

# DSI Project 01 – SAT & ACT Analysis

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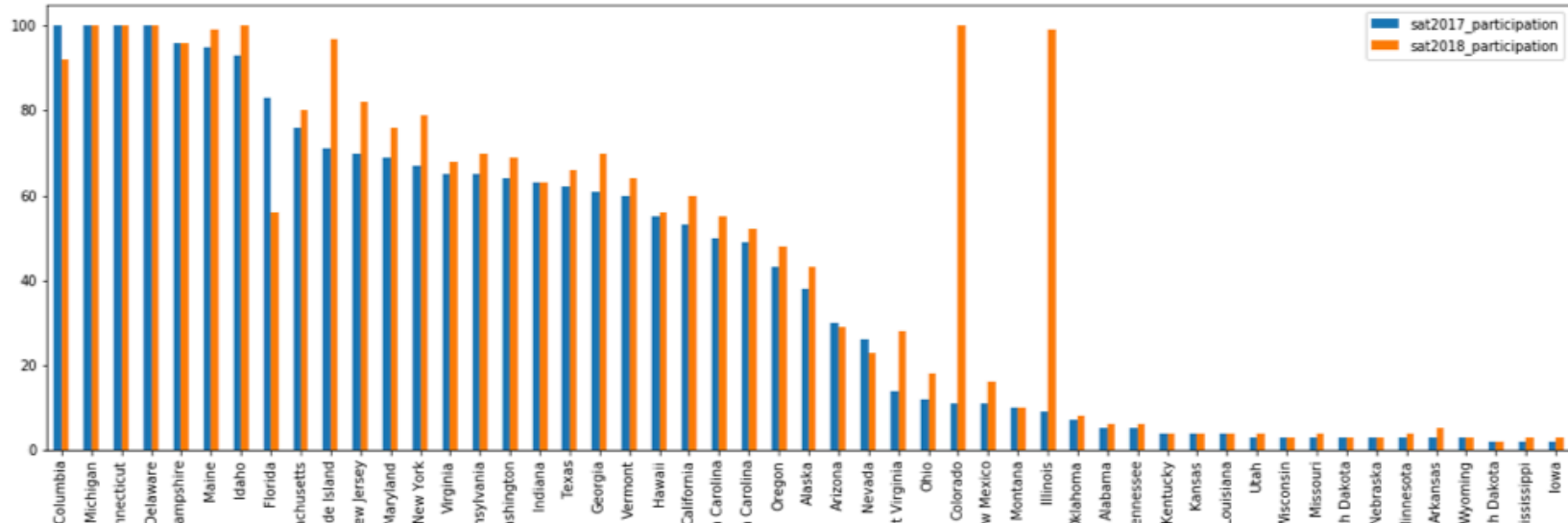
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## Problem Statement

What are the common trends  
seen in states with high SAT  
participation rates  
&  
why there is an inverse  
relationship with performance

## Tackling the issue

### SAT Participation (2017-2018)

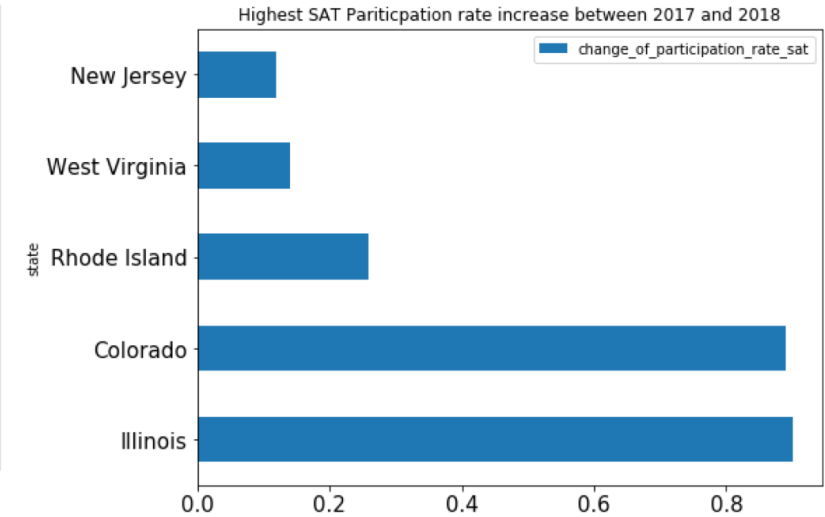


SAT2017 Participation rate for Year 2017 and 2018

Colorado, Illinois & Rhode Island saw more than huge increases in their participation of the SAT test

Hence, we would be investigating on why these states are showing stark increases year-on-year (2017-2018).

### SAT Participation Rate of Change



## **Background Research**

### **Colorado**

- Legislation change in 2017 mandated SAT test for public school junior students
- Won the bid to become the state test provider in 2015
- Colorado has underwritten the cost of sitting for SAT test for all the High school junior students
- MOOC learning provider, Khan Academy supported the SAT test with personalised resources

### **Illinois**

- Legislation change in 2017 mandated SAT test for public school junior students
- Illinois has underwritten the cost of sitting for SAT test for all the public school students

### **Rhode Island**

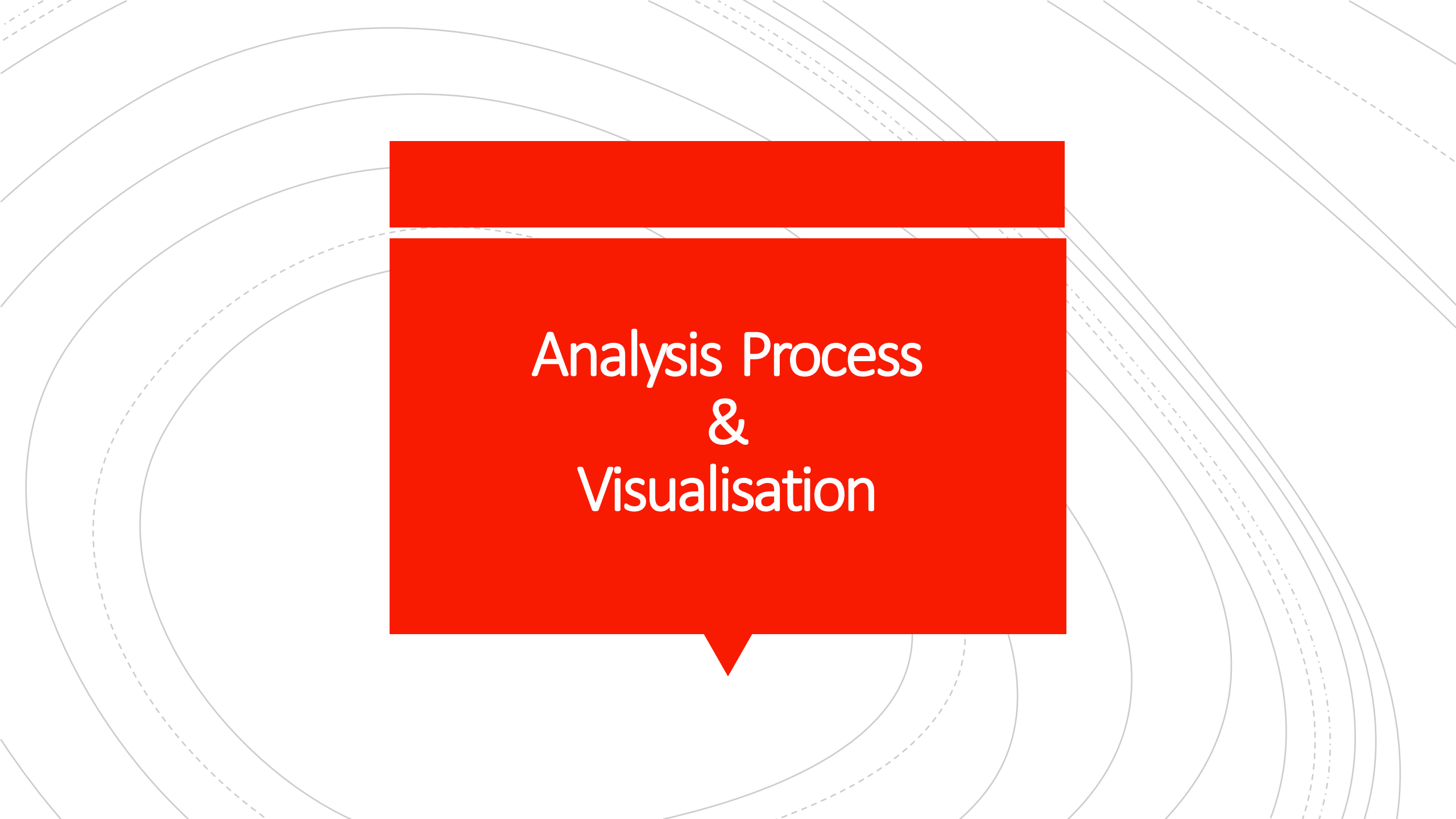
- Legislation change in 2017 mandated SAT test for public school junior students
- SAT was at no cost to students
- PrepareRI early college program and the Advanced Coursework Network were implemented

## Recommendation

- Working closely with state education boards to identify key obstacle areas to overcome and implement SAT test
- Develop manageable financial package and focus on upcoming new biddings and expiring biddings
- Develop a sustainable financial subsidy package for the interested states to offer to students
- Integrate more MOOC learning platforms to adopt and provide SAT courses
- SAT to be held on a school day

# Conclusions

- Colorado model can be studied further
- To pay close attention when biddings happen
- Focus on MOOC learning platforms & personalised learning for SAT
- Monitoring the inverse relationship between performance & participation helps to understand better the shifts in the behaviorual mindset of students

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# Analysis Process & Visualisation



# Analysis Process & Visualisation

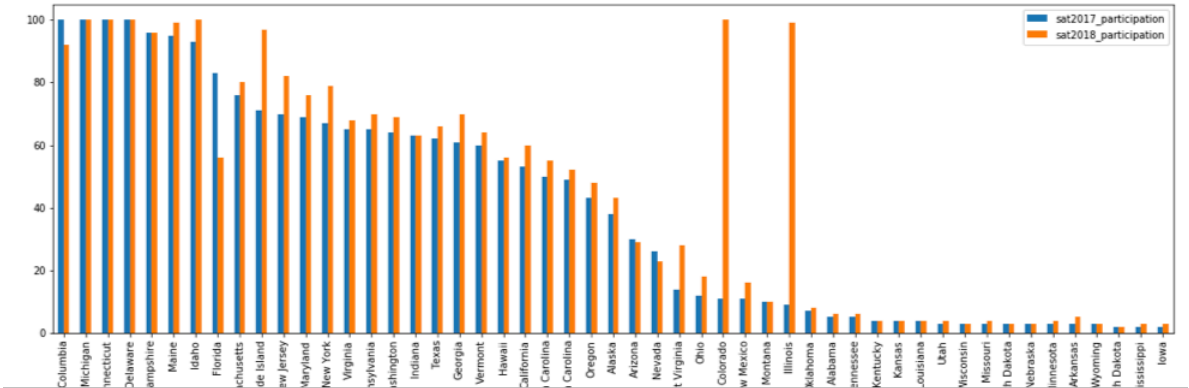
Calculating positive rate of change from 2017 - 2018

```
high_sat_rate=final[['state','participation_sat_2017',  
                    'participation_sat_2018',  
                    'change_of_participation_rate_sat']].sort_values('change_of_participation_rate_sat',ascending=False).head()
```

	state	participation_sat_2017	participation_sat_2018	change_of_participation_rate_sat
13	Illinois	0.09	0.99	0.90
5	Colorado	0.11	1.00	0.89
39	Rhode Island	0.71	0.97	0.26
48	West Virginia	0.14	0.28	0.14
30	New Jersey	0.70	0.82	0.12

Plotting year-on-year distribution of participation rates for different states

```
plt.figure()  
  
ax=plot_df[['act2017_participation',  
            'act2018_participation']].sort_values('act2017_participation',  
                                                    ascending=False).plot(kind='bar',  
                                                    figsize=(20,6));  
  
ax.set_xlabel('ACT 2017 and ACT2018 Participating States')  
ax.set_ylabel('Rates');  
plt.setp(ax.get_xticklabels(), rotation=45)  
#plt.savefig('sat_participation')
```



SAT2017 Participation rate for Year 2017 and 2018

# Analysis Process & Visulisation

## Showing the inverse relationship of participation & performance

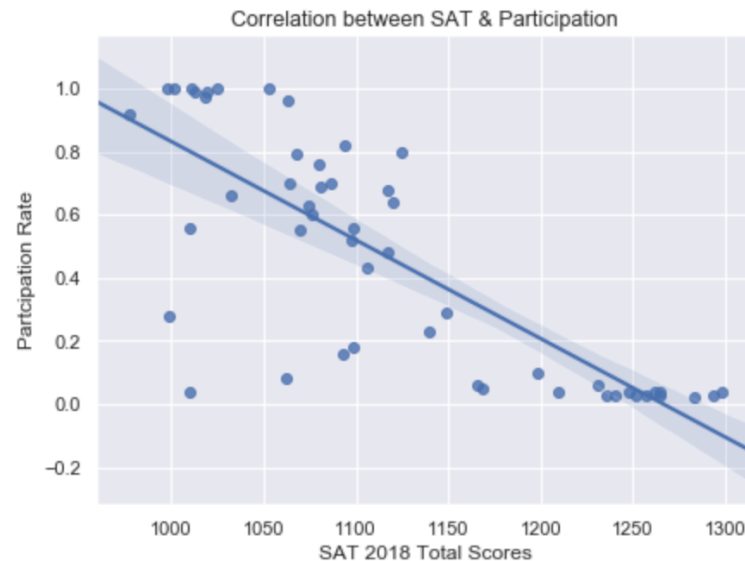
```
# plot the Figure object for SAT & ACT Total/Composite scores
fig = plt.figure(figsize=(15,5))

# add the Axes 1 object to the Figure (SAT)
ax1 = fig.add_subplot(1,2,1)
sns.regplot(data=final, x='sat_18_total', y='sat_18_participation')

# plot titles and labels
plt.xlabel('SAT 2018 Total Scores')
plt.ylabel('Participation Rate')
plt.title("Correlation between SAT Total & Participation", fontsize=12.5)

# add the Axes 2 object to the Figure (ACT)
ax2 = fig.add_subplot(1,2,2)
sns.regplot(data=final, x='act_18_composite', y='act_18_participation')

# plot titles and labels
plt.xlabel('ACT 2018 Composite Scores')
plt.ylabel('Participation Rate')
plt.title("Correlation between ACT Composite & Participation", fontsize=12.5);
```



# References

- <https://www.denverpost.com/2017/03/06/colorado-juniors-sat-college-exam/>
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- <https://www.ride.ri.gov/InstructionAssessment/Assessment/PSATandSAT.aspx#39491532-exemptions-from-testing>
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<https://research.collegeboard.org/programs/sat/data/2019-sat-suite-annual-report>

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THANK YOU