

ACT or SAT

WHICH SHOULD YOU TAKE ?

THE PROBLEM

- Suppose I am an education advisor.
- My advisees can't decide which test they should be working on.
- I have datasets of average student performances by state.
- I need to give a recommendation – ACT or SAT.

THE OUTLINE

- Background
- Datasets
- Analysis
- Conclusion

THE BACKGROUND (1)

ACT : American College Testing

- Accepted by all US colleges and universities
- Score range (composite) : 1 – 36

<https://blog.prepscholar.com/what-does-act-stand-for>

<https://blog.prepscholar.com/what-is-a-good-act-score-a-bad-act-score-an-excellent-act-score>

THE BACKGROUND (2)

SAT : Stands for nothing since 1997

- Accepted by all US colleges and universities
- Score range (total) : 400 – 1600

<https://blog.collegevine.com/what-does-sat-stand-for>

<https://blog.prepscholar.com/sat-sections>

THE BACKGROUND (3)

Some states require ACT/SAT.

- ACT : 11 states
 - Alabama, Hawaii, Kentucky, Mississippi, Montana, ...
- SAT : 10 states
 - Colorado, Connecticut, Delaware, District of Columbia, ...

<https://blog.prepscholar.com/act-vs-sat>

THE DATASETS (1)

Included in project

- ACT mean scores by state 2017 - 2019
- SAT mean scores by state 2017 - 2019

THE DATASETS (2)

Outside research

- ❑ ACT percentiles
 - Based on ACT-tested high school graduates in 2017 - 2019
- ❑ SAT percentiles
 - Based on actual SAT scores of students in 2016 - 2020 who took the new SAT

National Norms for ACT Test Scores
 Reported During the 2020-2021
 Reporting Year

Score	English	Math	Reading	Science	Composite	STEM	Score
36	100	100	100	100	100	100	36
35	99	99	98	99	99	99	35
34	96	99	96	98	99	99	34
33	94	98	94	97	98	98	33
32	92	97	91	96	96	97	32
31	91	96	89	95	95	96	31
30	89	94	86	93	93	94	30
29	88	93	84	92	90	92	29
28	86	91	82	90	88	90	28
27	84	88	80	88	85	87	27
26	82	84	77	85	82	84	26
25	79	79	74	82	78	80	25
24	75	74	71	77	74	75	24
23	71	70	66	71	70	70	23
22	65	65	61	64	64	65	22
21	60	61	55	58	59	60	21
20	55	58	50	51	53	54	20
19	49	54	44	45	47	48	19
18	45	49	39	39	41	41	18

Composite Score Percentiles, 2016-2020

SAT Composite Score	2020 Percentile	2019 Percentile	2018 Percentile	2017 Percentile	2016 Percentile
1600	99+	99+	99+	99+	99+
1590	99+	99+	99+	99+	99+
1580	99+	99+	99+	99+	99+
1570	99+	99+	99+	99+	99+
1560	99+	99+	99+	99+	99+
1550	99	99+	99+	99+	99+
1540	99	99	99	99+	99
1530	99	99	99	99+	99
1520	99	99	99	99	99
1510	98	99	99	99	99
1500	98	98	99	99	98
1490	98	98	98	99	98
1480	97	98	98	99	98
1470	97	97	98	98	98
1460	97	97	97	98	97
1450	96	96	97	98	97
1440	96	96	96	97	96
1430	95	96	96	97	96

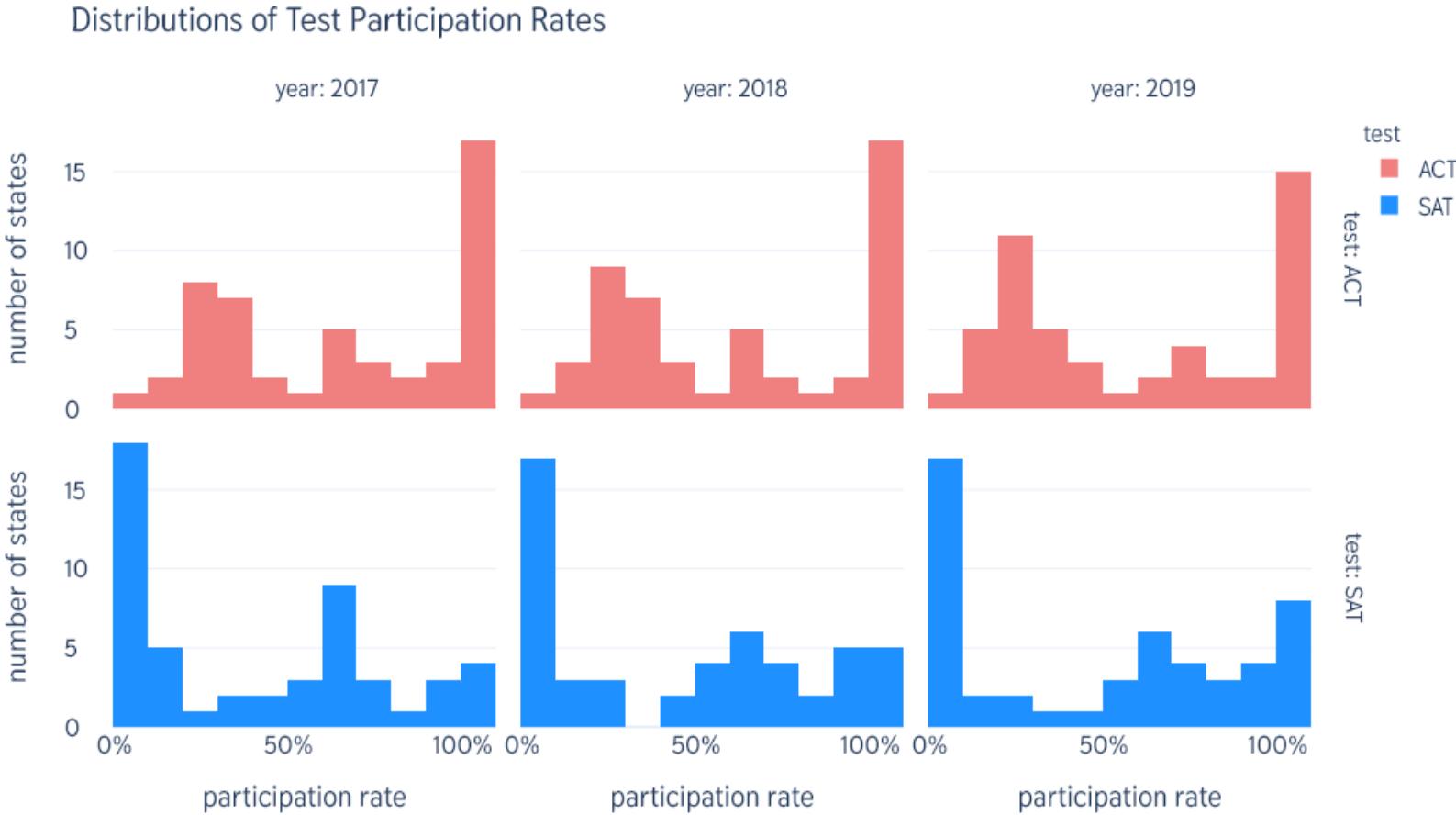
THE DATASETS (3)

THE ANALYSES (1)



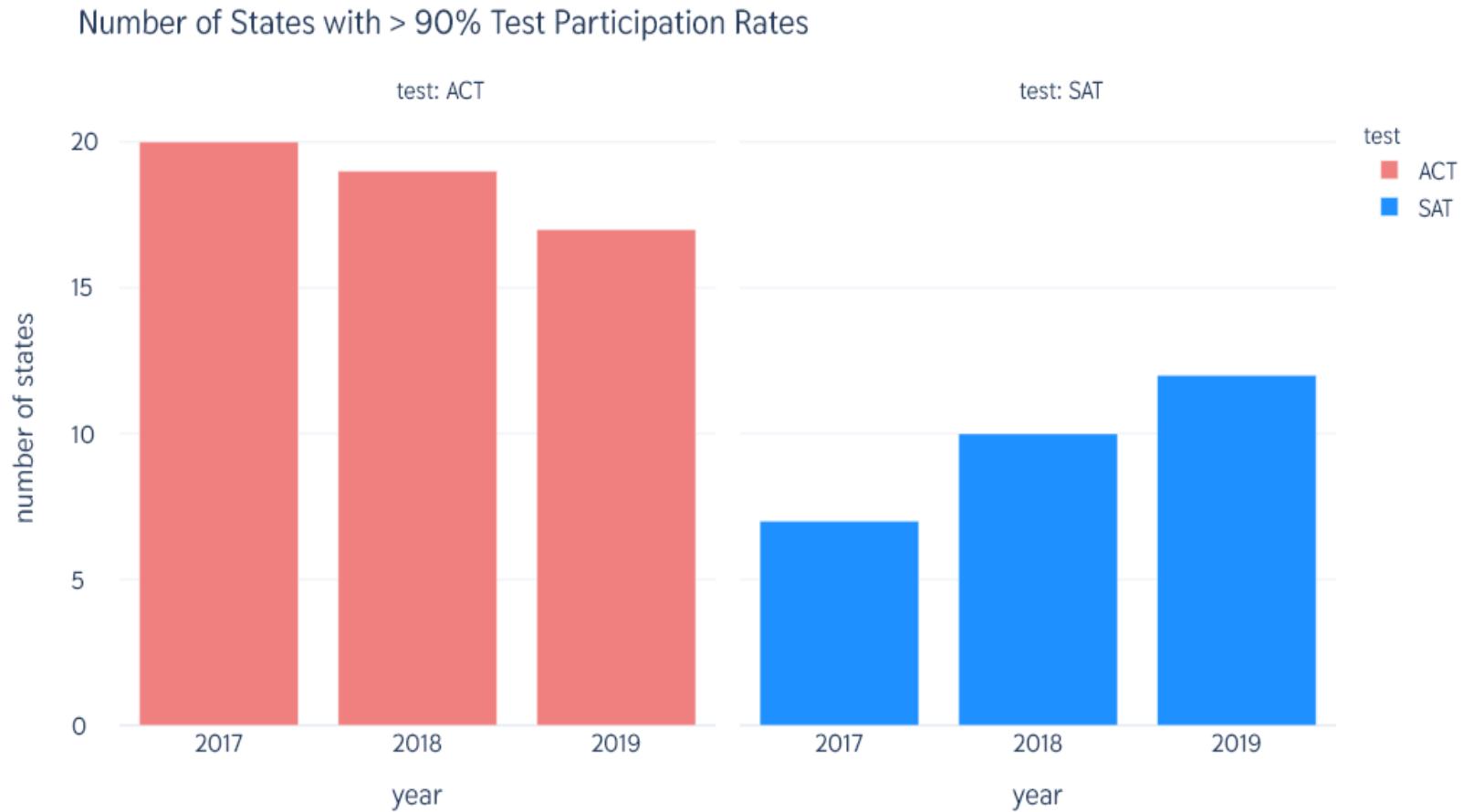
- Not quite normally distributed.
- SAT percentiles are more widely spread.
- ACT : conservative
- SAT : high risk, high return

THE ANALYSES (2)



- Do not follow normal distributions.
- ACT : left skewed
- SAT : right skewed
- ACT is more popular.

THE ANALYSES (3)

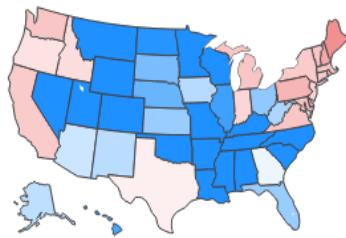


- Perhaps state mandatory policies or sponsorship.
- ACT : downward trend
- SAT : upward trend
- ACT has lost popularity to SAT.

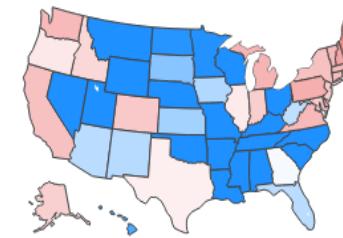
THE ANALYSES (4)

Test Participation Rates by State

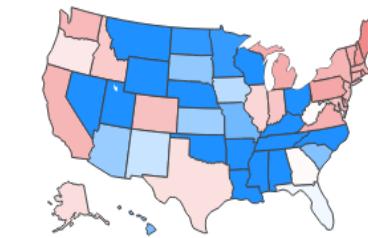
year: 2017



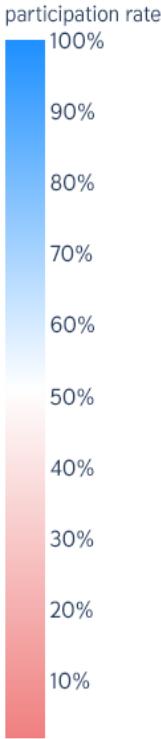
year: 2018



year: 2019



test: ACT

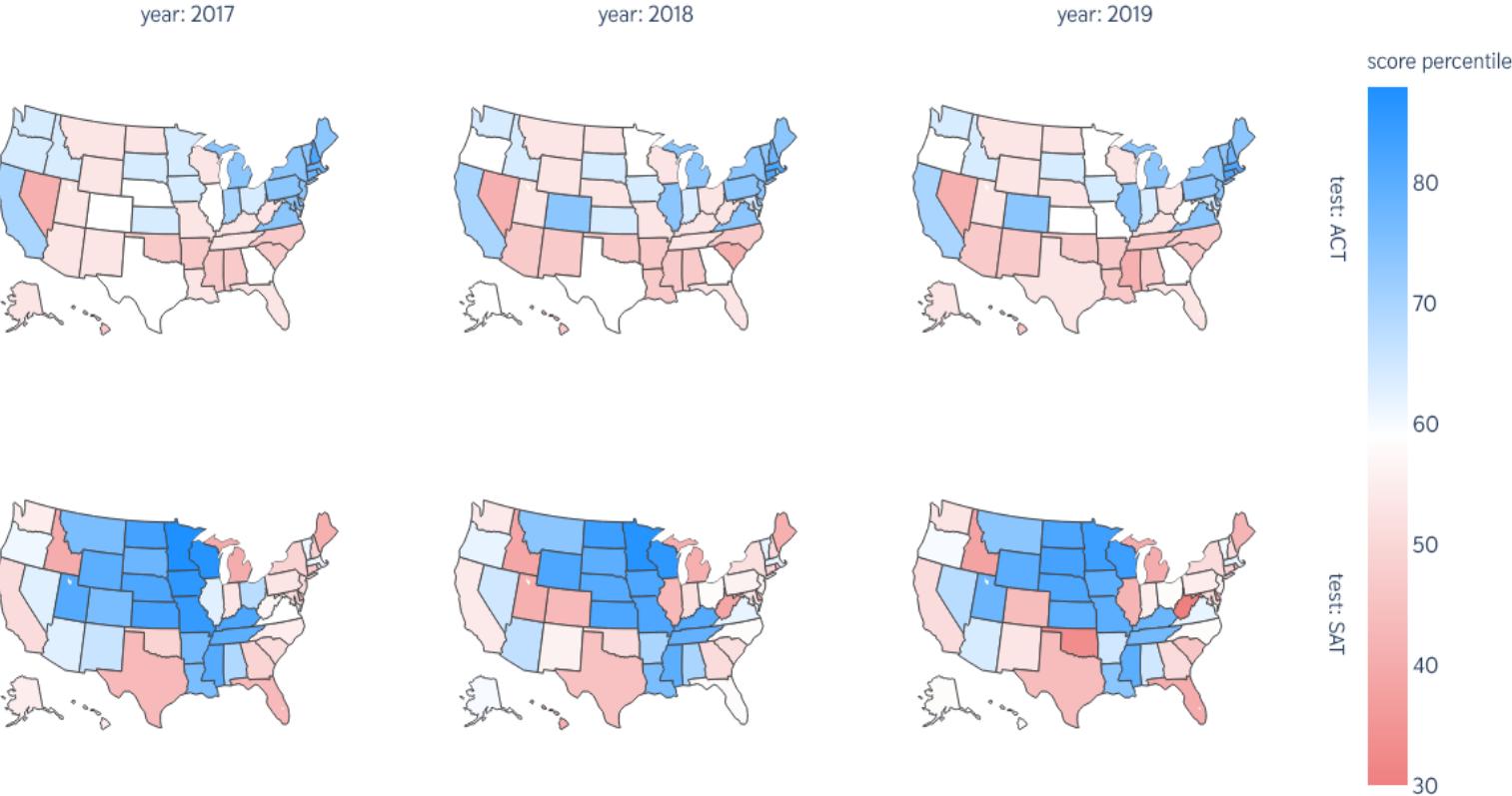


test: SAT

- ACT : more popular in mainland states.
- SAT : more popular in coastal states.

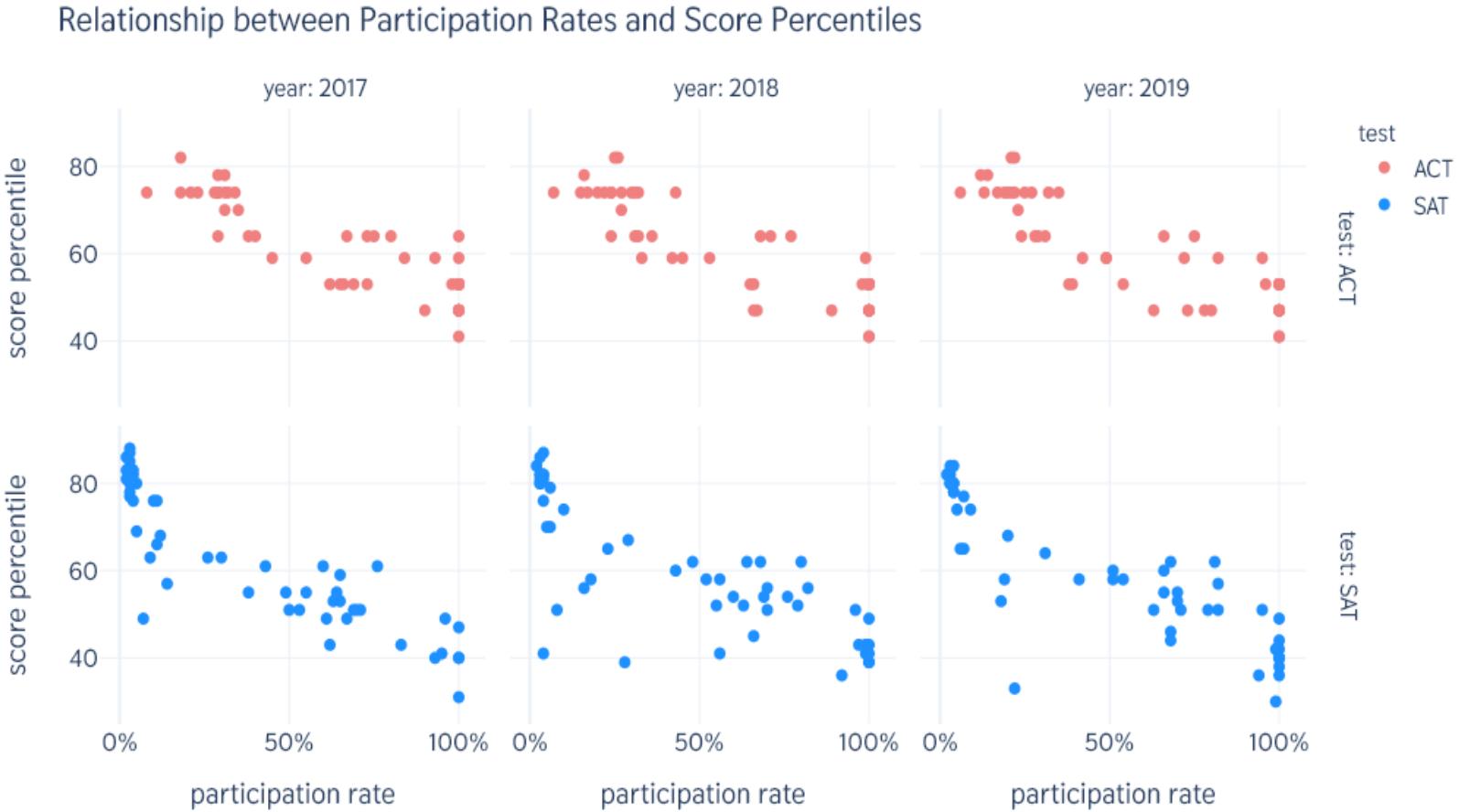
THE ANALYSES (5)

Test Score Percentiles by State



- Contrast between participation rates and score percentiles
- States with lower participation rates perform better on score percentiles and vice versa.

THE ANALYSES (6)



- ❑ Negative correlation between score percentiles and participation rates.
- ❑ Perhaps, students with high scores prepared exclusively for the tests.

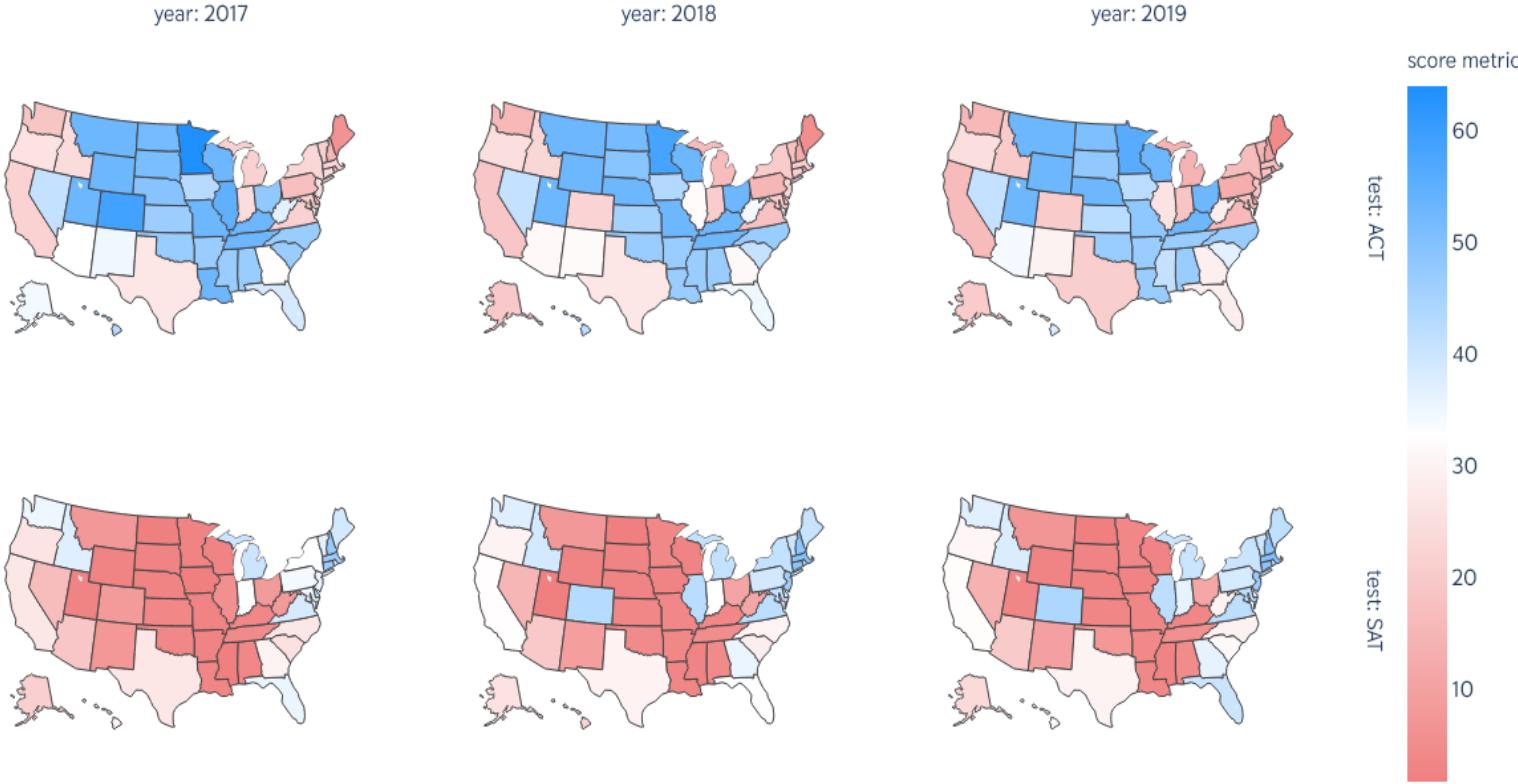
THE ANALYSES (7)



- ❑ Take the negatively correlated participation rates into consideration.
- ❑ In general, the ACT yields higher score metrics.

THE ANALYSES (8)

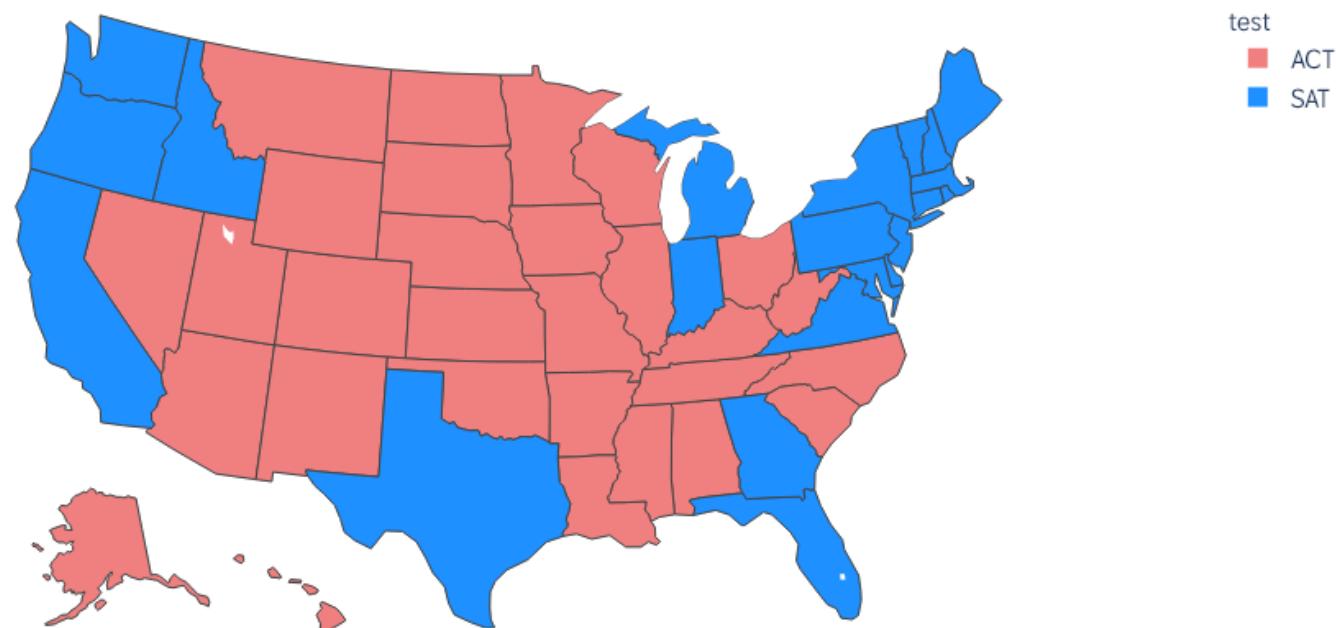
Test Score Metrics by State



- ACT : still recommended for the mainland states.
- SAT : preferred by the coastal regions.

THE CONCLUSION

Recommended Test by State for Class Year 2020 and Later



THANK YOU