



Analyzing SAT & ACT Test Results

DSI 18

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What's the story so far?

Both SAT and ACT are provided by not-for-profit organizations

SAT is provided by collegeboard:

<https://about.collegeboard.org/overview>

ACT is provided by ACT Inc.

<https://www.act.org/content/act/en.html>



	ACT	SAT
Total Time	2 hrs 55 mins without Writing 3 hrs 35 mins with Writing	3 hrs without Essay 3 hrs 50 mins with Essay
Order of Sections	1. English 2. Math 3. Reading 4. Science 5. Writing (optional)	1. Reading 2. Writing and Language 3. Math No Calculator 4. Math Calculator 5. Essay (optional)
Time Per Section	English: 45 mins Math: 60 mins Reading: 35 mins Science: 35 mins Writing (optional): 40 mins	Reading: 65 mins Writing and Language: 35 mins Math No Calculator: 25 mins Math Calculator: 55 mins Essay (optional): 50 mins
# of Questions	English: 75 questions Math: 60 questions Reading: 40 questions Science: 40 questions Writing (optional): 1 essay	Reading: 52 questions Writing and Language: 44 questions Math No Calculator: 20 questions Math Calculator: 38 questions Essay (optional): 1 essay
Scoring	Total score range: 1-36 Each section uses a scale of 1-36 . Your total score is the average of your four section scores. The optional Writing section uses <u>a scale of 2-12</u> and does not count toward your final score.	Total score range: 400-1600 The Evidence-Based Reading and Writing (EBRW) and Math sections each use a scale of 200-800 and are combined for a total score. The optional Essay uses <u>three separate scales of 1-8</u> and does not count toward your final score.
Cost	<u>\$55 without Writing</u> <u>\$70 with Writing</u>	<u>\$52 without Essay</u> <u>\$68 with Essay</u>
Who Accepts Scores?	<u>Accepted by all colleges and universities in the US</u>	Accepted by all colleges and universities in the US

Comparison table between the ACT and SAT.

PREFERENCE OF
ACT OR **SAT**
BY STATE

By looking at the percentage of students who reported taking the ACT, we can see which test each state favors.



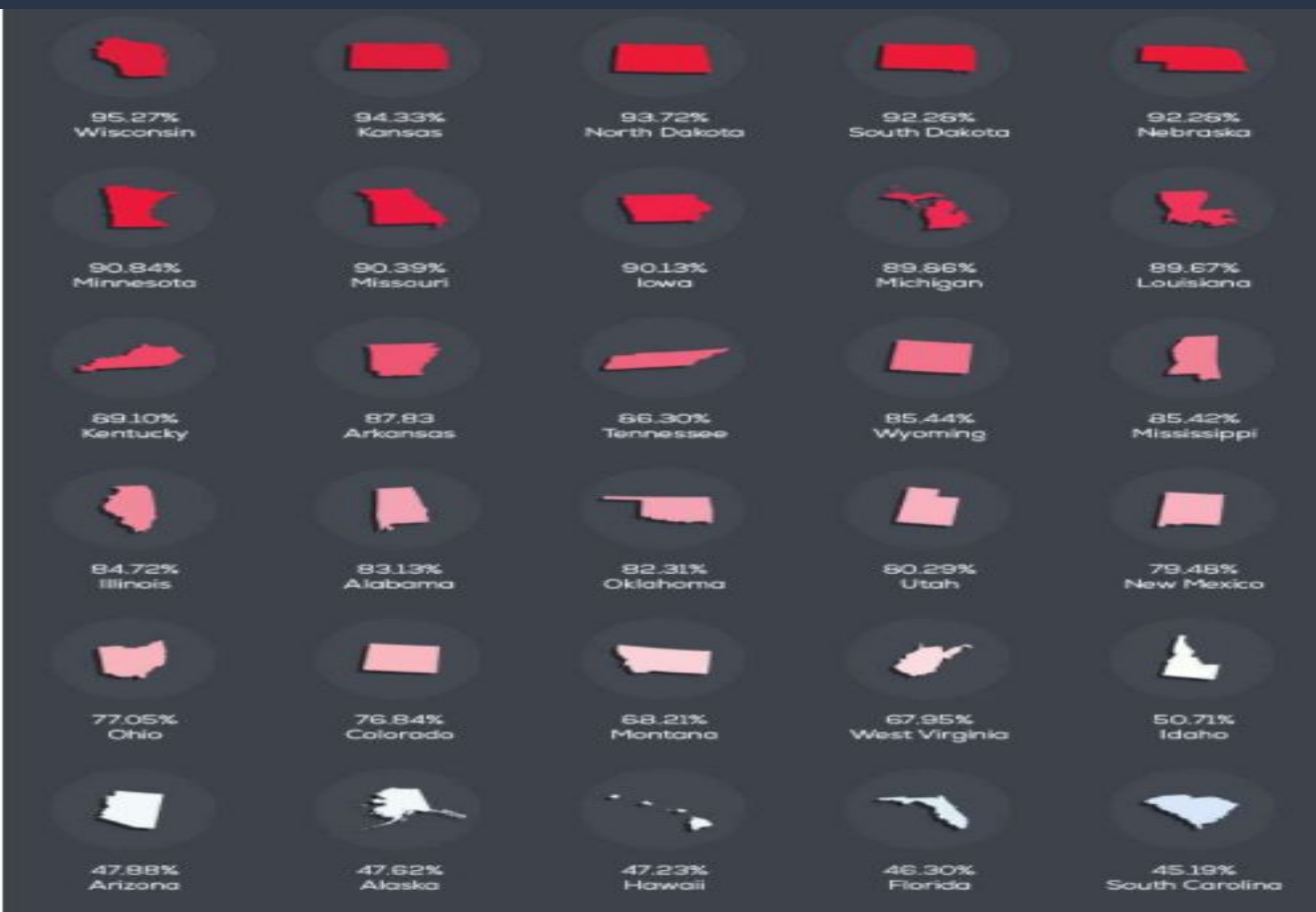
SAT   ACT

Preference of the States
for ACT or SAT.

SAT



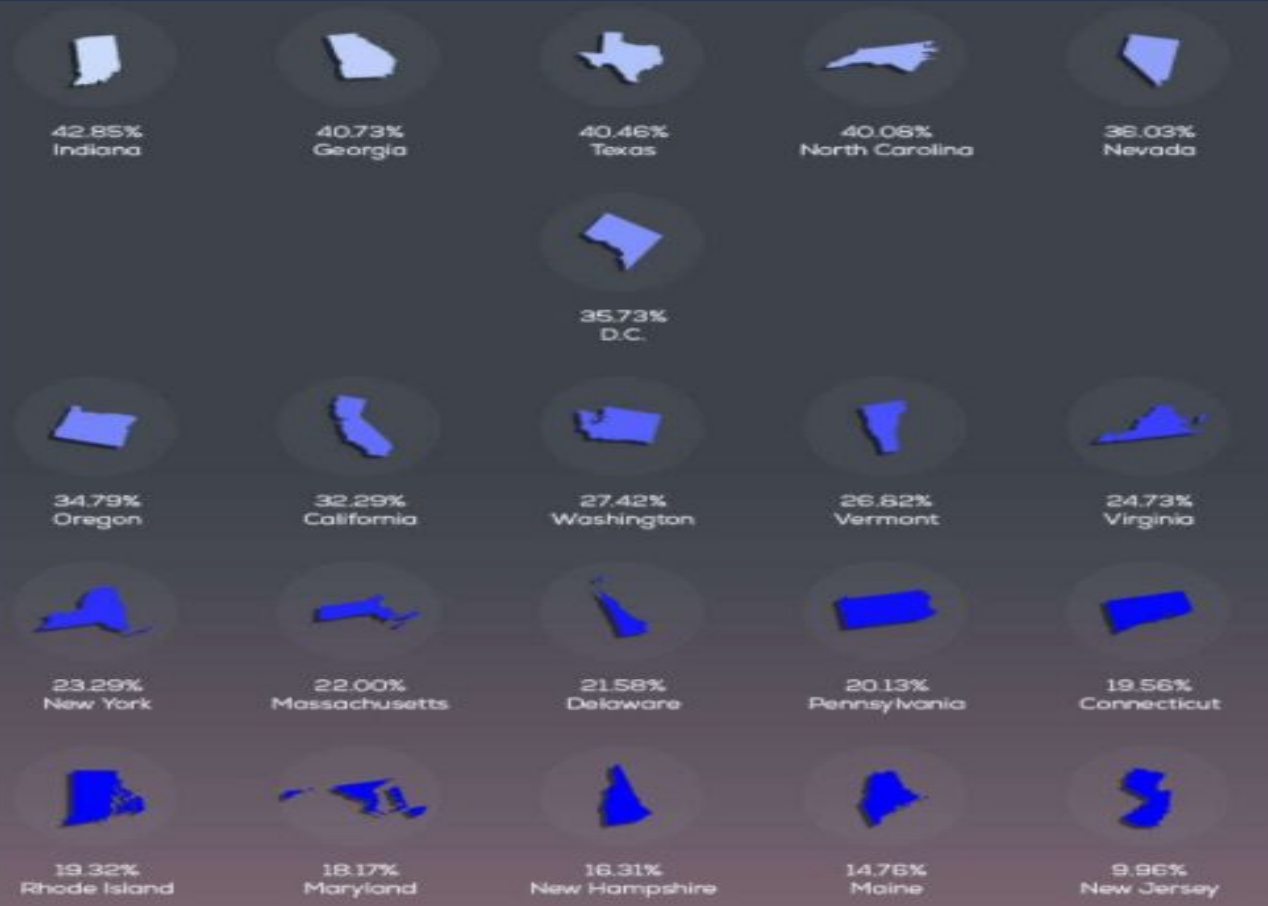
ACT



List of states with high school graduates taking ACT.

SAT

ACT



List of states with high school graduates taking SAT.

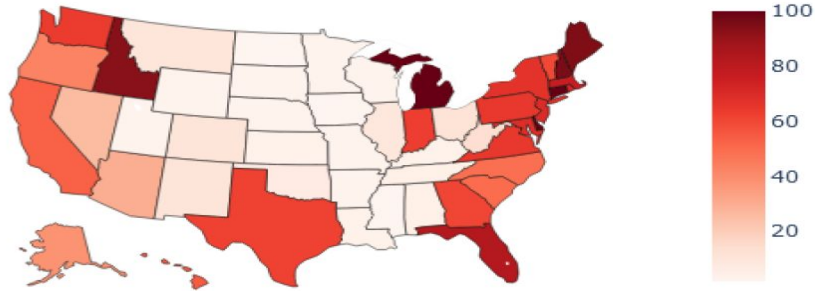
FOOTNOTES:

- Colleges report percentages of first-year applicants' choice in exam to the government
- Students are not necessarily from the state in which the college resides
- Students who reported taking the ACT could have also taken the SAT
- Not all schools send in percentage reports

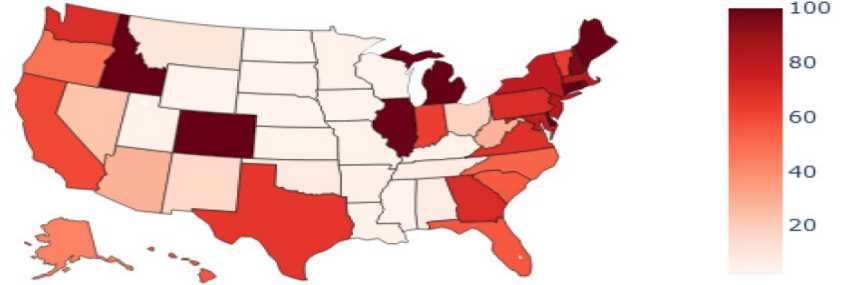
Sources: NCES, ACT, College Board

Current SAT / ACT Landscape

2017 SAT Participation (%)



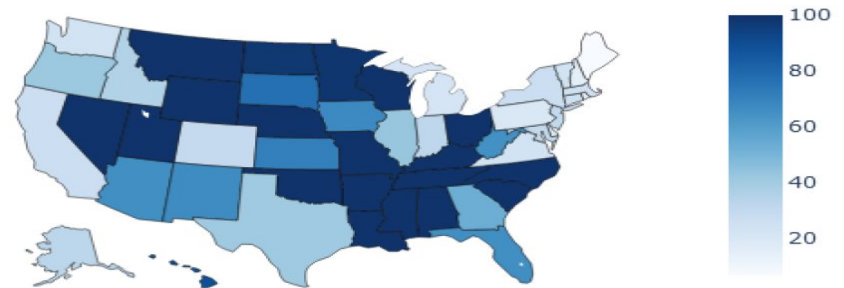
2018 SAT Participation (%)



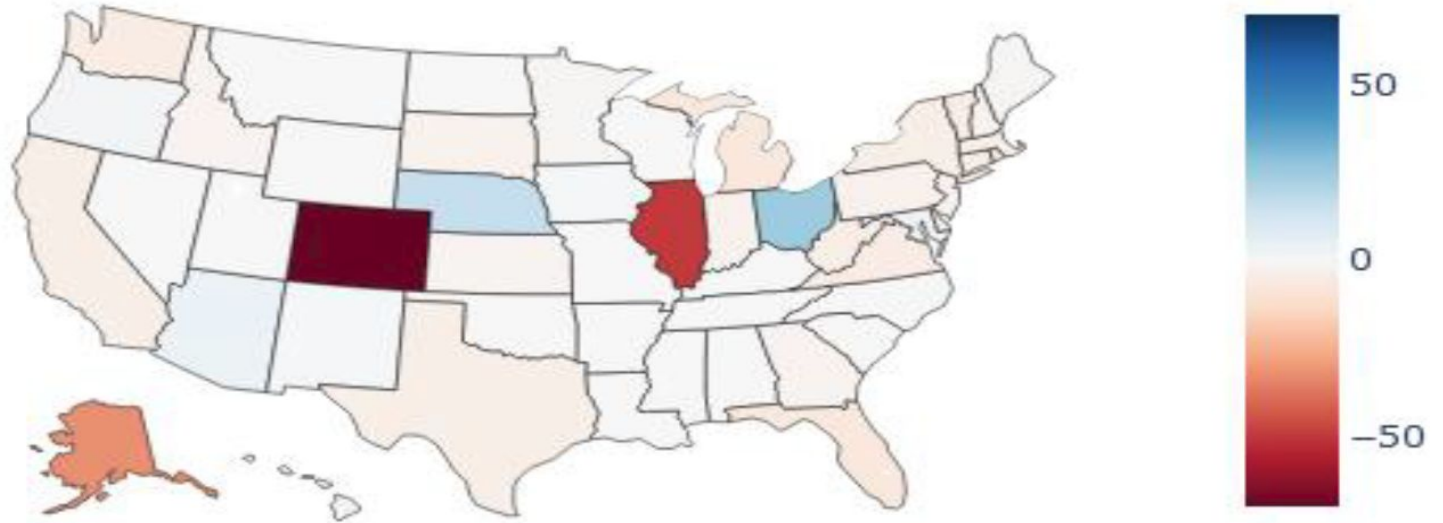
2017 ACT Participation (%)



2018 ACT Participation (%)

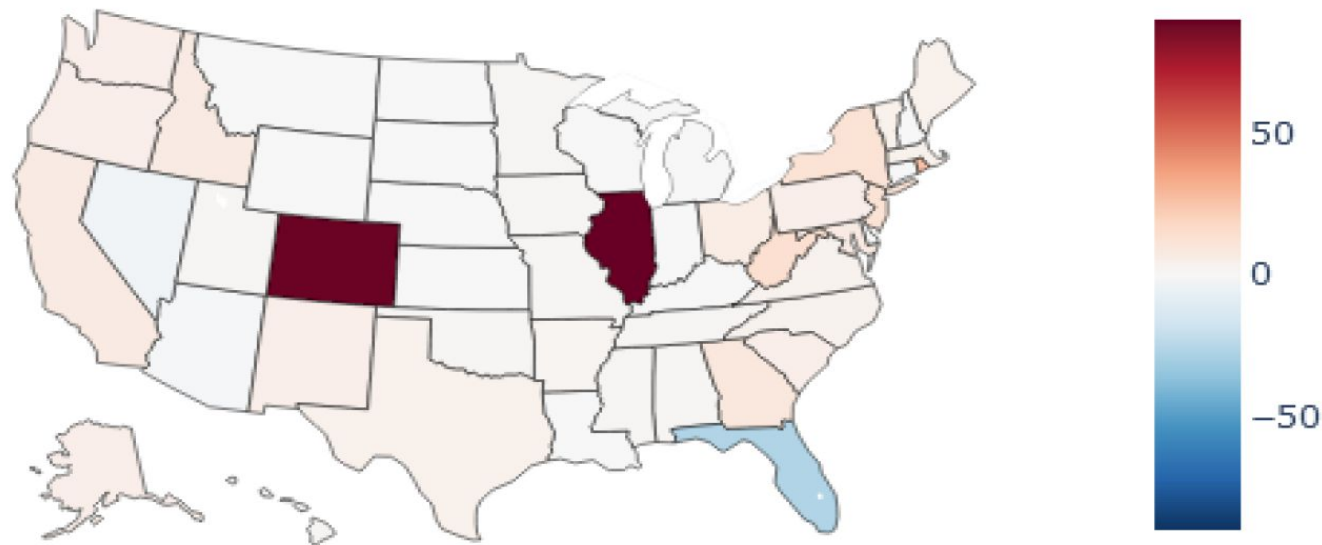


Change in ACT Participation rate, 2017-2018 (%)



- Sharp decline in Colorado (70ppt), Illinois (50ppt) and Alaska (32ppt)
- Made gains in Ohio (25ppt) and Nevada (16ppt)
- Overall, slight decreased in participation rates (<5%) across many of the states

Change in SAT Participation rate, 2017-2018 (%)



- Decline in Florida (27ppt), and only slightly in Nevada (3ppt) and Arizona (1ppt)
- Made major gains in Illinois (90ppt) and Colorado (89ppt)
- Overall, encouraging modest gains (5-10ppt) along the east and west coasts as well

Participation Rates of SAT vs ACT (between 2017 & 2018)

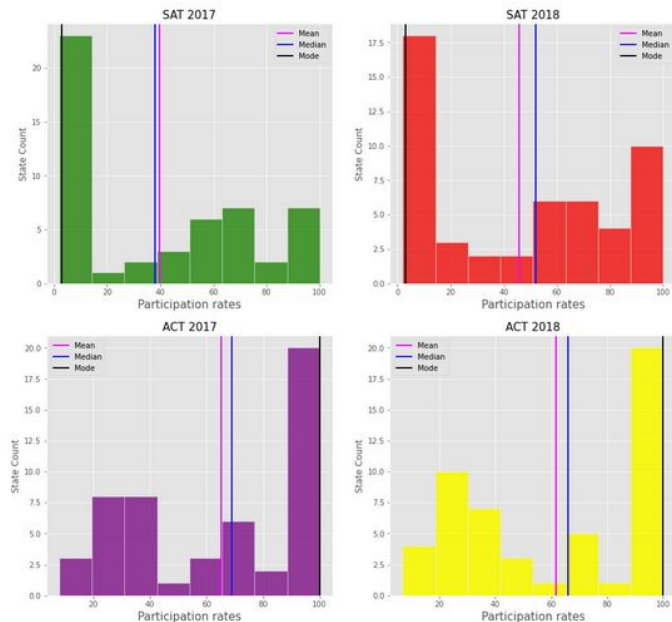
- 1) ACT has higher participation than SAT.
- 2) The market share of ACT is higher than SAT.
- 3) For ACT, there is a sharp decline in Colorado, Illinois and Alaska. There are gains made in Ohio and Nevada. The losses outweighs the gains, hence the overall participation rate of ACT dropped.
- 4) For SAT, there was a decline in Florida. There is a big increase in Illinois and Colorado. The gains outweigh the losses, hence the overall participation rate of SAT increased.

Market Share of ACT > SAT
How to increase market share of SAT?

Participation rates

- Many states have participation rates vary with concentrations around very high (>90%) and very low participation rate (< below 10%).
- States that require testing have students usually picking one.
- How can we improve the participation scores of SAT?

SAT and ACT participation rate



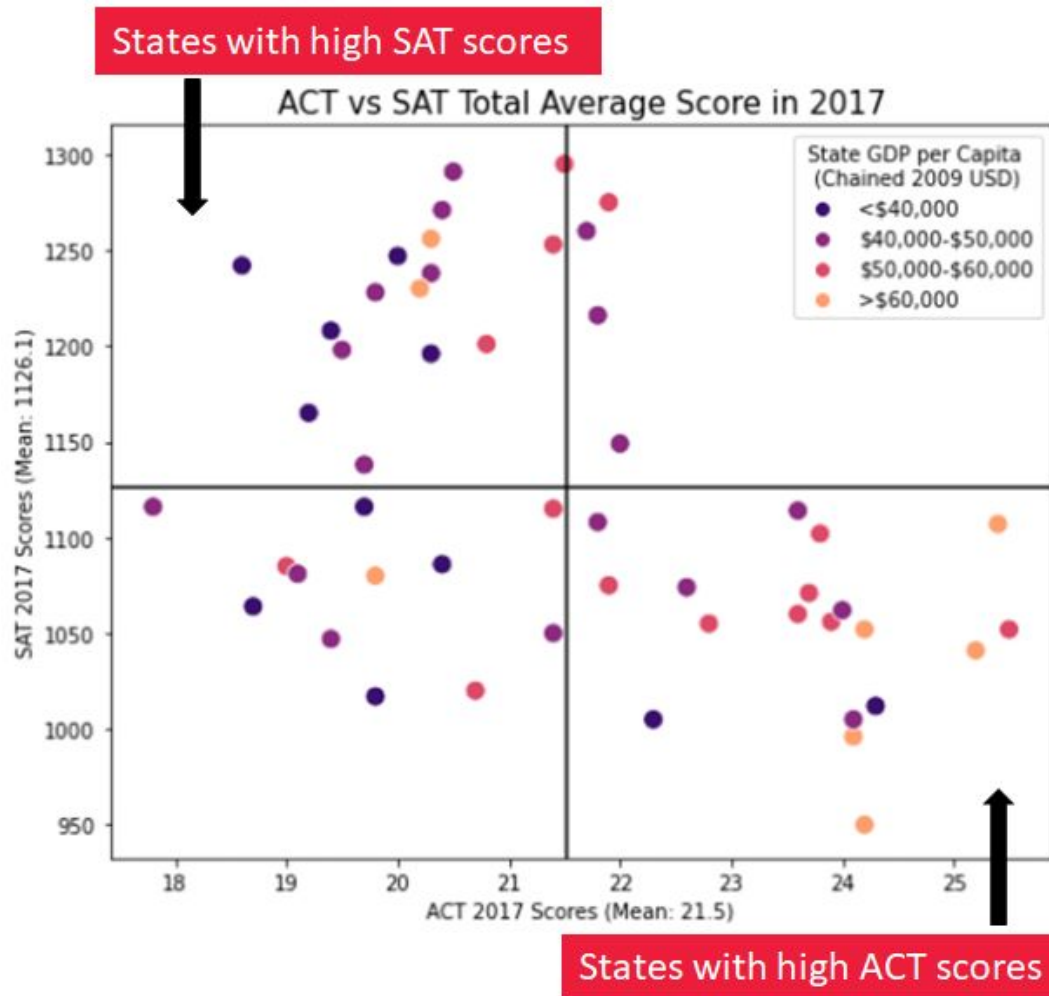
Ways to improve the SAT participation rate

- States that have not mandated either the SAT or ACT can choose to enact a policy make SAT mandatory as part of it's high school graduation requirements .
- States to provide incentives such as giving students time off for test taking.
- States to subsidize the test fees.
- Integrate the test into high school curriculum to remove the barriers.

What are some key trends?

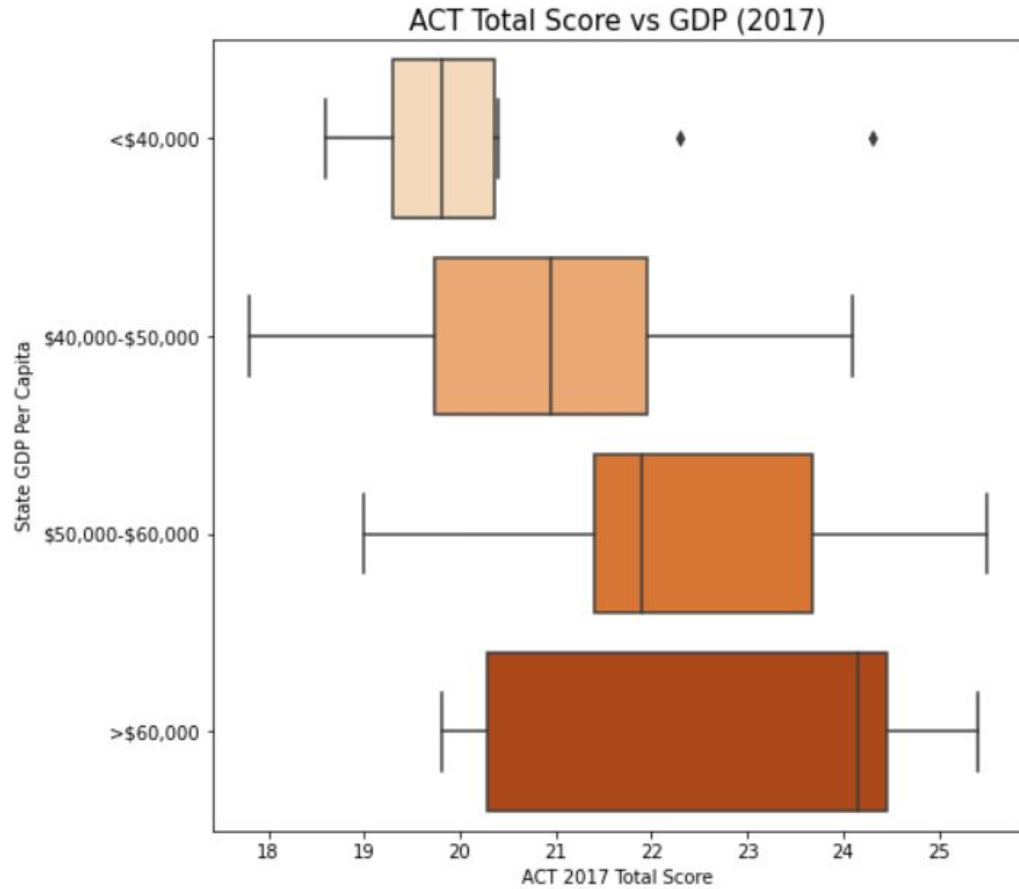
Test Scores vs GDP

- Higher GDP per Capita have higher ACT scores
- States with lower GDP per Capita have higher SAT scores.
- **Conclusion: poorer states can still perform well on the SAT**



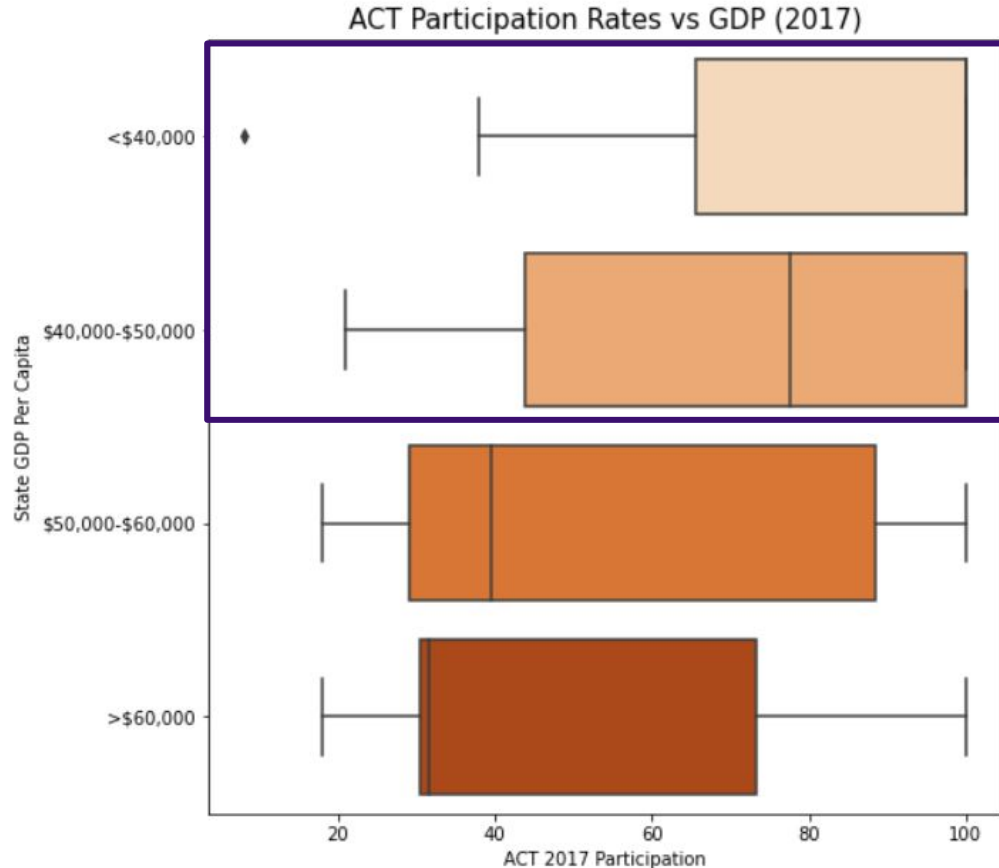
ACT Total Score vs GDP

- States with a low GDP per Capita tend to have relatively poor ACT scores.
- In comparison, states with a GDP per Capita of above \$50,000 have higher ACT scores.



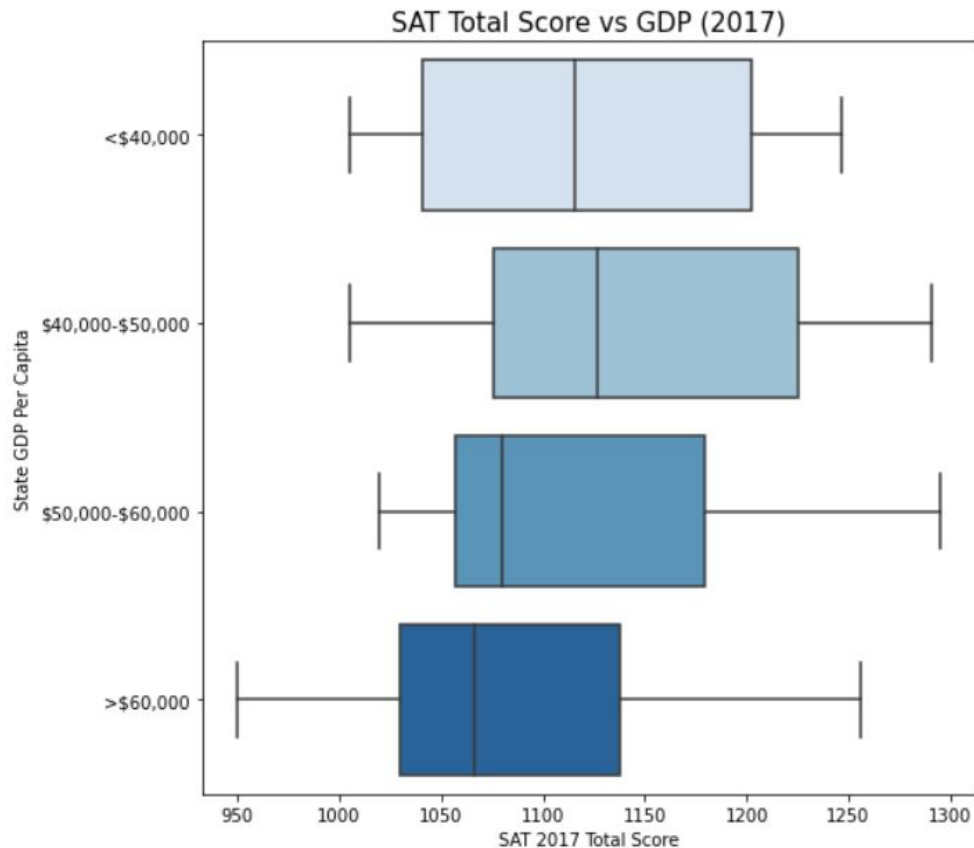
ACT Participation Rates vs GDP

- Despite this, states with a low GDP per Capita have high ACT participation rates.
- There are **19 states with:**
 - 1. Relatively low GDP per capita (>\$50,000)**
 - 2. High ACT participation rates (>50%)**
 - 3. Below average ACT total scores (>21.5)**



In comparison, the SAT seems to be more equitable

- This could be due to policies that support low income students, such as the [SAT Fee Waiver](#).
- The SAT also assigns low income students with [Landscape](#), an adversity score system which offers colleges information on a candidate's neighborhood and demographic characteristics, including crime rate and poverty.



Which state should the College Board target?

Make Arizona Great Again

States	SAT / ACT Participation (2018)	Population
Arizona	29% / 66%	7,278,717
West Virginia	28% / 65%	1,792,147
New Mexico	16% / 67%	2,096,829
Kansas	4% / 71%	2,913,314
South Dakota	3% / 77%	884,659
Iowa	3% / 68%	3,155,070

Persons under 18	22.5%
White alone	54.1%
Hispanic or Latino	31.7%
American Indian and Alaska Native	5.3%
Black or African - American alone	5.2%
Asian, alone	3.7%
Native Hawaiian and Other	0.3%

- Low SAT Participation (but not non-existent) - identify the potential upside
- Not under statewide contract for ACT
- Highly addressable market (> 1.5m people under 18 yrs)
- Low GDP (~\$40,000) and low ACT scores (19.2 in 2018)
- >45% of non-Whites demographics where we can advocate the support for minorities

Strategies to Enter, Entrench, Replicate

Entry Strategy		Entrenchment Strategy & Replicating Success	
Identifying Data points	<ul style="list-style-type: none">• High School graduates• High Schools, educators, parents, state	Advocating for Minorities	<ul style="list-style-type: none">• Create access and support for minorities & disadvantaged groups
Collecting data	<ul style="list-style-type: none">• Focus groups / interviews / surveys• Qualitative / Quantitative	Creating Success Stories	<ul style="list-style-type: none">• Stories / Individuals that the community can identify with• SAT as assessment of choice
Analyzing data	<ul style="list-style-type: none">• Look for trends in motivating factors (Why SAT / ACT?)• Spot potential barriers	Replicating Success	<ul style="list-style-type: none">• Replicate strategies from Arizona to other states (eg, West Virginia, New Mexico etc.)
Execution	<ul style="list-style-type: none">• Create ease of access to and motivation to take SAT• Eg, SAT School Day	Exerting Dominance	<ul style="list-style-type: none">• Alleviate SAT to become a unique brand leader

Appendix

However, correlation != causation.

- While the SAT may be more socially equitable than the ACT, research shows that standardized test measures generally show a **negative correlation between socioeconomic status and test results** ([NC Gov 2017](#)).
- Our results may also be affected by the **selection bias** discussed earlier.
- The College Board must continue to work with states to address this issue. This could mean incorporating other forms of testing such as **portfolio-based assessment** or **adaptive testing**.
- With COVID-19 changing the landscape of standardized testing, the College Board must continue to adapt the SAT to the times we are now in.

ACT

- 19 states with low GDP Per Capita
- High ACT Participation Rates (50 - 100%)
- Below average ACT scores (21.5)

	act_2017_participation	act_2017_total	sat_2017_participation	sat_2017_total
state				
Georgia	55	21.4	61	1050
Arizona	62	19.7	30	1116
New Mexico	66	19.7	11	1138
West Virginia	69	20.4	14	1086
Florida	73	19.8	83	1017
Alabama	100	19.2	5	1165
Utah	100	20.3	3	1238
Tennessee	100	19.8	5	1228
South Carolina	100	18.7	50	1064
Oklahoma	100	19.4	7	1047
North Carolina	100	19.1	49	1081
Montana	100	20.3	10	1196
Missouri	100	20.4	3	1271
Mississippi	100	18.6	2	1242
Louisiana	100	19.5	4	1198
Kentucky	100	20.0	4	1247
Arkansas	100	19.4	3	1208
Nevada	100	17.8	26	1116
Wisconsin	100	20.5	3	1291

SAT

- 8 states with low GDP Per Capita
- SAT Participation Rates (50 - 100%)
- Below average SAT scores (1125)

	sat_2017_participation	sat_2017_total
state		
Vermont	60	1114
Georgia	61	1050
Indiana	63	1074
Rhode Island	71	1062
Florida	83	1017
Idaho	93	1005
Maine	95	1012
Michigan	100	1005

Test Scores by GDP 2017 vs 2018

