SAT / ACT Scores

College Requirements

By Azin Faghihi

How do the college SAT/ACT *requirements* in each state compare to the *average scores* in that state?

Possible Role: A part-time researcher for SAT College Board and college admissions board.

Datasets:

	state	sat_participation	sat_total	act_participation	act_composite	year
0	Alabama	0.05	1165	1.00	19.2	2017
1	Alaska	0.38	1080	0.65	19.8	2017
2	Arizona	0.30	1116	0.62	19.7	2017
3	Arkansas	0.03	1208	1.00	19.4	2017
4	California	0.53	1055	0.31	22.8	2017
...	...	...	...	...	...	...
148	Virginia	0.68	1119	0.21	24.0	2019
149	Washington	0.70	1074	0.24	22.1	2019
150	West Virginia	0.99	943	0.49	20.8	2019
151	Wisconsin	0.03	1283	1.00	20.3	2019
152	Wyoming	0.03	1238	1.00	19.8	2019

Sources : https://blog.prepscholar.com, https://blog.collegevine.com

Datasets:

	school	state	number_of_applicants	accept_rate	sat_min	sat_median	act_min	act_median	test_optional?	Rank	coordinates	sat_mandatory	act_mandatory
0	Stanford University	California	47452	0.043	1440.0	1505	32.0	33.5	True	2.0	(37.431313849999995, -122.16936535498309)	False	False
1	Harvard College	Massachusetts	42749	0.047	1460.0	1520	33.0	34.0	True	1.0	(42.36790855, -71.12678237443698)	False	False
2	Princeton University	New Jersey	35370	0.055	1440.0	1505	32.0	33.5	True	8.0	(40.33867515, -74.65836549131683)	False	False
3	Columbia University	New York	40203	0.055	1450.0	1505	33.0	34.0	True	7.0	(40.8077627, -73.96164061324416)	False	False
4	Yale University	Connecticut	36844	0.061	1460.0	1515	33.0	34.0	True	6.0	(41.25713055, -72.98966960152231)	True	False
...	...	...	...	...	...	...	...	...	...	...	...	...	...
406	University of Texas Rio Grande Valley	Texas	10680	0.798	950.0	1040	17.0	19.5	False	NaN	(26.30715335, -98.17281873206672)	False	False
407	University of South Dakota	South Dakota	4434	0.864	990.0	1085	19.0	22.0	False	NaN	(42.79137035, -96.92542348265259)	False	False
408	University of Mississippi	Mississippi	15371	0.881	1050.0	1160	21.0	25.0	False	NaN	(34.3646125, -89.53963491020966)	False	False
409	University of Wyoming	Wyoming	5348	0.960	1060.0	1170	22.0	25.0	False	NaN	(41.3144774, -105.56432285957351)	False	True
410	University of Texas El Paso	Texas	7157	0.999	820.0	935	17.0	20.0	False	NaN	(31.77570475, -106.50628747547725)	False	False

411 rows × 13 columns

Sources : https://www.compassprep.com/college-profiles/, geopy

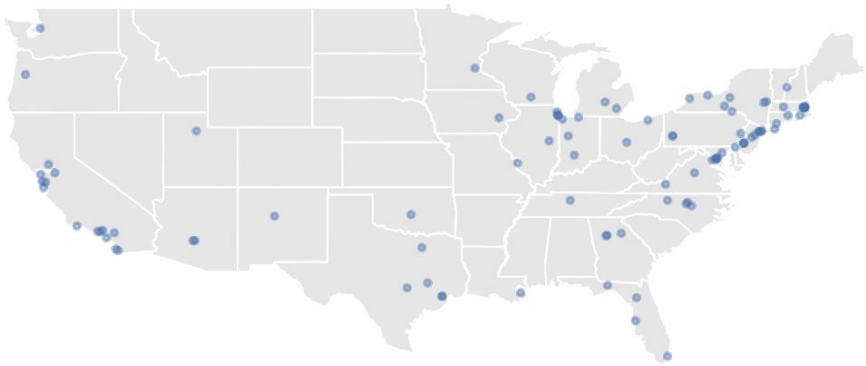
Question: Where are the *top ranked* universities located?

Top 100 Universities

(2020)

California	14
New York	10
Massachusetts	8
Pennsylvania	6
Texas	5
Illinois	5
Florida	4
North Carolina	4
Indiana	4
New Jersey	4
Washington D.C.	3
Georgia	3
Virginia	3
Ohio	2
Arizona	2
Michigan	2
Connecticut	2
Maryland	2

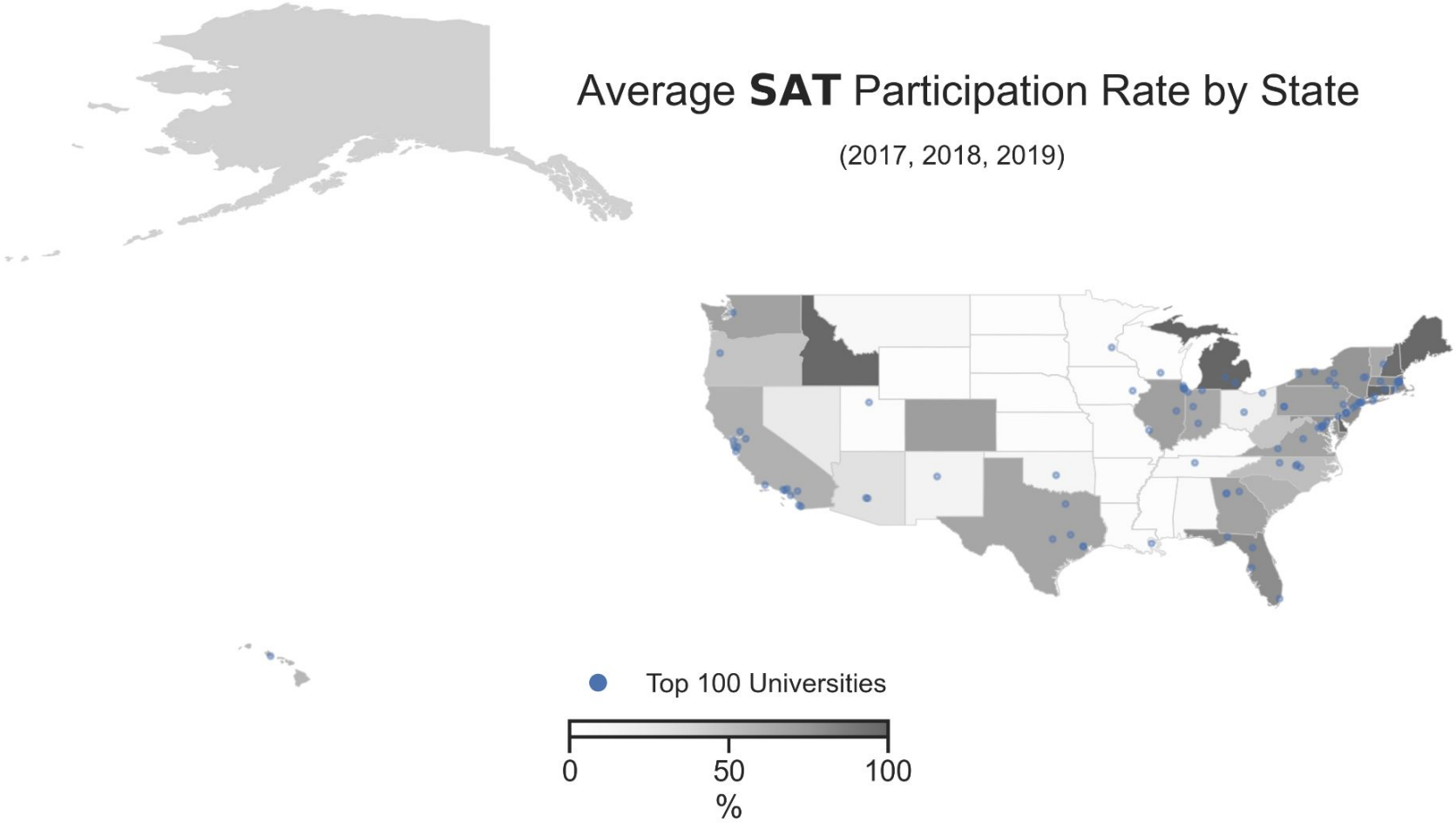
source: https://www.topuniversities.com



Question: What are the **SAT** *participation* rate & average *score* in each state?

Average **SAT** Participation Rate by State

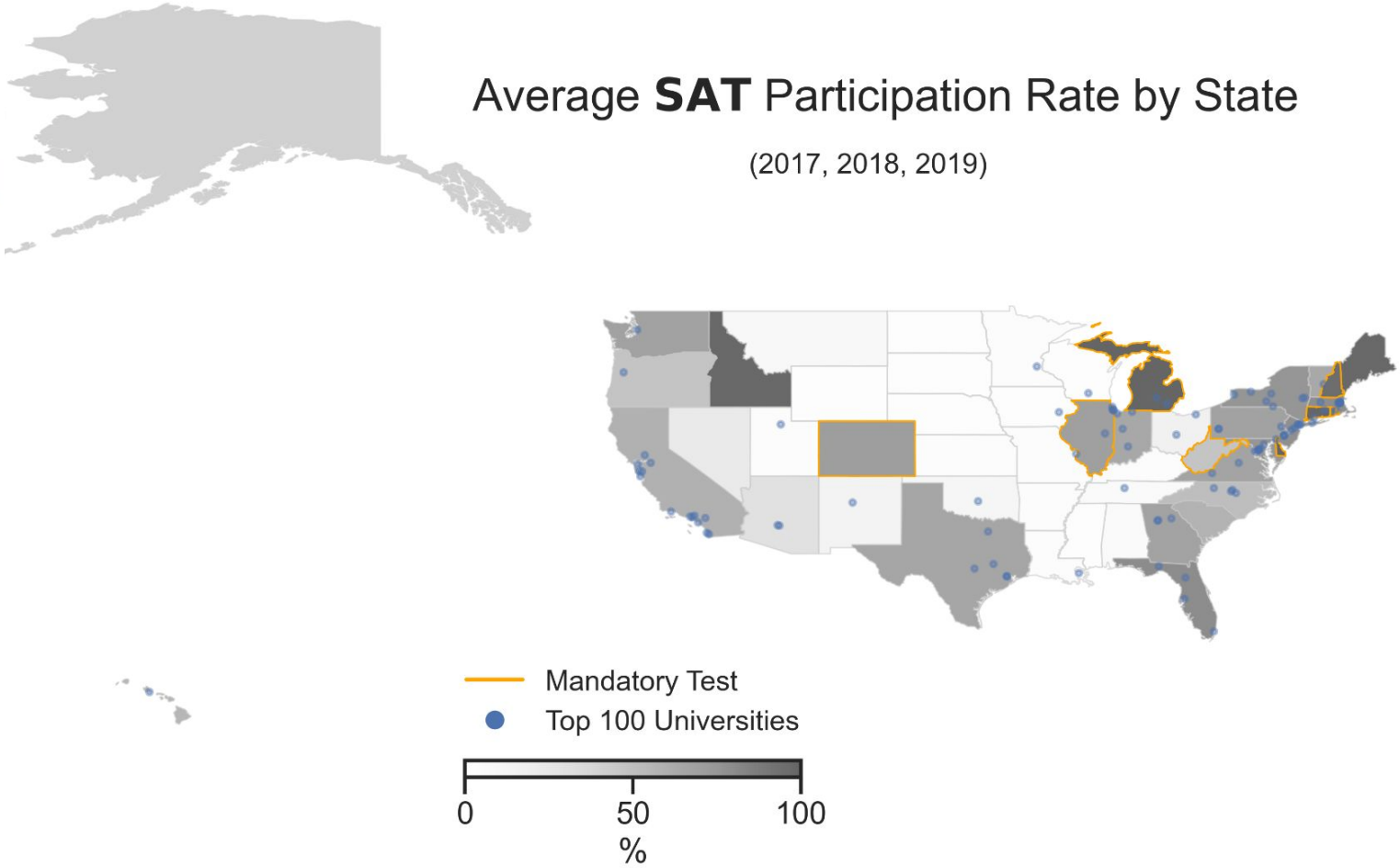
(2017, 2018, 2019)



Michigan	100
Connecticut	100
Delaware	100
Maine	98
Idaho	97
District of Columbia	97
New Hampshire	95
Rhode Island	89
Florida	79
Massachusetts	79
New Jersey	78
Maryland	75
New York	75
Colorado	70
Illinois	69
Pennsylvania	68
Washington	67
Georgia	67
Virginia	67
Texas	65
Indiana	64
Vermont	63
California	58
South Carolina	57
Hawaii	55

Average **SAT** Participation Rate by State

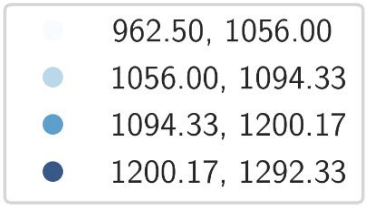
(2017, 2018, 2019)

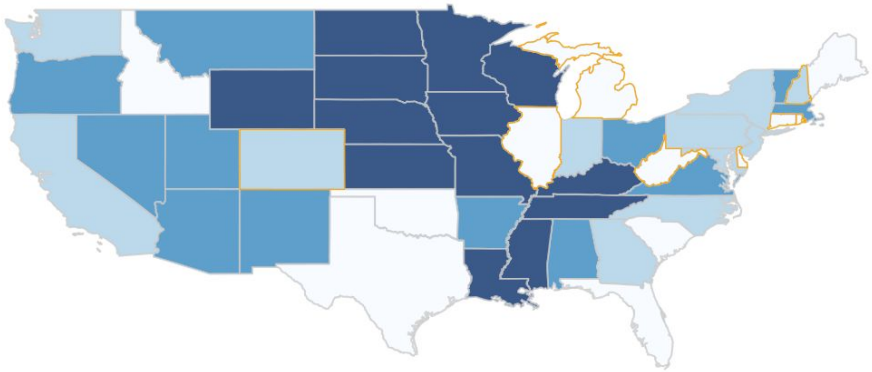


Minnesota	1292
Wisconsin	1289
North Dakota	1267
Iowa	1261
Missouri	1256
Kansas	1255
Nebraska	1255
Kentucky	1242
Wyoming	1241
South Dakota	1241
Mississippi	1238
Tennessee	1226
Louisiana	1202
Montana	1197
Arkansas	1172
Utah	1159
Alabama	1158
Nevada	1137
Arizona	1133
Massachusetts	1117
Ohio	1115
Vermont	1113
Virginia	1112
Oregon	1112
New Mexico	1101

Average Total SAT Score

(2017, 2018, 2019)

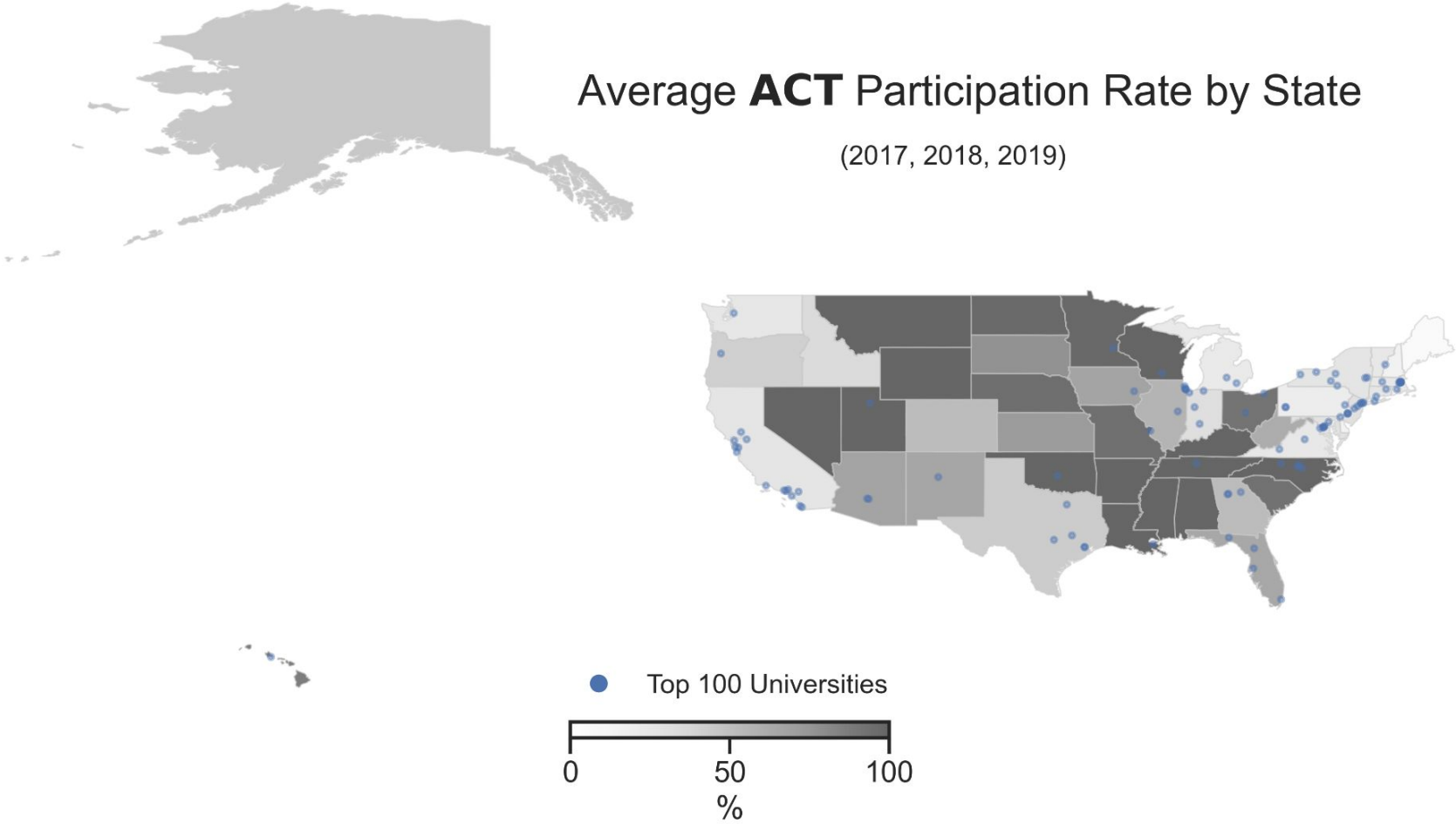




Question: What are the **ACT** *participation* rate & average *score* in each state?

Average **ACT** Participation Rate by State

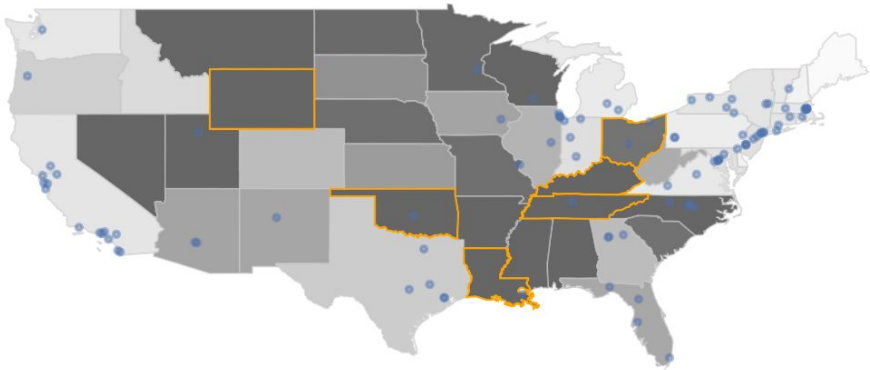
(2017, 2018, 2019)



Alabama	100
Kentucky	100
Wisconsin	100
Utah	100
Tennessee	100
Oklahoma	100
North Carolina	100
Nevada	100
Montana	100
Mississippi	100
Louisiana	100
Wyoming	100
Arkansas	100
Minnesota	98
North Dakota	97
Nebraska	94
Missouri	94
South Carolina	92
Ohio	91
Hawaii	86
South Dakota	77
Kansas	72
Iowa	67
Arizona	67
New Mexico	65

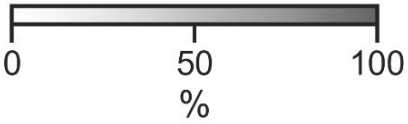
Average **ACT** Participation Rate by State

(2017, 2018, 2019)



Mandatory Test

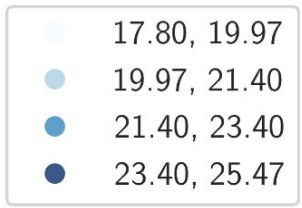
Top 100 Universities

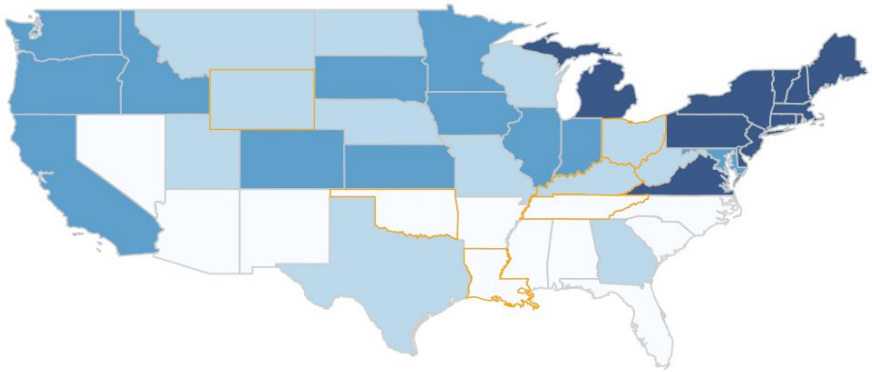


Massachusetts	25.5
Connecticut	25.4
New Hampshire	25.2
New York	24.4
Rhode Island	24.3
Michigan	24.2
Maine	24.2
Delaware	24.0
Vermont	23.9
New Jersey	23.9
Virginia	23.9
District of Columbia	23.8
Pennsylvania	23.6
Illinois	23.2
Colorado	22.8
Maryland	22.8
California	22.7
Indiana	22.5
Idaho	22.4
Washington	22.1
South Dakota	21.8
Iowa	21.8
Kansas	21.5
Oregon	21.4
Minnesota	21.4

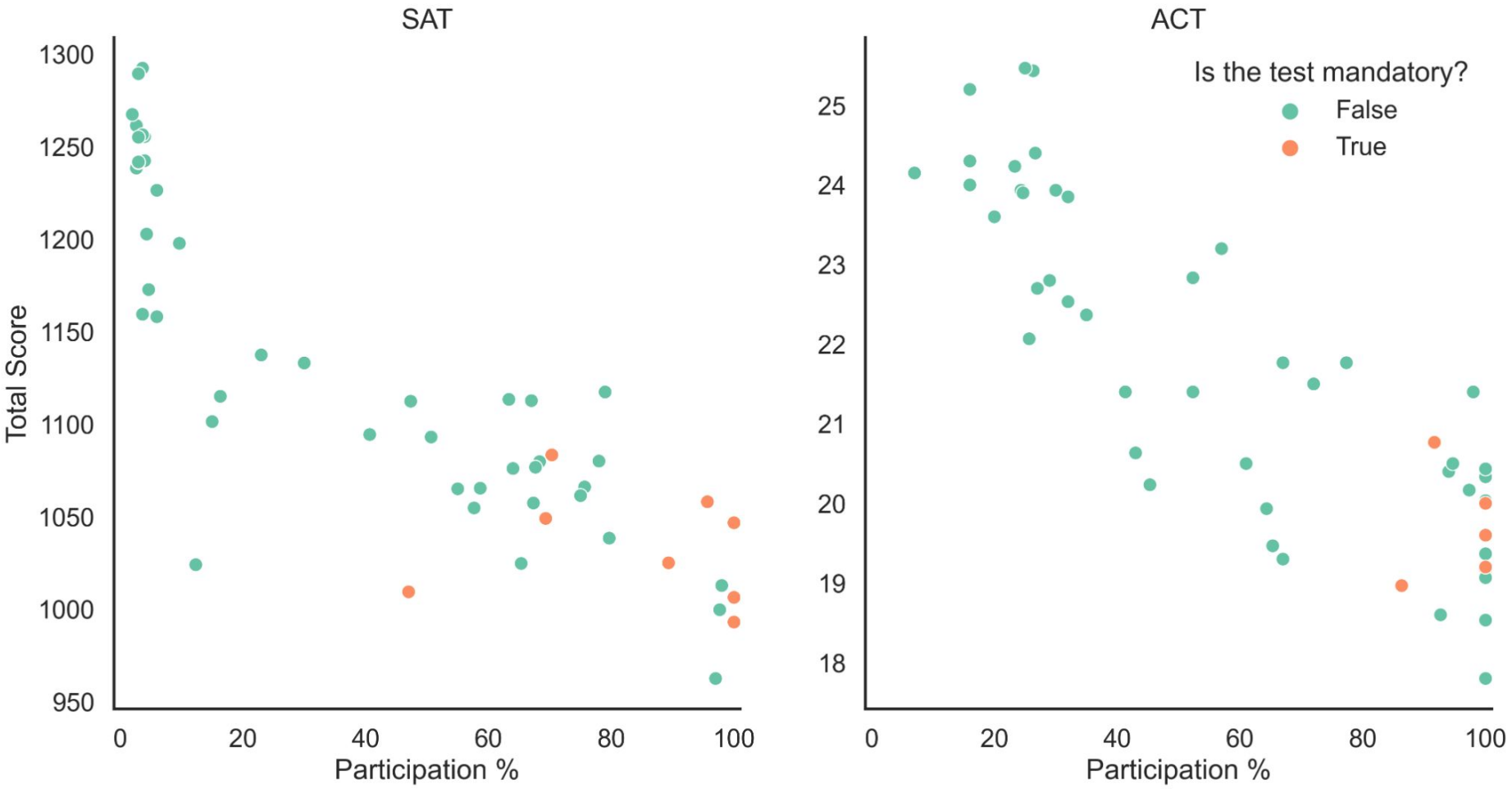
Average Total ACT Score

(2017, 2018, 2019)





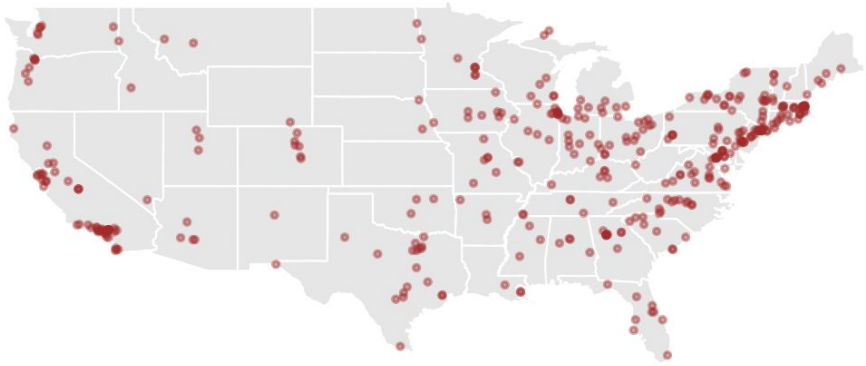
Question: Is there a pattern in how the total score varies with the *participation* rate?


SAT
ACT
Total Score
Participation %
Participation %
Is the test mandatory?
False
True
1300
1250
1200
1150
1100
1050
1000
950
25
24
23
22
21
20
19
18
0
20
40
60
80
100

Question: How do the *required* scores (by the universities) compare to the *average scores* in each state?

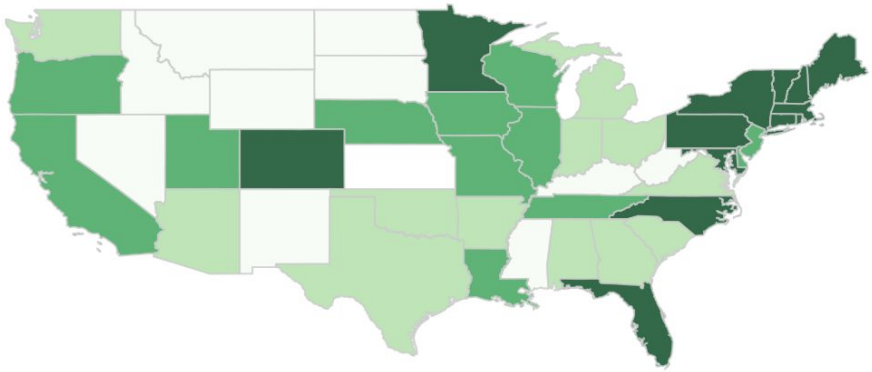
California	50
New York	36
Massachusetts	22
Pennsylvania	21
Texas	19
Ohio	16
Virginia	16
Illinois	14
North Carolina	12
Indiana	12
Georgia	10
Michigan	10
New Jersey	10
Maryland	9
Florida	9
South Carolina	8
Missouri	8
Minnesota	7
Oregon	7
Iowa	7
Connecticut	7
Washington	6

Universities



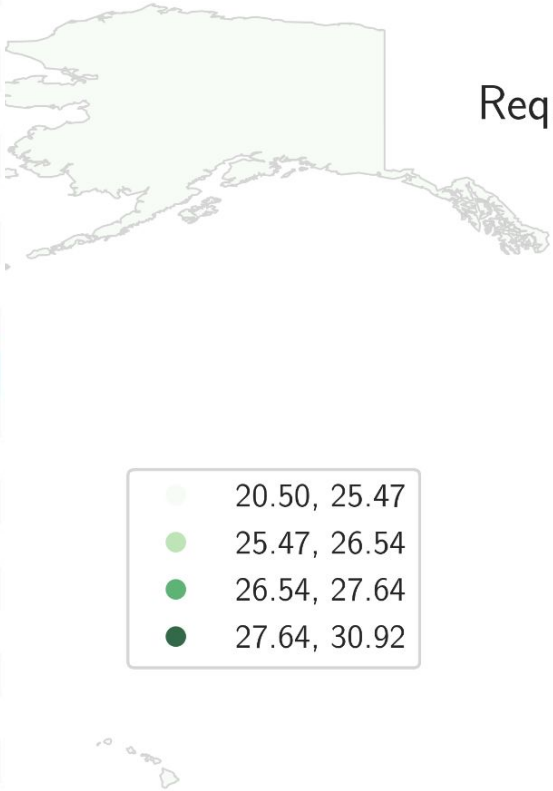
Massachusetts	1381
Connecticut	1349
Maine	1346
New Hampshire	1335
Pennsylvania	1334
Rhode Island	1318
Vermont	1313
Minnesota	1303
New York	1302
Colorado	1295
Maryland	1279
Florida	1278
North Carolina	1274
New Jersey	1272
Tennessee	1271
Louisiana	1263
Delaware	1260
Utah	1252
Illinois	1251
Oregon	1248
Iowa	1247
Nebraska	1245
California	1244
Missouri	1243
Wisconsin	1243

Required (Median) SAT Score by Universities



Massachusetts	30.9
Connecticut	29.9
Maine	29.9
Vermont	29.6
Pennsylvania	29.5
New Hampshire	29.2
Rhode Island	29.1
Colorado	29.0
New York	28.8
New Jersey	28.2
Minnesota	28.0
Louisiana	27.7
Tennessee	27.7
Maryland	27.6
Florida	27.6
Delaware	27.5
Illinois	27.5
Arkansas	27.3
Oregon	27.3
North Carolina	27.2
Missouri	27.2
Indiana	26.8
Ohio	26.7
Iowa	26.7
Washington	26.6

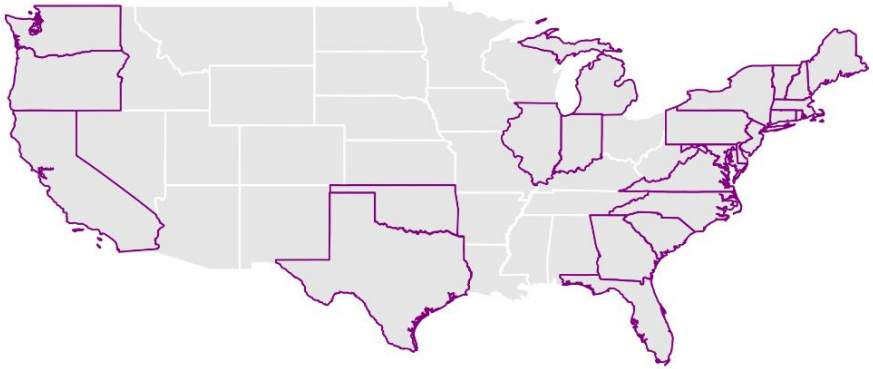
Required (Median) ACT Score by Universities



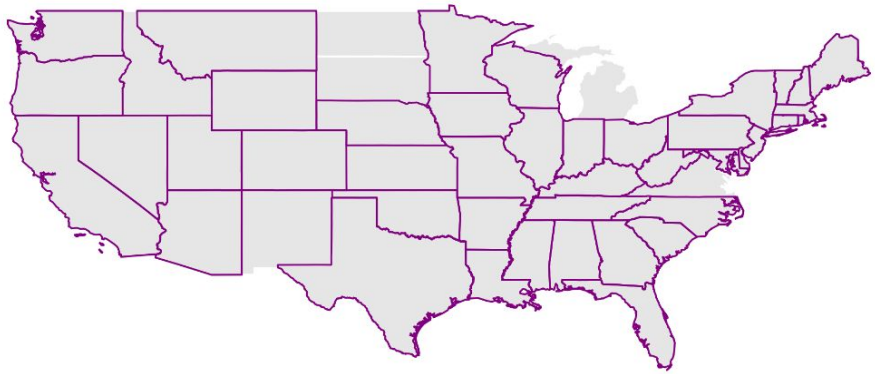
Question: How does the average *minimum score requirement* compare to the *average score* in each state?

California
Connecticut
Delaware
Florida
Georgia
Illinois
Indiana
Maine
Maryland
Massachusetts
Michigan
New Hampshire
New Jersey
New York
North Carolina
Oklahoma
Oregon
Pennsylvania
Rhode Island
South Carolina
Texas
Vermont
Virginia
Washington

States Where the Minimum SAT Requirement is Higher than the State Average Score



States Where the Minimum **ACT** Requirement is Higher than the State Average Score



Recommendations:

- Introduce more preparatory SAT classes (SAT College Board)

- Start a collaborative project with the local schools to achieve a higher acceptance rate for in-state students (College Admissions)

Future Work:

- Find a measure to normalize the scores and participation rates by the number of applicants/population.
- Figure out how to combine the mandatory test with possible parameters to bring the scores higher

Sources:

- https://www.topuniversities.com/where-to-study/north-america/united-states/ranked-top-100-us-universities
- https://mindfish.com/which-states-require-the-sat/
- https://blog.collegevine.com/states-that-require-the-act/
- https://www.compassprep.com/college-profiles/
- https://blog.prepscholar.com
- https://blog.collegevine.com