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# DSI Project 1

Which state College Board should invest in to boost SAT participation rate.

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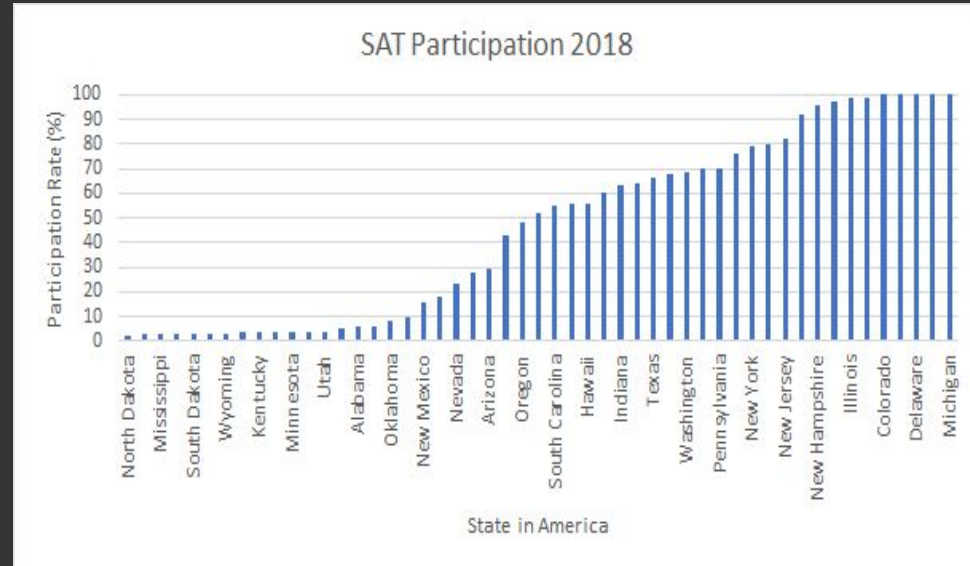
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# Table of Contents

1. Problem Statement
2. Project Objectives
3. Business Overview
4. Process
5. Technical Overview
6. Key Findings
7. Key Problems
8. Conclusion

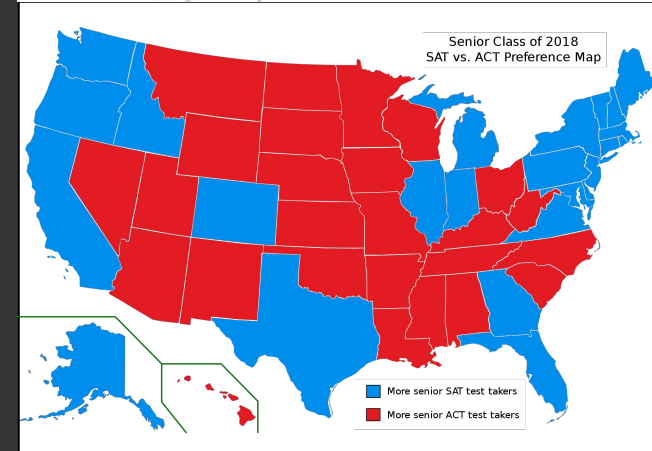
# Problem Statement

- College Board would like to have a high amount of SAT participation rate in America.
- However from the data, there is a great disparity in SAT participation rates across the states .
- This project will investigate states within America which have low SAT participation rate, looking for trends and factors in our dataset and external research, to determine which state has the best potential for an increase in SAT participation.



# Project Objectives

- Visualise data gathered from SAT participation rates in 2017 and 2018
- Identify any trends in the data
- Select a state with a low participation rate for recommendation to the School Board
- Provide a plan on how to increase participation
- Support findings with data and information gathered



Images sourced from wikipedia.org

# Business Overview & Process

Business Context

Business Question

Process

# Business Overview & Process

## Business Context

SAT and ACT are two popular college admissions exams for students seeking admissions in a college in USA. In 2018, 2.1 million test-takers completed the SAT and 1.9 million students took the ACT.

<https://www.usnews.com/education/best-colleges/articles/act-vs-sat-how-to-decide-which-test-to-take>

Benefits of taking test

- score-dependent scholarships

<https://www.usnews.com/education/blogs/college-admissions-playbook/articles/2018-04-23/3-benefits-of-standardize-d-testing-beyond-college-admissions>

- 19 billion financial aid opportunities for deserving students - <https://www.scholarships.com/>
- Topo schools still rely on SAT/ACT <https://blog.prepscholar.com/the-most-selective-colleges-in-the-us>

Changes made to the SAT in 2016 have made it easier than ever to prep for SAT.

SAT is comparatively cheaper

The SAT costs \$47.50 for the test only and \$64.50 if the optional essay is included.

The ACT costs \$50.50 for only the exam and \$67 if the optional writing test is included

<https://www.princetonreview.com/college/sat-act>

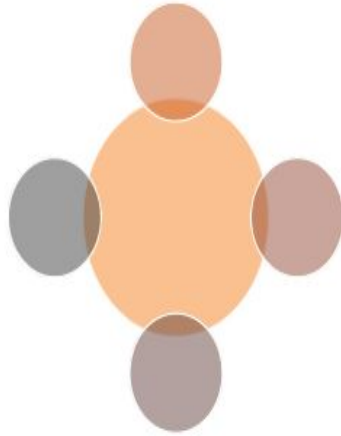
# Business Overview & Process

College Name	Acceptance Rate	Average GPA	Average SAT	Average ACT
<a href="#">Stanford</a>	4%	3.95	1465	33
<a href="#">Harvard</a>	5%	4.10	1520	34
<a href="#">Princeton</a>	5%	3.90	1500	33
<a href="#">Columbia</a>	6%	4.14	1515	34
<a href="#">Yale</a>	6%	4.12	1505	34
<a href="#">Caltech</a>	7%	4.22	1560	35
<a href="#">MIT</a>	7%	4.16	1528	34
<a href="#">University of Chicago</a>	7%	4.29	1530	34
<a href="#">Brown</a>	8%	4.09	1488	32
<a href="#">Northwestern</a>	8%	4.09	1490	33
<a href="#">Pomona</a>	8%	4.01	1450	32
<a href="#">UPenn</a>	8%	3.93	1490	33
<a href="#">Claremont McKenna</a>	9%	4.09	1490	32
<a href="#">Dartmouth</a>	9%	4.07	1478	32
<a href="#">Duke</a>	9%	4.08	1485	33
<a href="#">Swarthmore</a>	9%	4.09	1490	32
<a href="#">Bowdoin</a>	10%	3.80	1390	31
<a href="#">Vanderbilt</a>	10%	3.80	1475	34

# Business Overview & Process

## Process

Analytics Process: CRISP DM

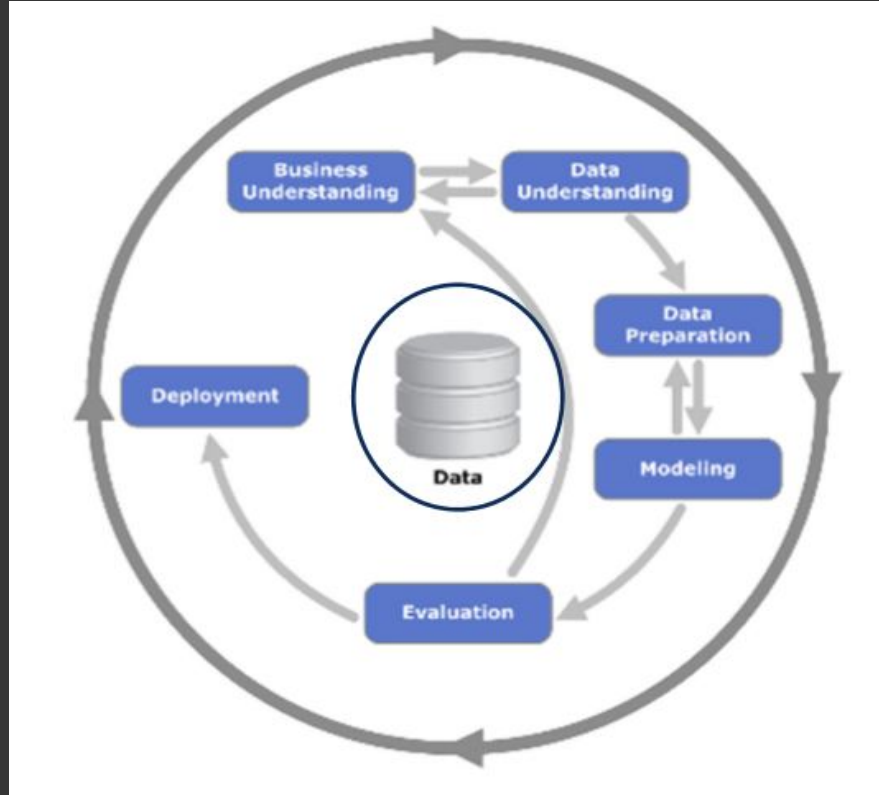
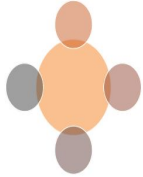




# Business Overview & Process

## Process

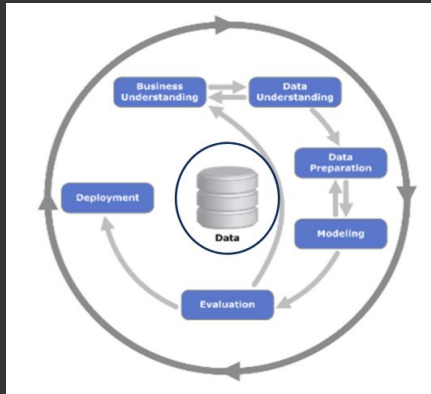
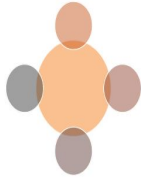
Analytics Process: CRISP DM



# Business Overview & Process

## Process

Analytics Process: CRISP DM



## Business Understanding

- The most important step
- The most neglected step

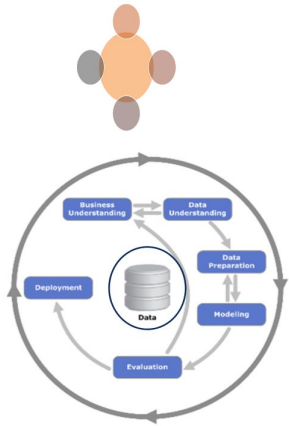
- Who is the end user?
- What is the end benefit?
- How will the solution be deployed?
- What are the hypotheses of the business users?



# Business Overview & Process

## Process

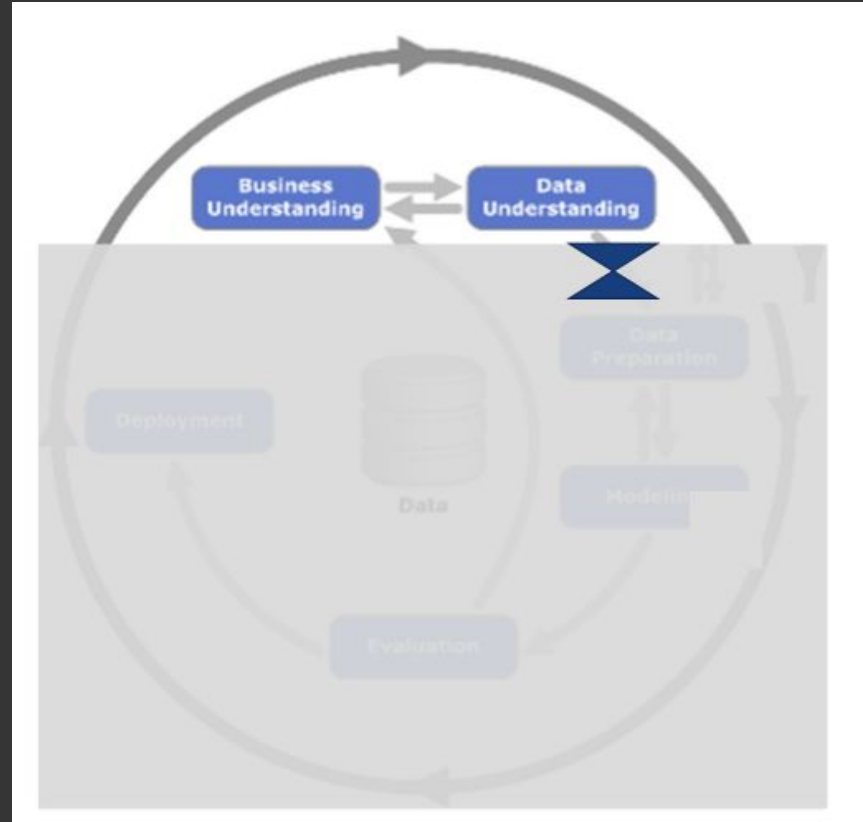
Analytics Process: CRISP DM



Business Understanding

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# Business Overview & Process

## Business Question

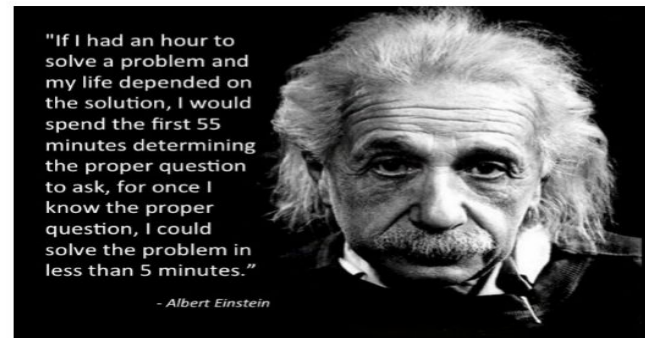
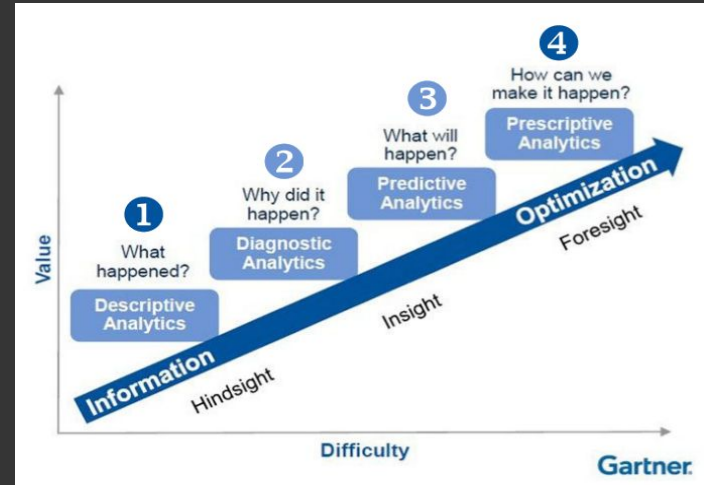
Analytics help organization find answers to different business questions.

Our team effort is concentrated on providing recommendations to College Board, which administers SAT exam based on

- insights generated from last 2 years data
- Competitive analysis to influence participation rates.

## Specific Business Question

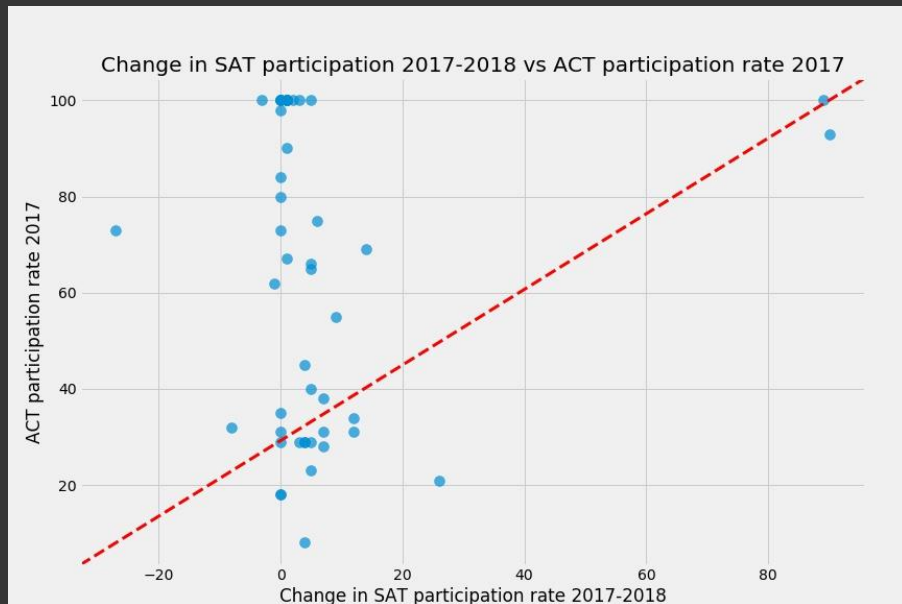
Which state should marketing spend be targeted to boost SAT participation rates?



# Technical Overview

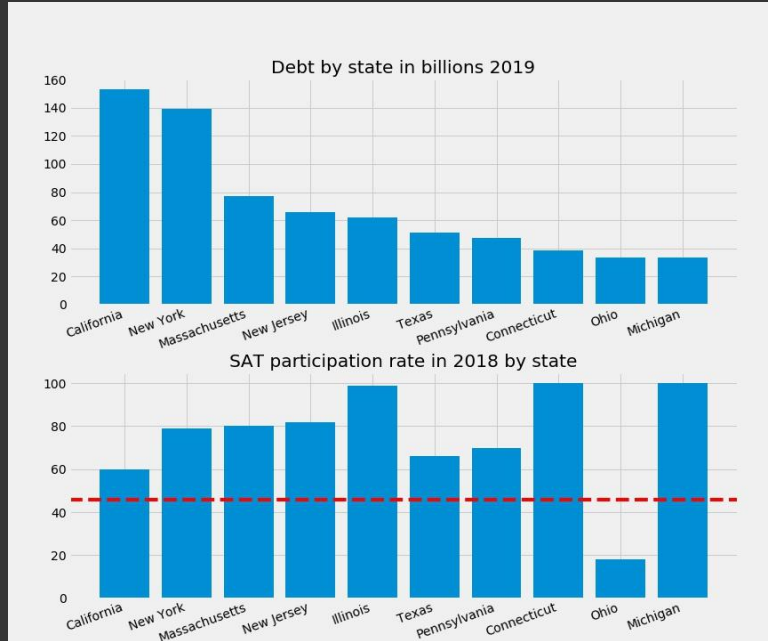
1. Validate data given with external sources
2. Import and cleanse/fix data given
3. Analyze and visualize data using charts and statistics to uncover trends and key findings
4. Using evidence from sample data, our key findings, and outside research, we'll derive and present our recommendations

# Key Findings 1



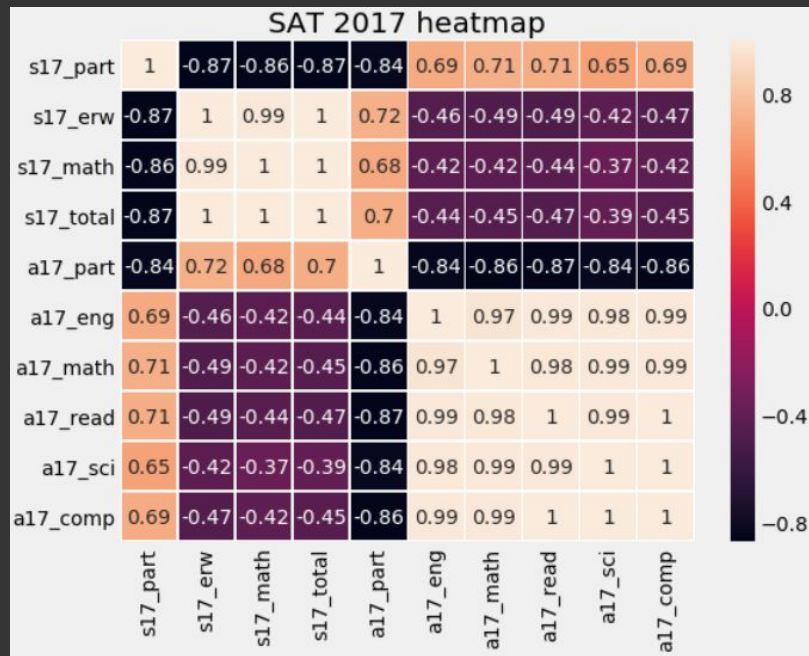
1. There appears to be **no relationship** between a state's present ACT participation rate and an increase in SAT participation rate the following year.
2. In fact, the states with the **greatest increase** in SAT participation rates, Illinois and Colorado, had ACT participation rates near 100%.

# Key Findings 2



3. From consulting outside sources, a common factor of **high debt and desire for cost savings** was found between the 3 states which most recently decided to switch from ACT to SAT.
4. From this, we decided to look for states with the high debt burdens and low SAT participation rates. **Ohio was chosen** based on these criteria.

# Key Problems



1. Verifying the dataset.
2. Many correlations between the data could not be used to predict future trends, as correlation does not equal causation.
3. The data given spans only one year, and thus inferences drawn from it may not be accurate in predicting future trends.



# Conclusion

1. Based on the fact that Ohio has a high debt load and low SAT participation rate, the **cost saving benefits to the state** of switching from ACT to SAT should be emphasized to education officials.
2. To further encourage the switch to the SAT, free tests should be offered to select schools which may be resistant to the idea to help **ease the pain of transition** and get students accustomed to the SAT.

# Outside sources

1. Illinois launched a competitive process for a new contract, which the SAT won with a proposal that was \$1.37 million less than the ACT over three years. - <https://www.nbcchicago.com>
2. Colorado cites cost savings as one of the reasons it switched from ACT to SAT. - <https://www.coloradokids.org>
3. Michigan's switch to SAT lowered costs for the state. - <https://www.mlive.com>
4. Data for debt load of US states. - <https://www.worldatlas.com/articles/us-states-with-the-most-debt.html>