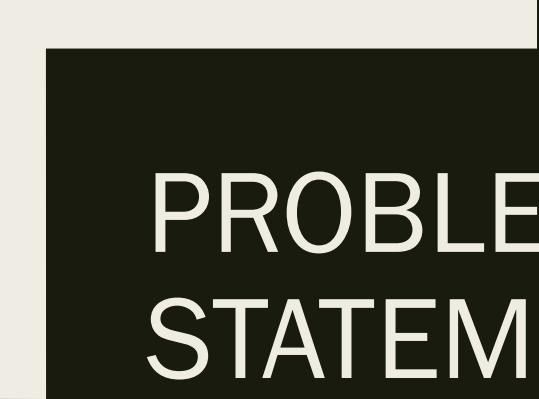




**GENERAL
ASSEMBLY**

SAT & ACT ANALYSIS

JOSHUA SOH



PROBLEM STATEMENT

- Find trends in the SAT and ACT participation rates and subject scores in 2017 and 2018
- Datasets chosen:
 - act_2017.csv
 - act_2018.csv
 - sat_2017.csv
 - sat_2018.csv

What is SAT or ACT?



Carl Brigham, 1890 - 1943

- The SAT(Scholastic Aptitude Test) was founded in 1926, with a highest possible score of 1600.
- The ACT (American College Testing) was founded in 1959, 33 years after SAT's debut, with a highest possible score of 36.
- FUN FACT: Based on the initial test results, Carl Brigham concluded that native-born Caucasian Americans had the highest intelligence and that Eastern Europeans, Southern Europeans and Black Americans had inferior intelligence.

Data Cleaning

```
#identify and find the foreign object  
df_act2017[["State","Composite"]].tail()
```

	State	Composite
47	Virginia	23.8
48	Washington	21.9
49	West Virginia	20.4
50	Wisconsin	20.5
51	Wyoming	20.2x

```
df_sat2017.describe() #min value 52 when the Mean is 547 fo
```

	Evidence-Based Reading and Writing	Math	Total
count	51.000000	51.000000	51.000000
mean	569.117647	547.627451	1126.098039
std	45.666901	84.909119	92.494812
min	482.000000	52.000000	950.000000
25%	533.500000	522.000000	1055.500000
50%	559.000000	548.000000	1107.000000
75%	613.000000	599.000000	1212.000000
max	644.000000	651.000000	1295.000000

```
df_act2017.describe() #min value for Science
```

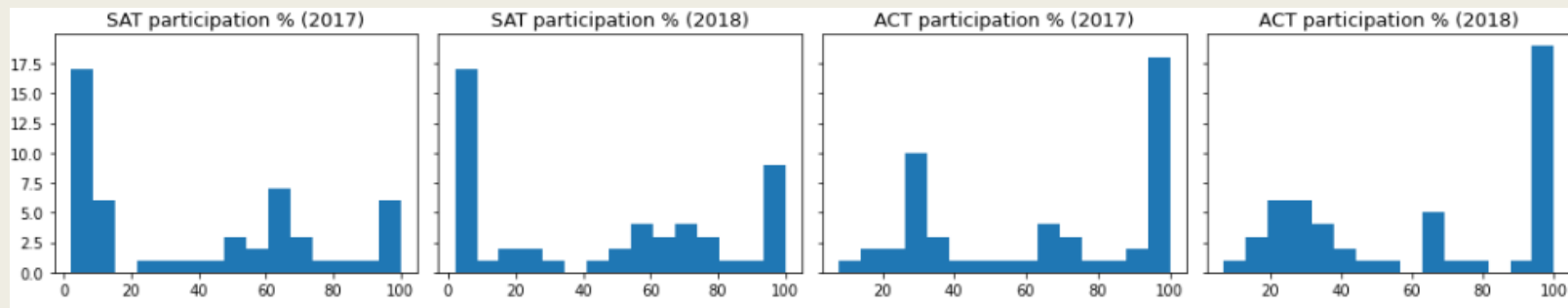
	English	Math	Reading	Science
count	52.000000	52.000000	52.000000	52.000000
mean	20.919231	21.173077	22.001923	21.040385
std	2.332132	1.963602	2.048672	3.151113
min	16.300000	18.000000	18.100000	2.300000
25%	19.000000	19.400000	20.475000	19.900000
50%	20.550000	20.900000	21.700000	21.150000
75%	23.300000	23.100000	24.125000	22.525000
max	25.500000	25.300000	26.000000	24.900000

```
df_act2018
```

	State	Participation	Composite
18	Louisiana	100%	19.2
19	Maine	7%	24.0
20	Maine	7%	24.0

Participation

- Most states had either very high participation rates in one test and much lower participation rates in the other
- 18 states require ACT, 11 require SAT, and 3 require either one of these tests
- A few states have over 50% participation in both tests, namely Florida, Georgia, Hawaii, North and South Carolina (2017 and 2018)



Outliers

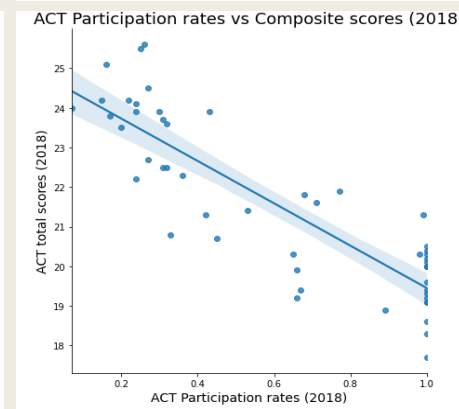
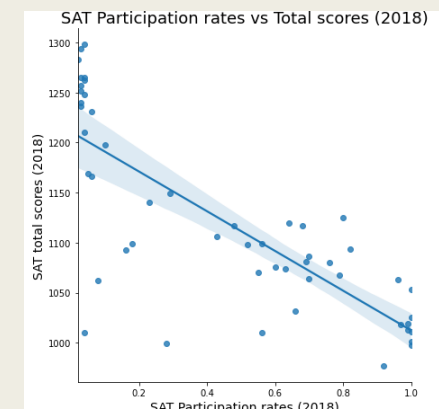
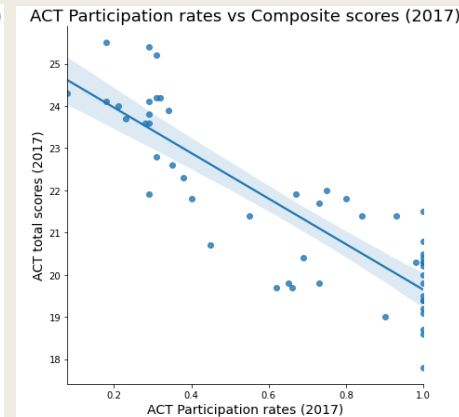
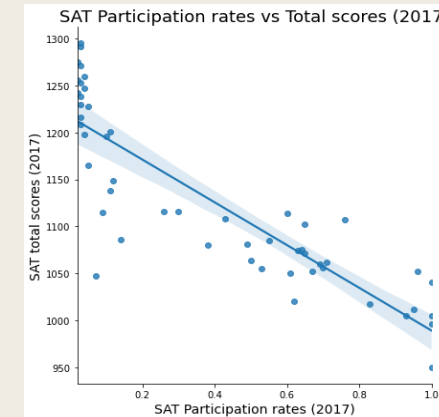
- Colorado and Illinois saw a drastic swing in participation rates from 2017 to 2018
- Reason was due to both states changing to SAT in 2017
 - <https://testive.com/illinois/>
 - <https://testive.com/colorado-sat-change-2017/>

	sat_state_2017	sat_participation_2017	sat_participation_2018
5	Colorado	0.11	1.00
13	Illinois	0.09	0.99

Participation

- States with a higher participation rate were observed to have a lower total/composite score
- Strong negative correlation between the above variables based on the scatterplot diagrams constructed for 2017 and 2018

	sat_state_2017	sat_participation_2017	sat_participation_2018	sat_total_2017	sat_total_2018
5	Colorado	0.11	1.00	1201	1025
13	Illinois	0.09	0.99	1115	1019



Recommendations

- For ACT-mandated states, it is unlikely that efforts spent there will yield any satisfactory results. Resources are recommended to be better focused on states such as California, Georgia or Oregon, where SAT and ACT participation rates remain low and show potential for substantial growth.
- Another recommendation would be to offer SAT tests at no cost to students, a move administered by [Delaware to promote a school culture to encourage more students to pursue education after high school](<https://delawarepta.org/free-sat-registration-now-open-for-public-school-juniors/>) - the results of this funding speaks for itself in the datasets above with 100% participate rate in 2017 and 2018 from said state, 7 years after it kickstarted.



THANK YOU