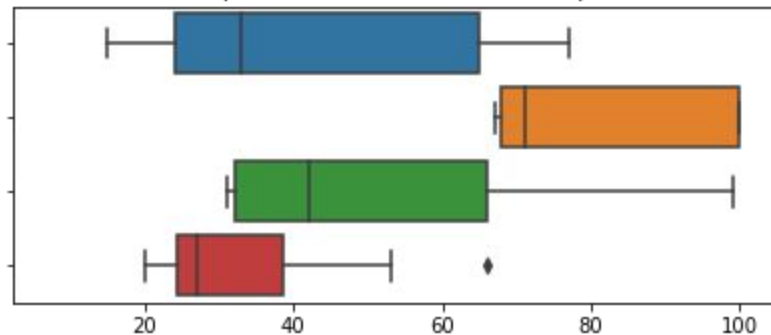
ACT Participation Rate (%) - SAT required



ACT Participation Rate (%) - Both tests required



ACT Participation Rate (%) - No state requirement



Percentile of Participatio..



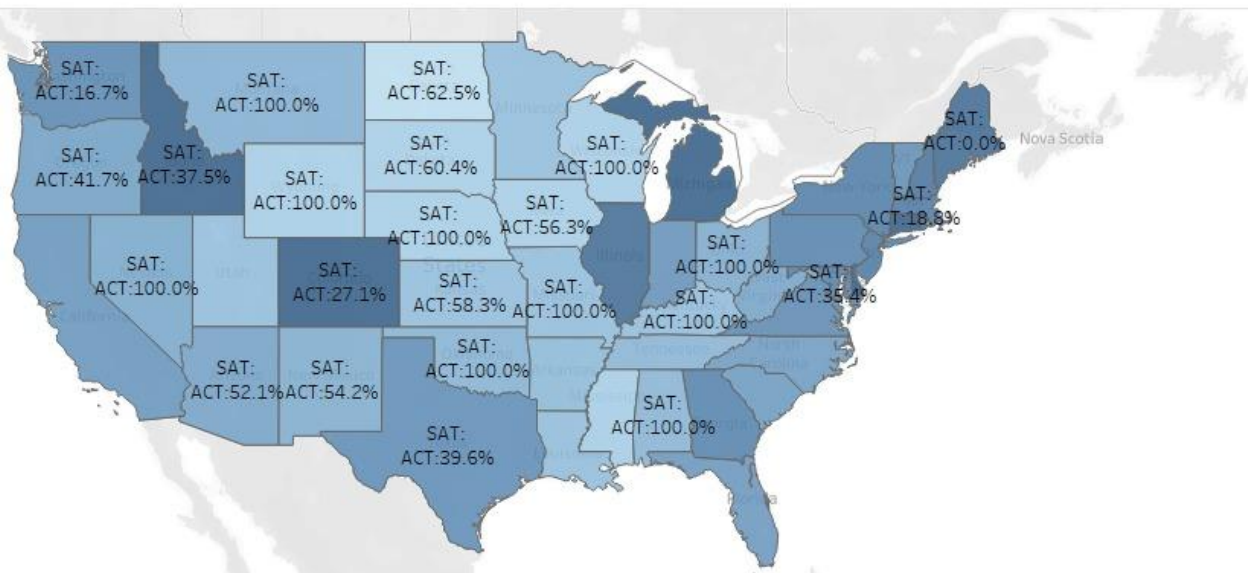
0.0% 100.0%

Percentile of Participatio..



0.0% 100.0%

SAT Participation Rate



Percentile of Participatio..



0.0%

100.0%

Percentile of Participatio..



0.0%

100.0%

ACT Participation Rate

