

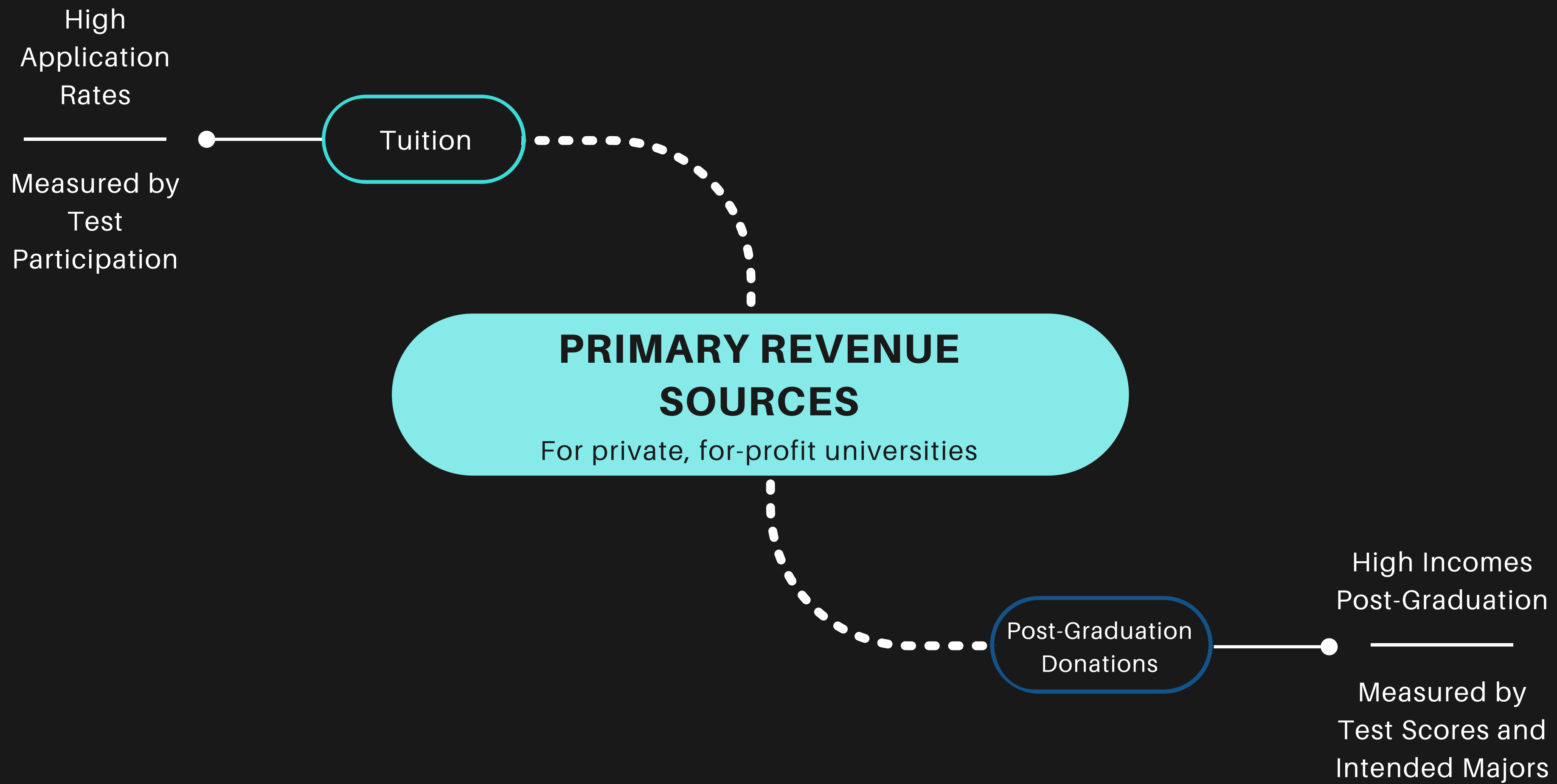
# DATA SCIENCE - UNIVERSITY MARKET RESEARCH

Using SAT / ACT Data  
Joshua Lin

# Narrowing down an effective target market

## **PROBLEM STATEMENT**

A university's bottom line metric is revenue, primarily dictated by tuition. This project aims to use SAT and ACT data to find the optimal target demographics so that universities can reevaluate the targeting in their marketing strategies, thus resulting in maximizing revenues.



# ASSUMPTIONS

```
graph LR; A[ASSUMPTIONS] --- B[The Largest Revenue Stream for a University is Tuition]; A --- C[Higher Scores = Higher Future Income Potential]; A --- D[Test Participation = Intent to Apply to Universities]; A --- E[Effective Targeting = Effective Marketing Spend];
```

The Largest  
Revenue  
Stream for a  
University is  
Tuition

Higher Scores =  
Higher Future  
Income Potential

Test Participation =  
Intent to Apply to  
Universities

Effective  
Targeting =  
Effective  
Marketing Spend

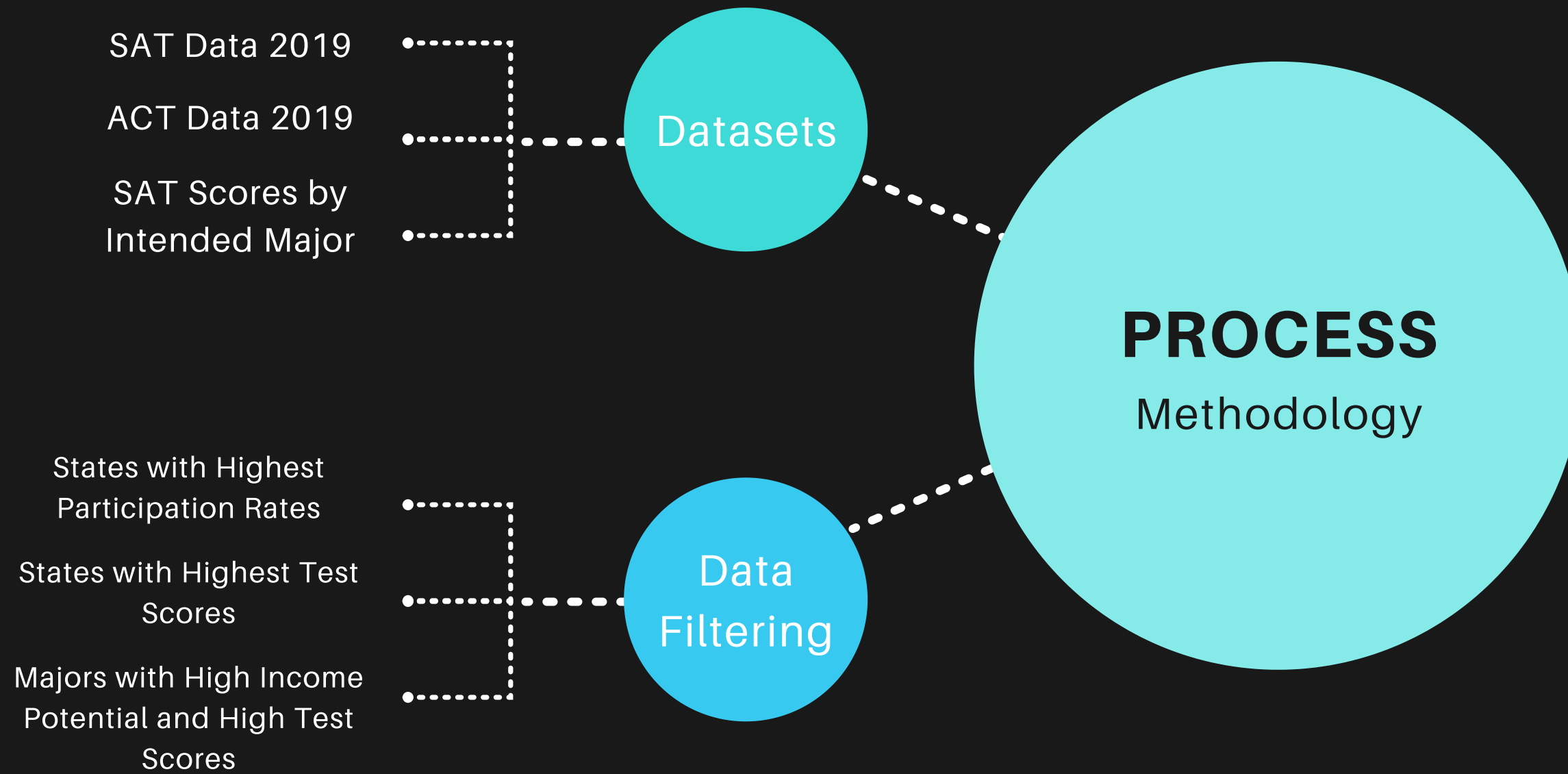
SAT Data 2019

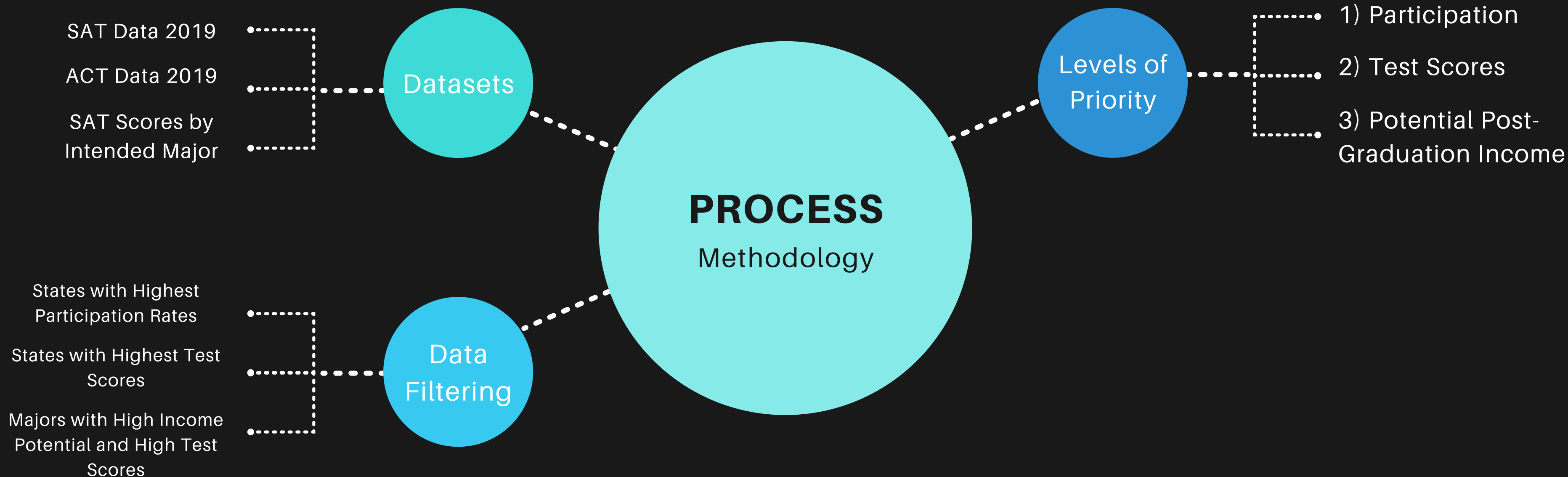
ACT Data 2019

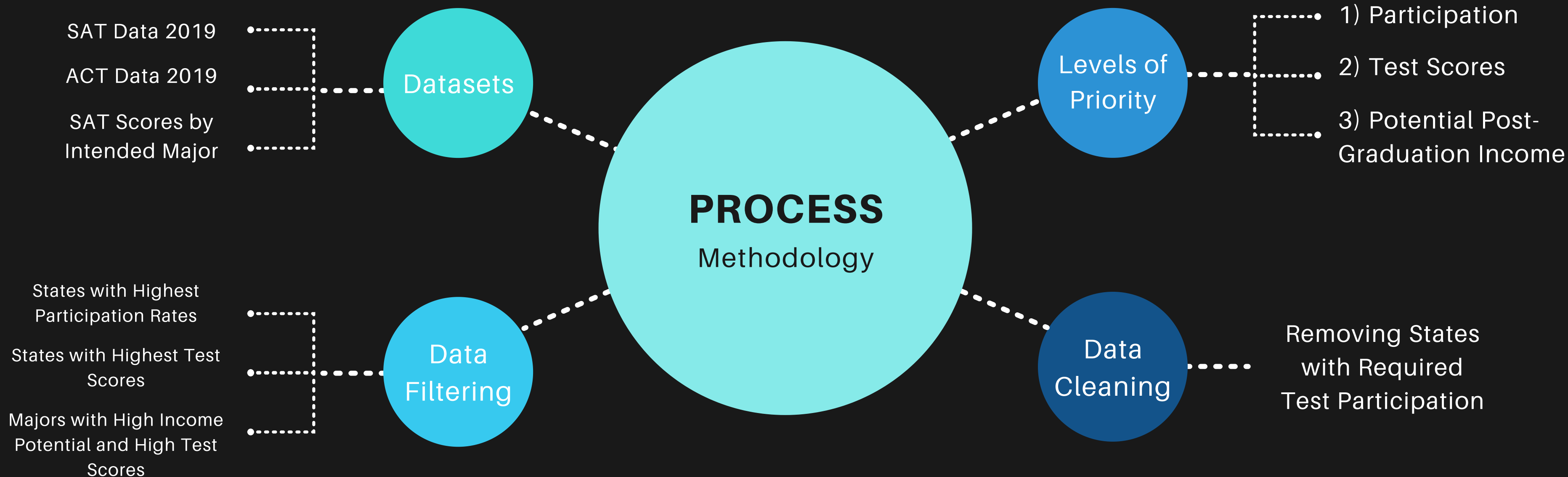
SAT Scores by  
Intended Major

Datasets

**PROCESS**  
Methodology









# Primary Findings

## ACT Findings:

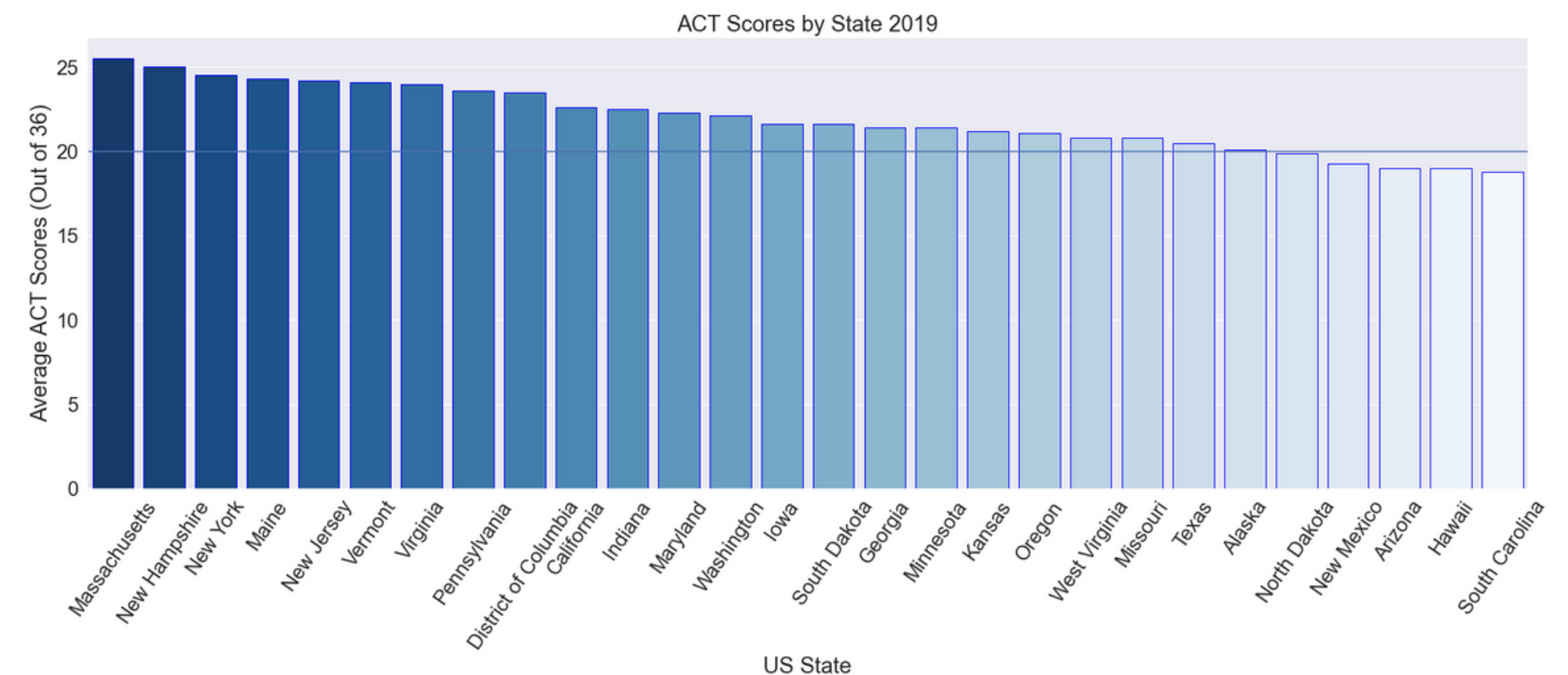
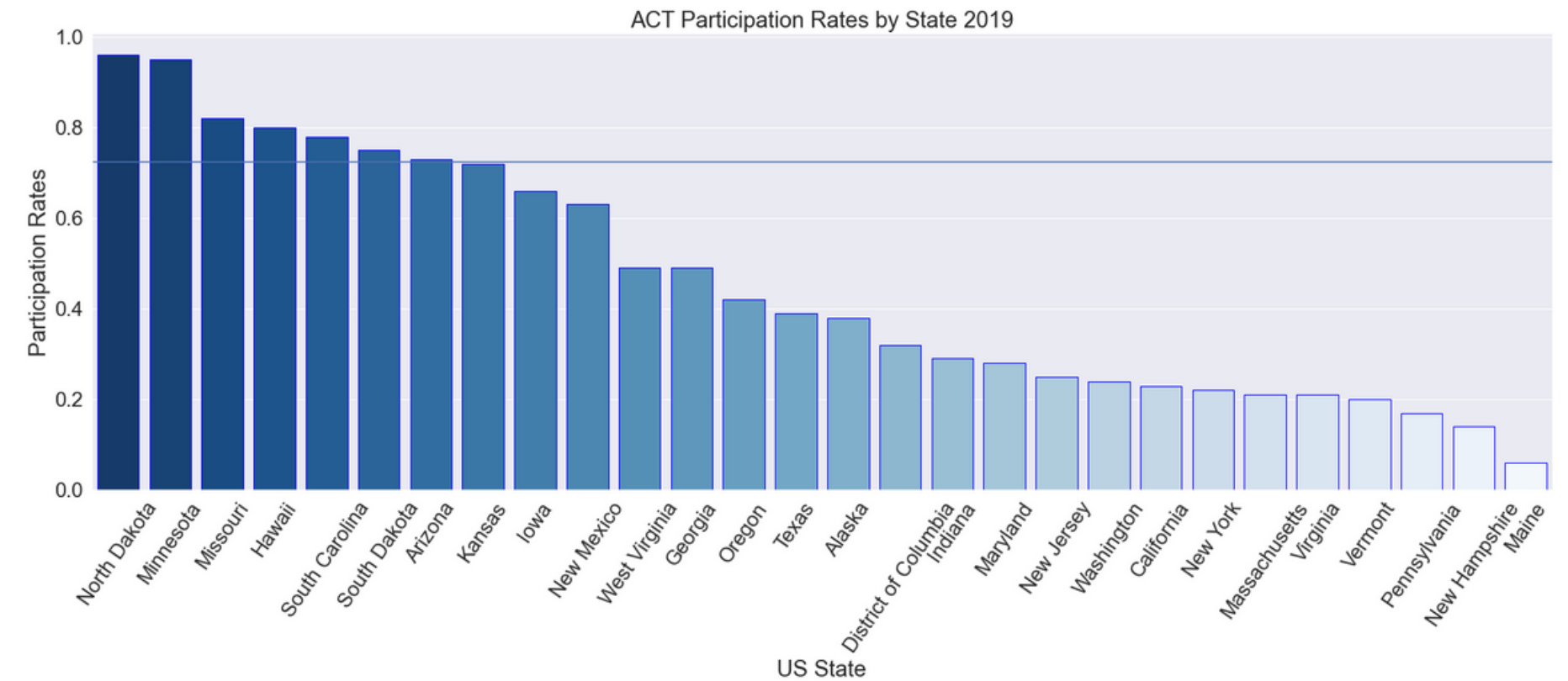
States with Highest ACT Participation and Scores:

- Minnesota
- Missouri, and
- South Dakota

## Correlative Findings:

There is a negative correlation (-0.88) between the amount of students that participate in the SAT / ACT and the average scores in those states.

There is a negative correlation (-0.8) between the amount of students that participate in the SAT versus the ACT and vice versa.



# Primary Findings

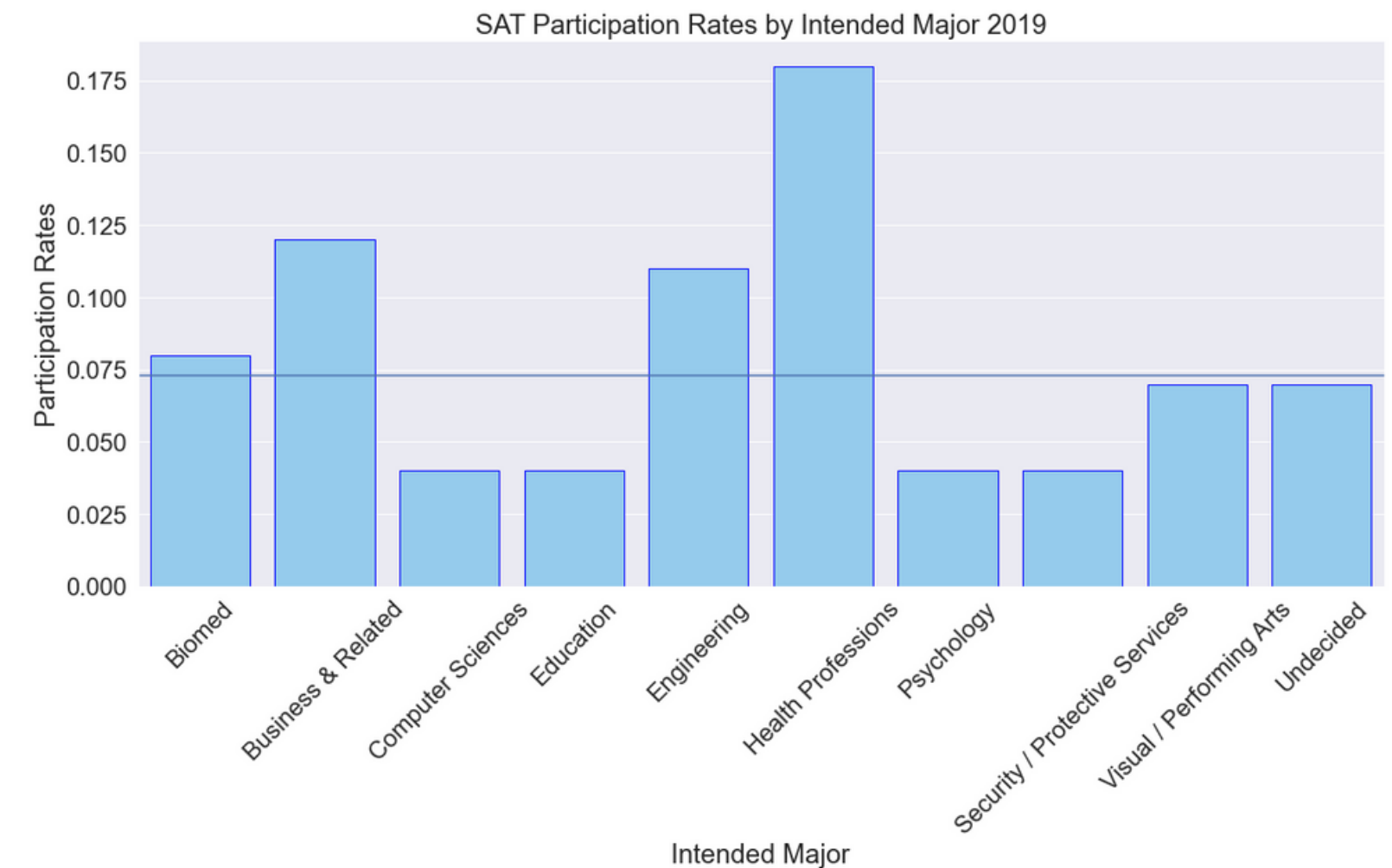
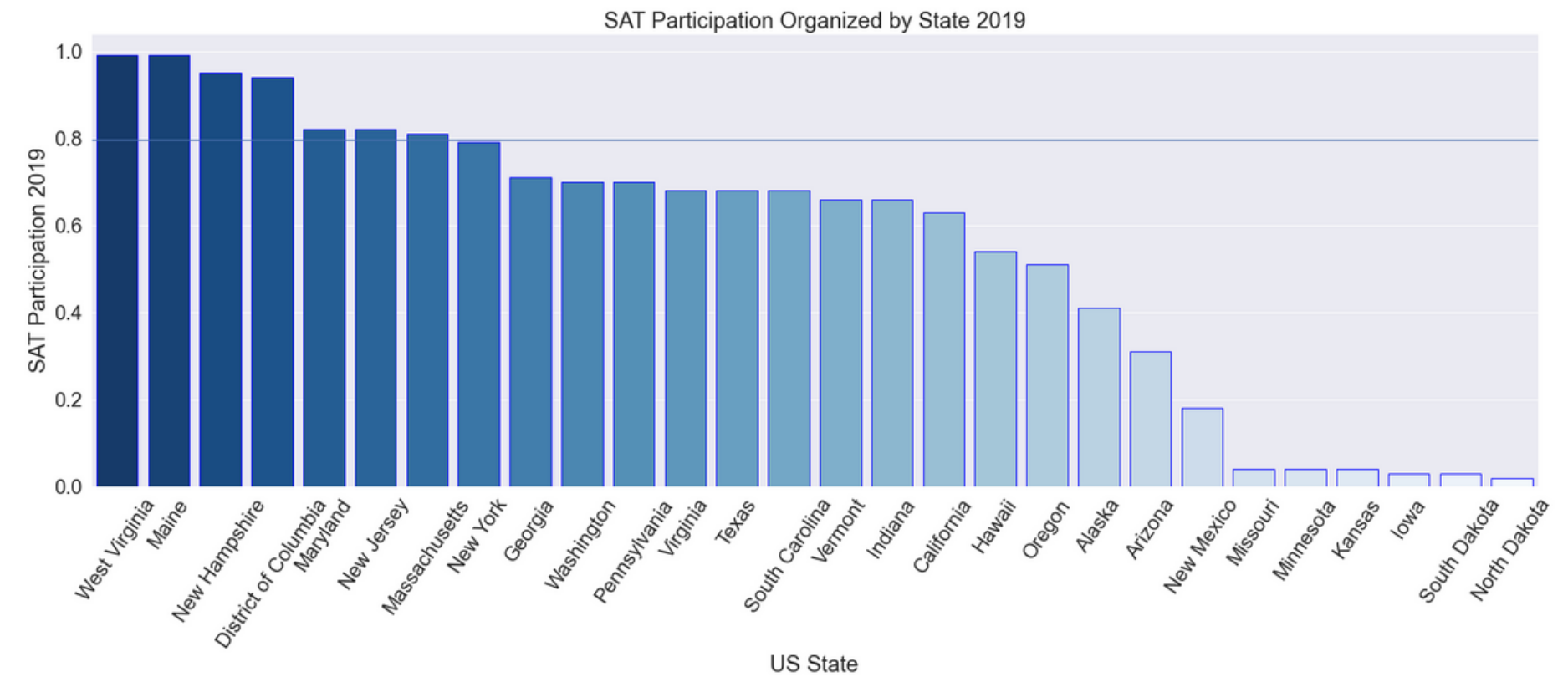
## SAT Findings:

States with Highest SAT Participation and Scores:

- Massachusetts
- New Jersey
- New Hampshire
- Maryland
- Maine

High-Earning Intended Majors with the Highest SAT Participation and Scores:

- Biological and Biomedical Sciences,
- Business, Management, Marketing, Related Studies, and
- Engineering



## STATE DEMOS TO TARGET

- Maine,
- New Hampshire,
- Maryland,
- New Jersey,
- Massachusetts,
- Minnesota,
- Missouri, and
- South Dakota

## INTENDED MAJORS TO TARGET

- Biological and Biomedical Sciences,
- Business, Management, Marketing, and Related Studies, and
- Engineering

# Conclusions and Recommendations

If a private for-profit university wants to maximize revenue through tuition and post-graduate donations, while optimizing marketing spend, the left classifications should be included and prioritized in the target demographic and incorporated into the existing marketing strategy.

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# Appendix

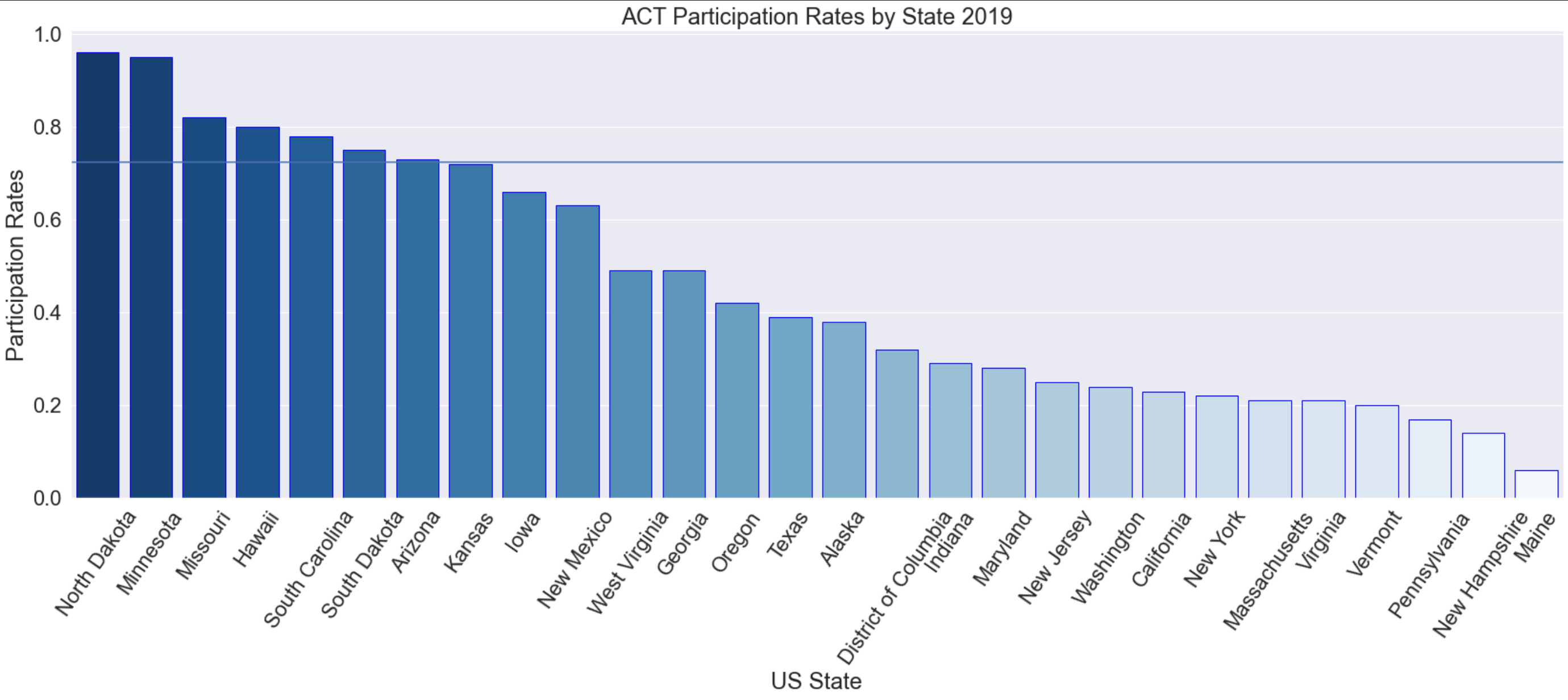


Fig. 1, ACT Participation Rates by State, Seperator at 0.75th Quartile

# Appendix

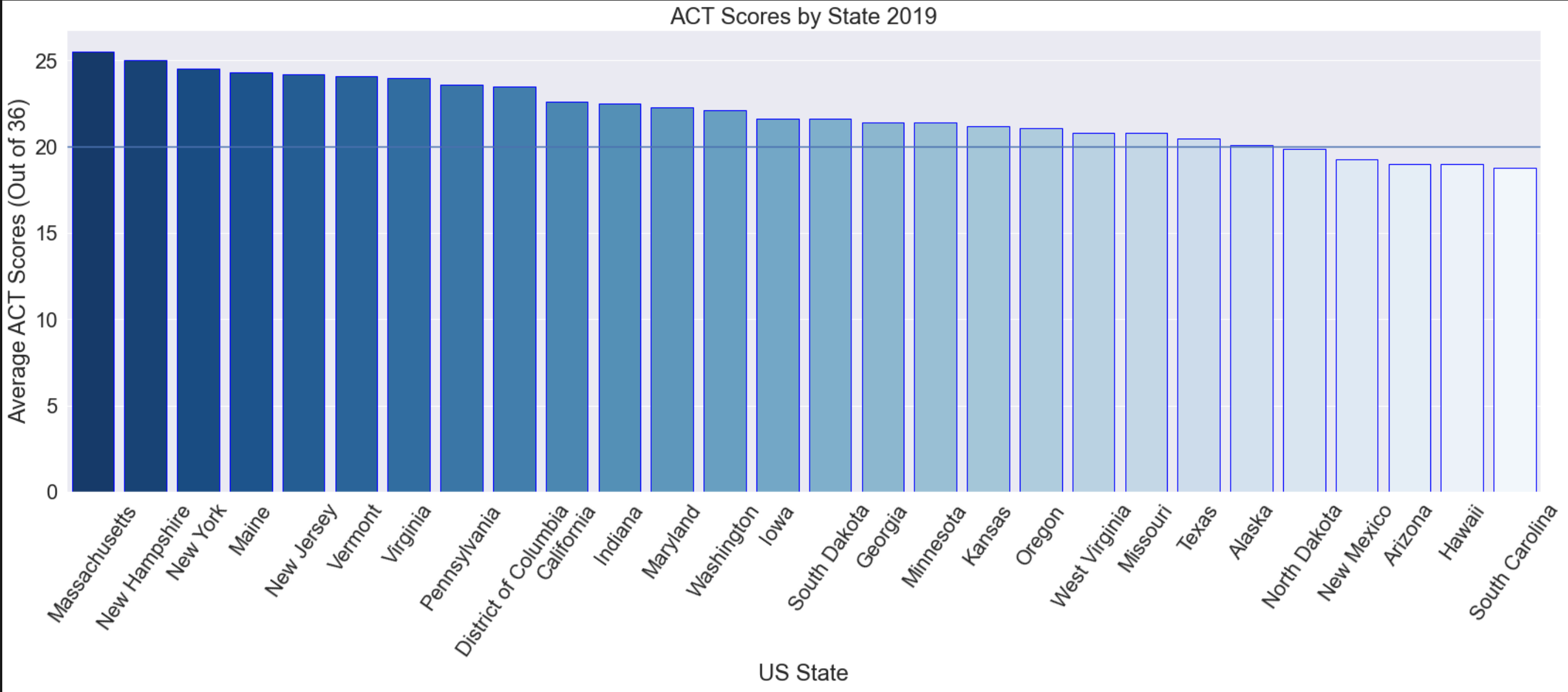


Fig. 2, ACT Scores by State, Separator at 20

# Appendix

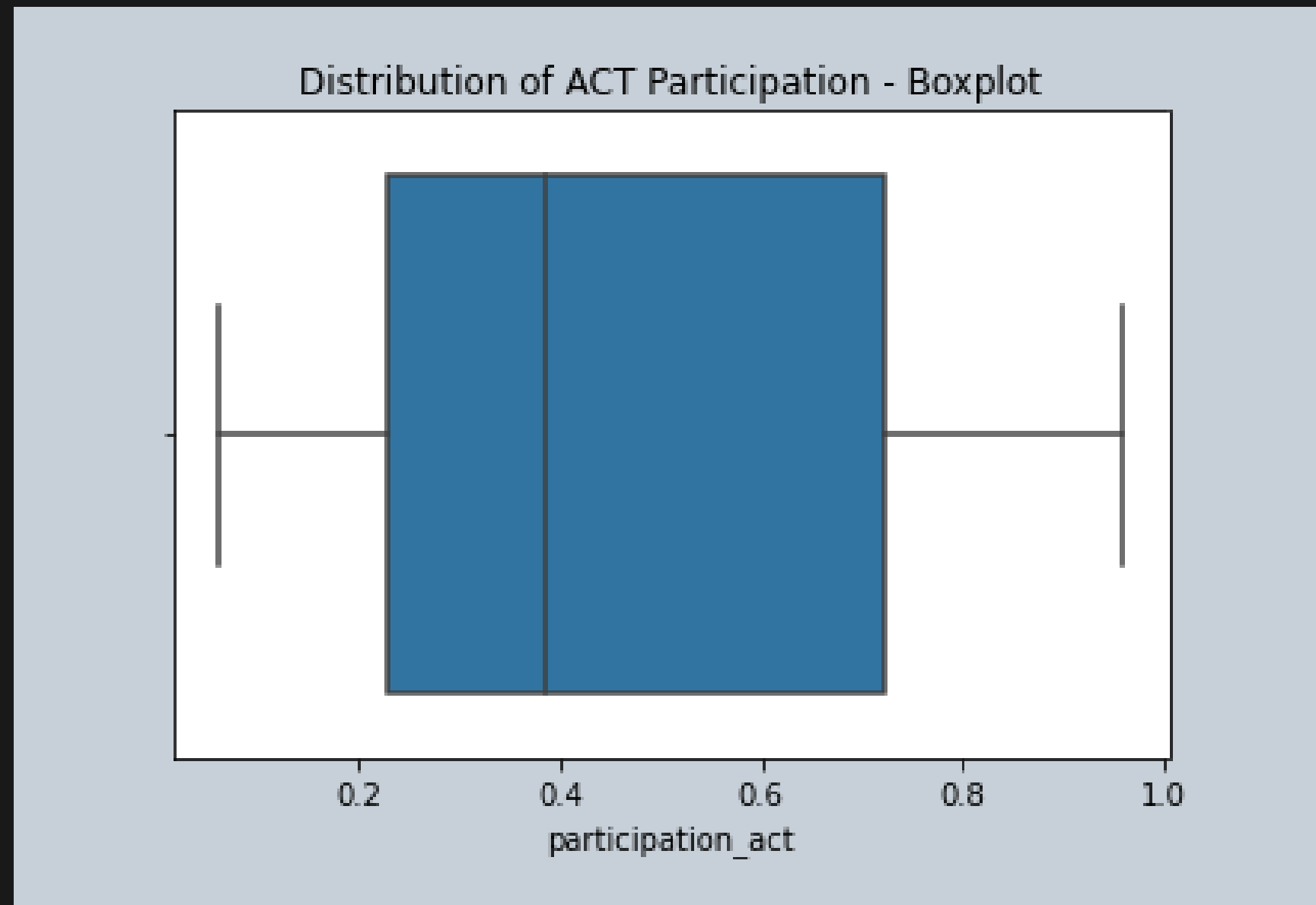


Fig. 3, ACT Participation Distribution / Boxplot

# Appendix

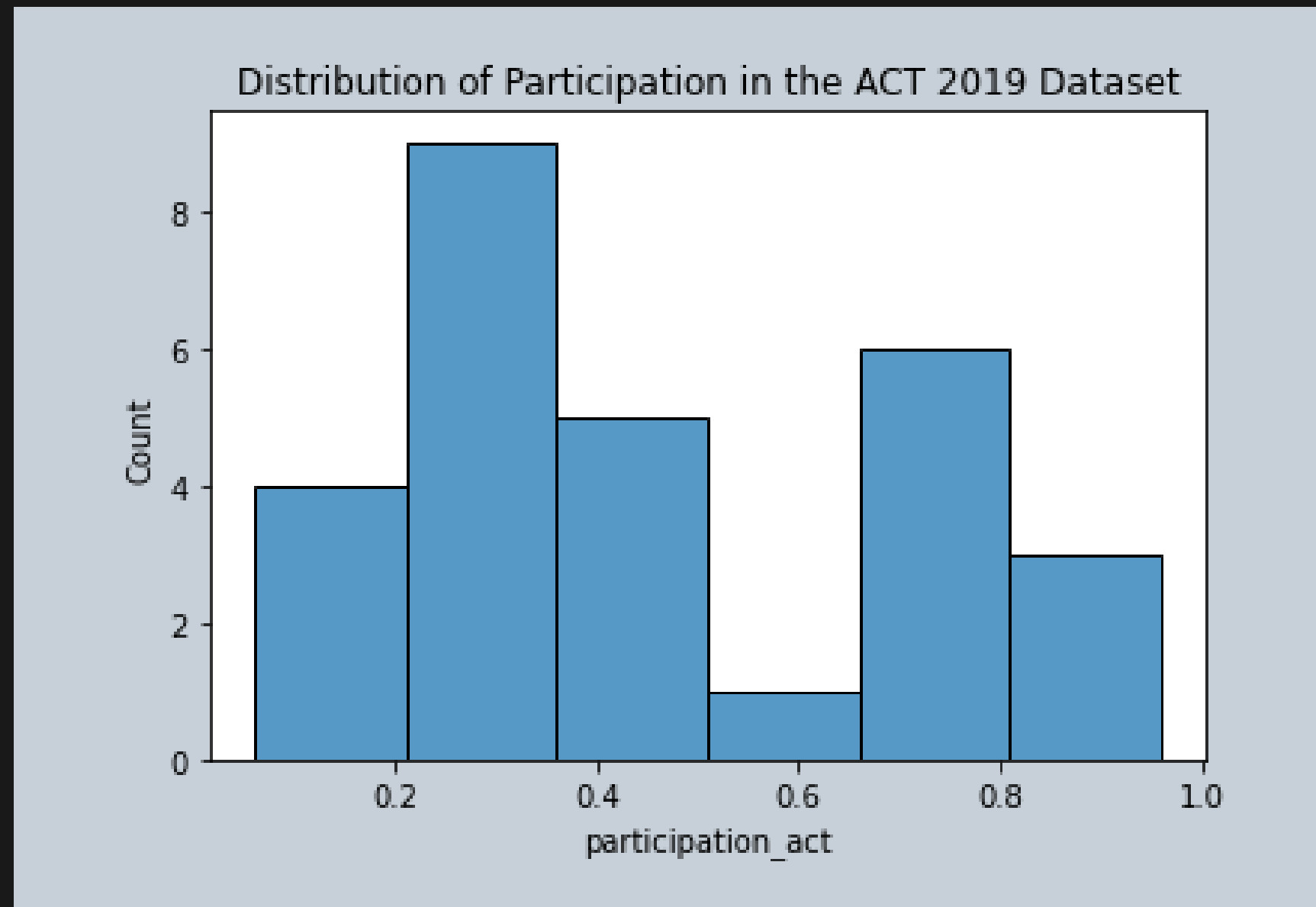


Fig. 3, ACT Participation Distribution / Histogram



# Appendix

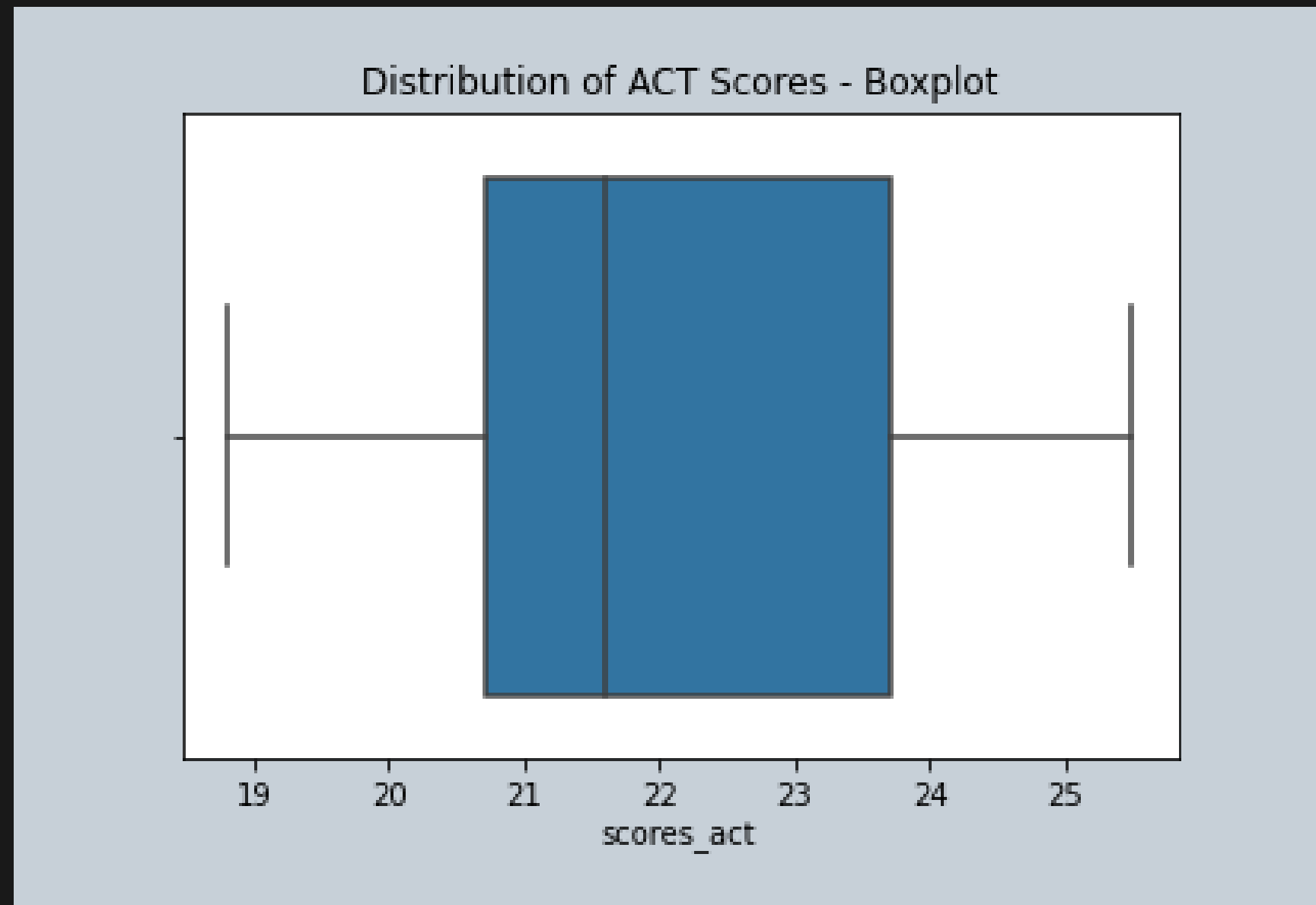


Fig. 5, ACT Scores Distribution / Boxplot

# Appendix

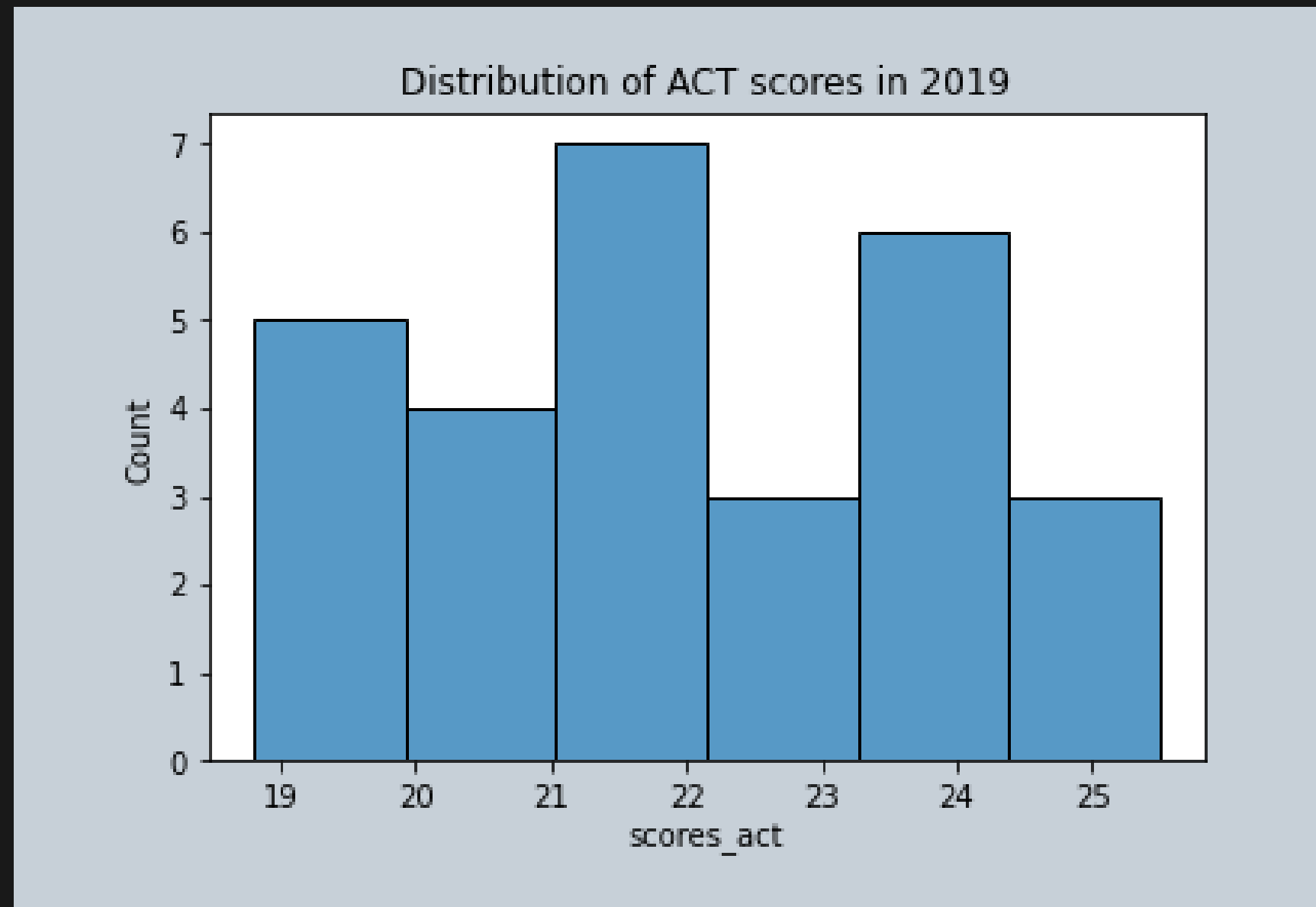


Fig. 6, ACT Scores Distribution / Histogram

# Appendix

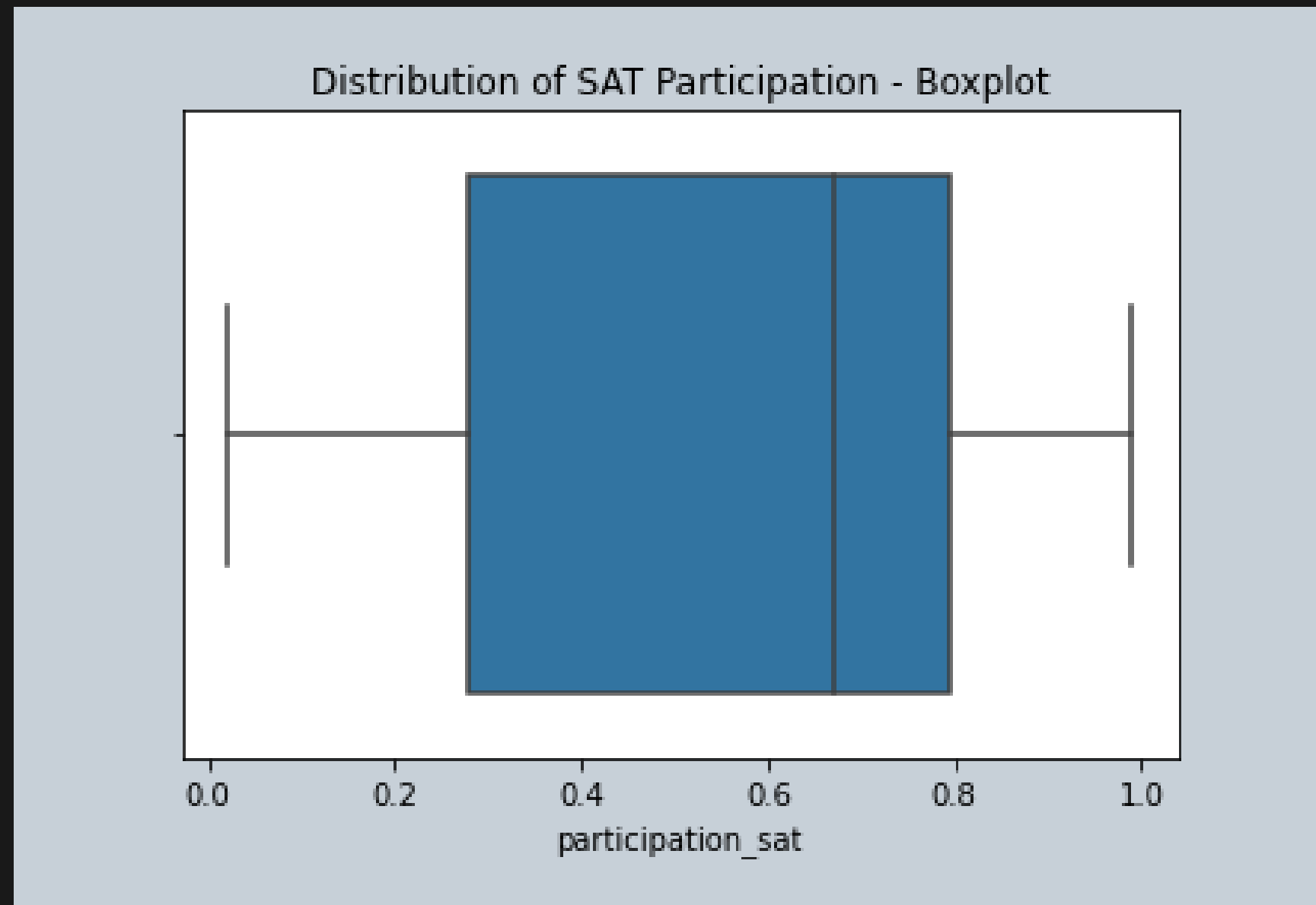


Fig. 7, SAT Participation Distribution / Boxplot

# Appendix

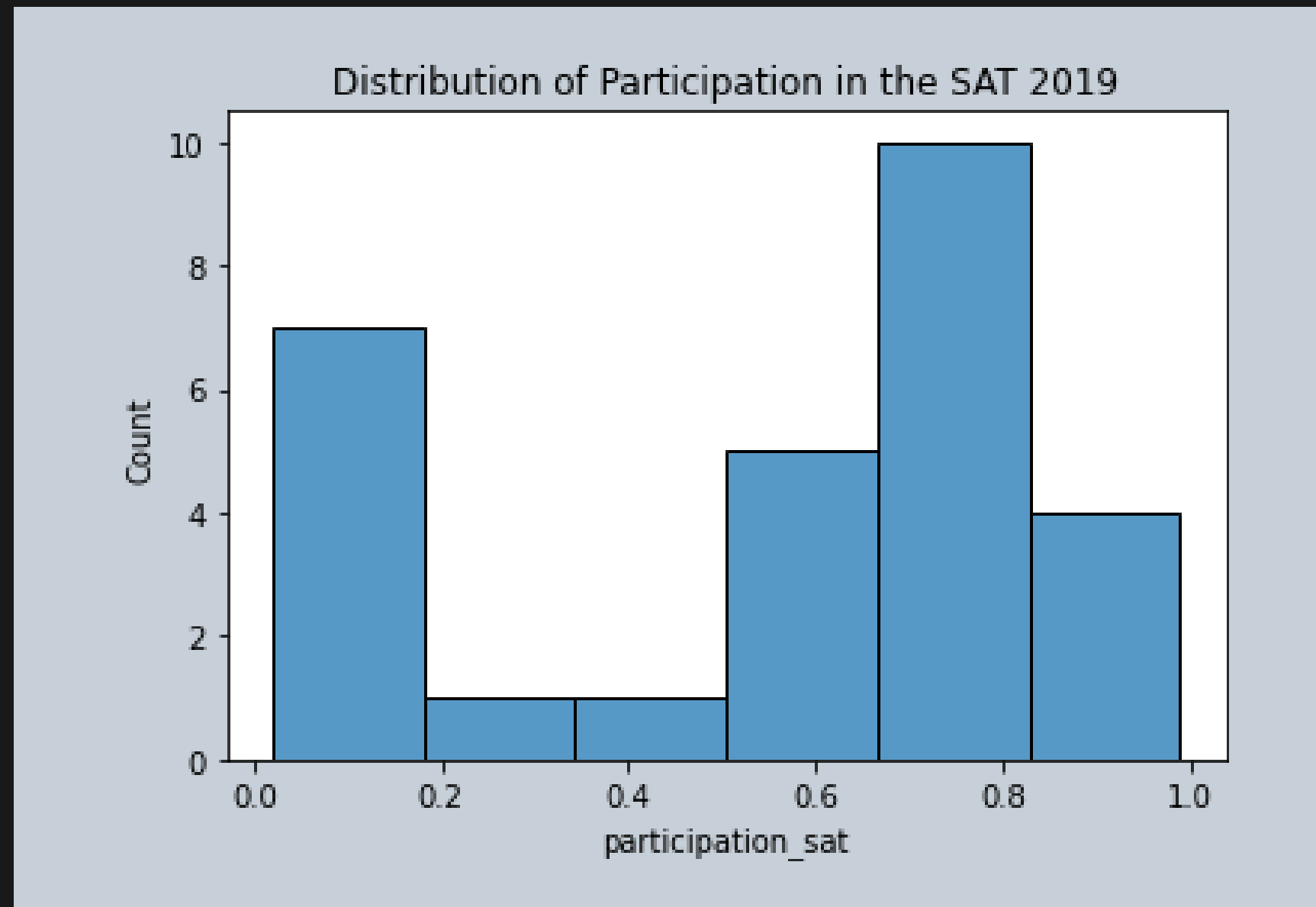


Fig. 8, SAT Participation Distribution / Histogram

# Appendix

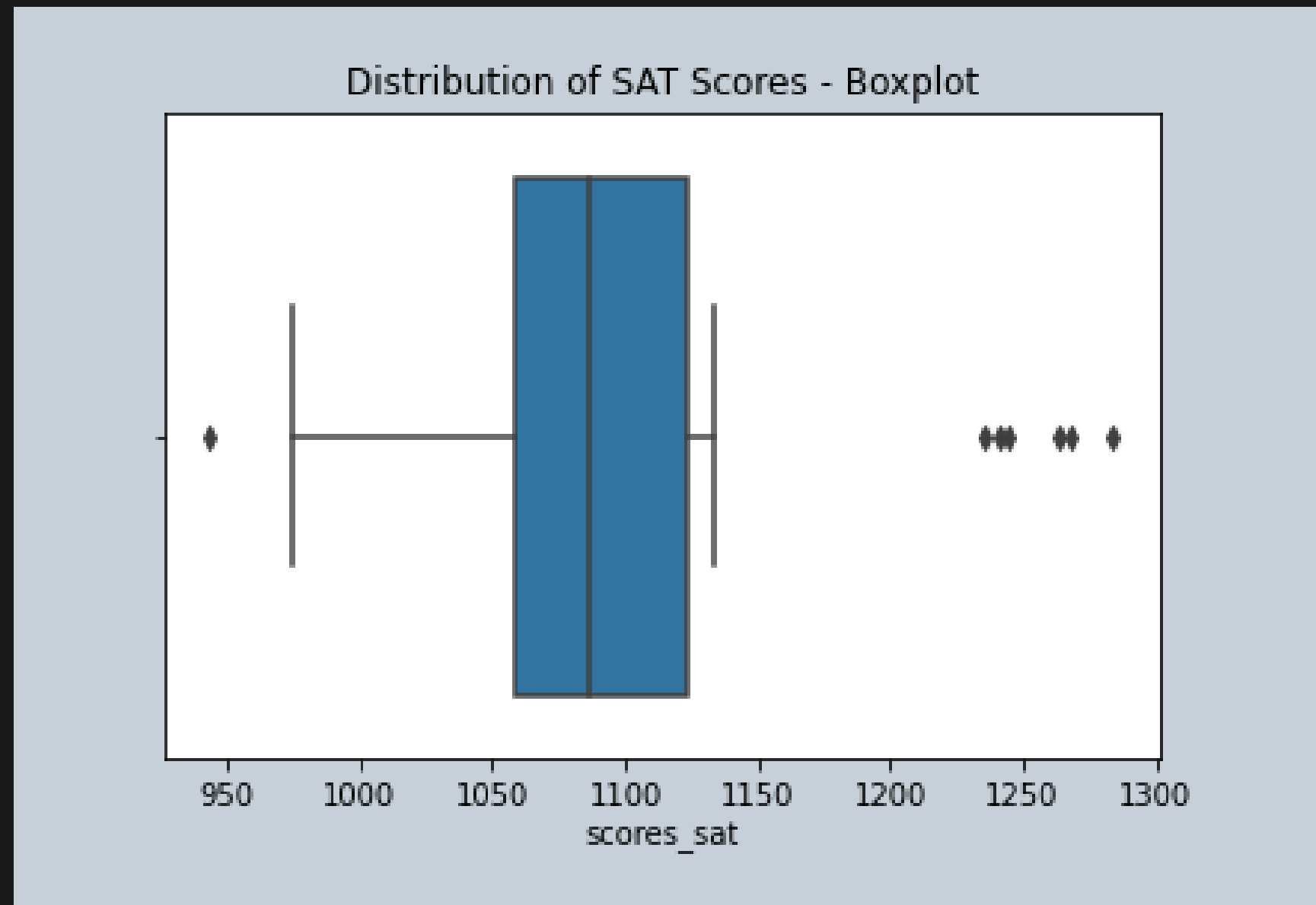


Fig. 9, SAT Scores Distribution / Boxplot

# Appendix

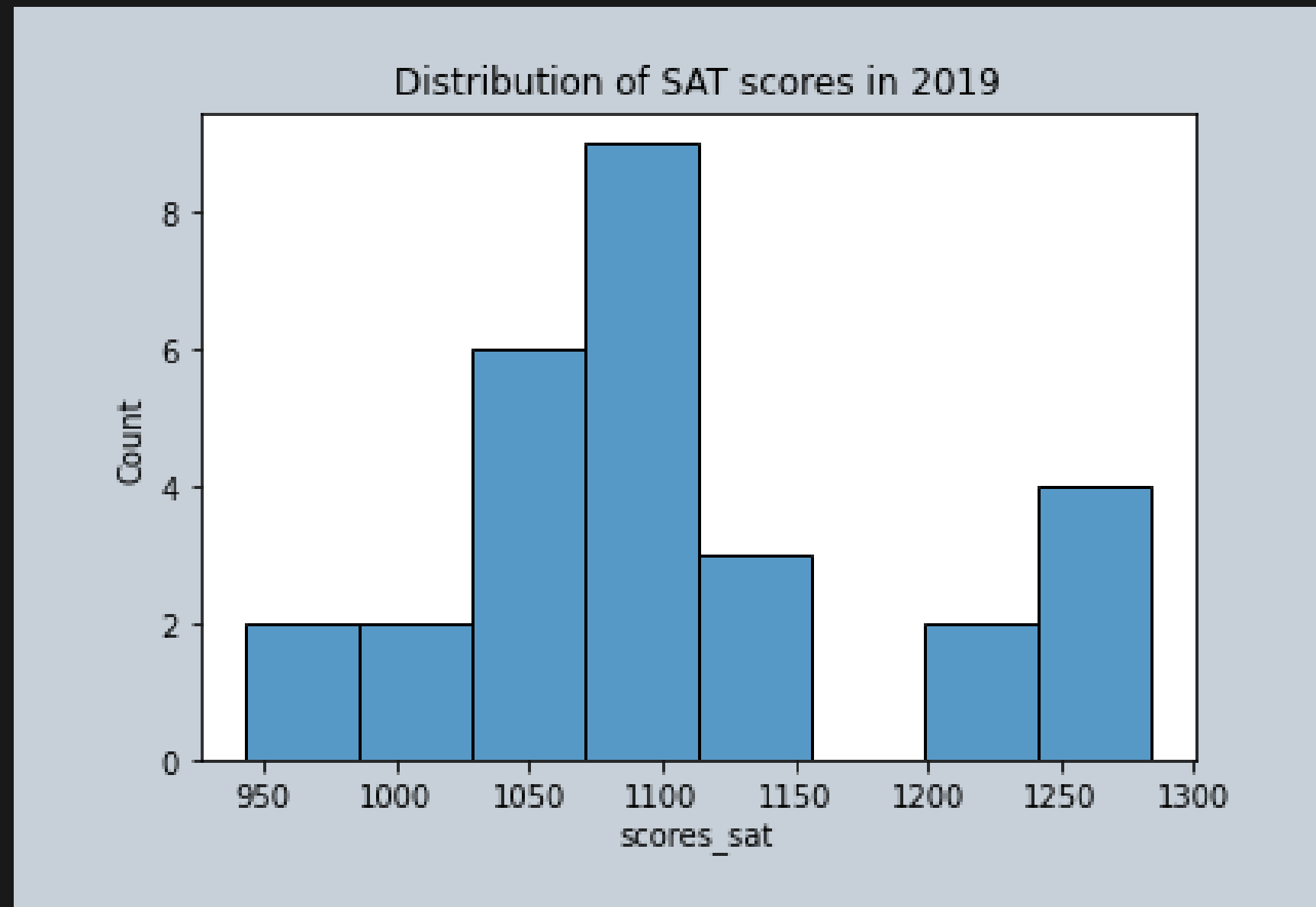


Fig. 10, SAT Scores Distribution / Histogram

# Appendix

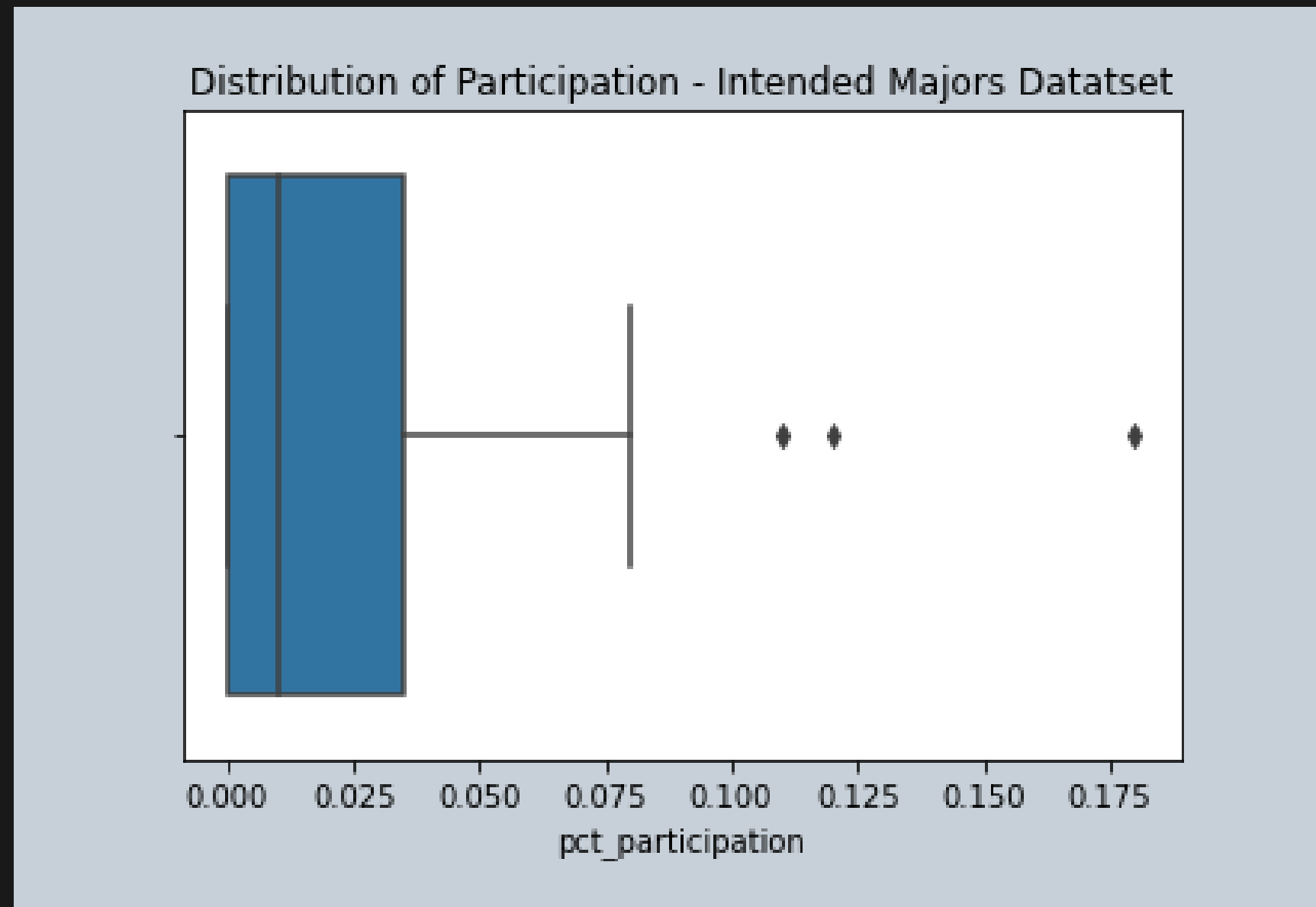


Fig. 11, SAT Participation Distribution by Intended Major / Boxplot

# Appendix

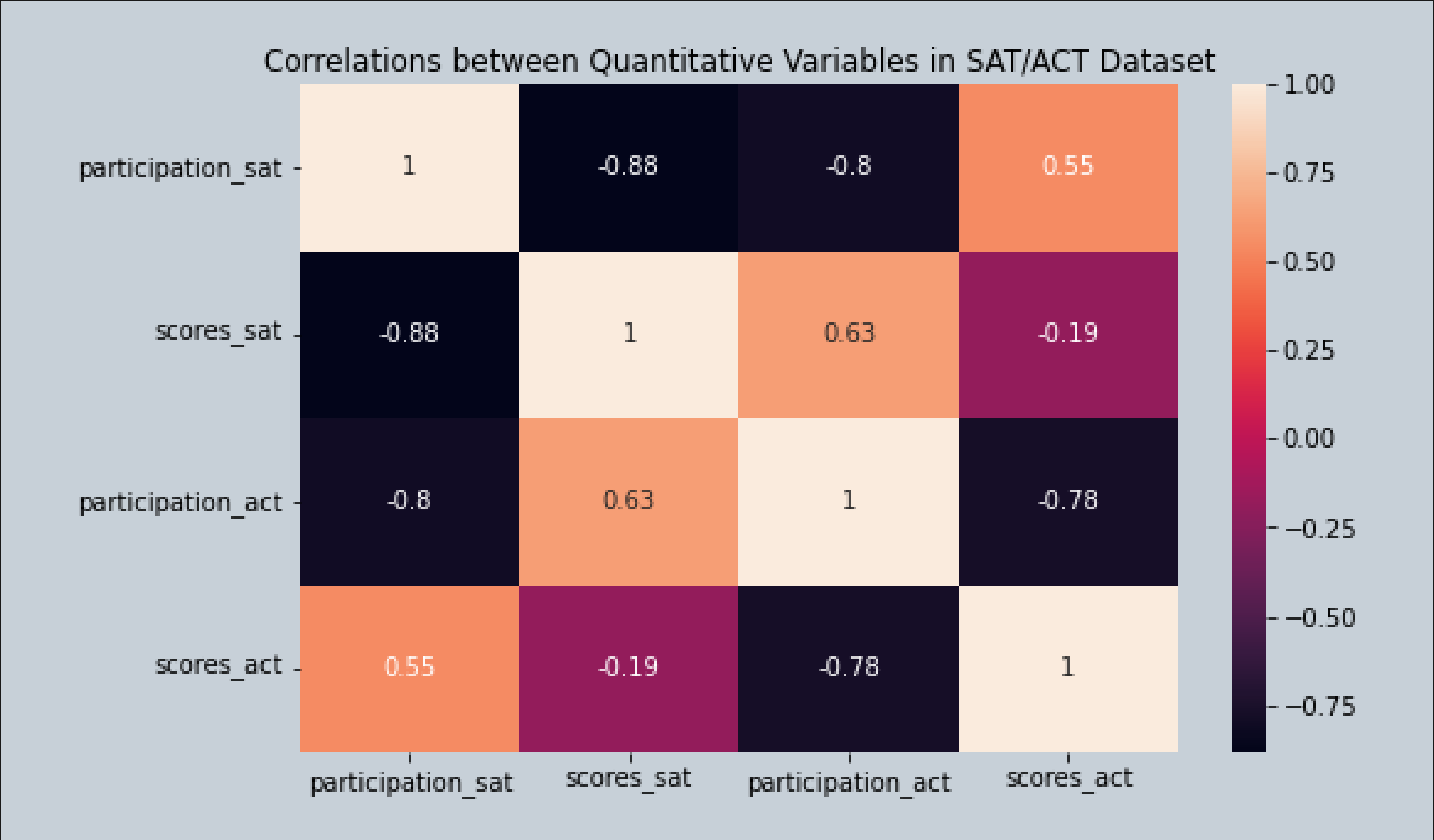


Fig. 12, SAT / ACT Quantitative Variables Correlations



# Appendix

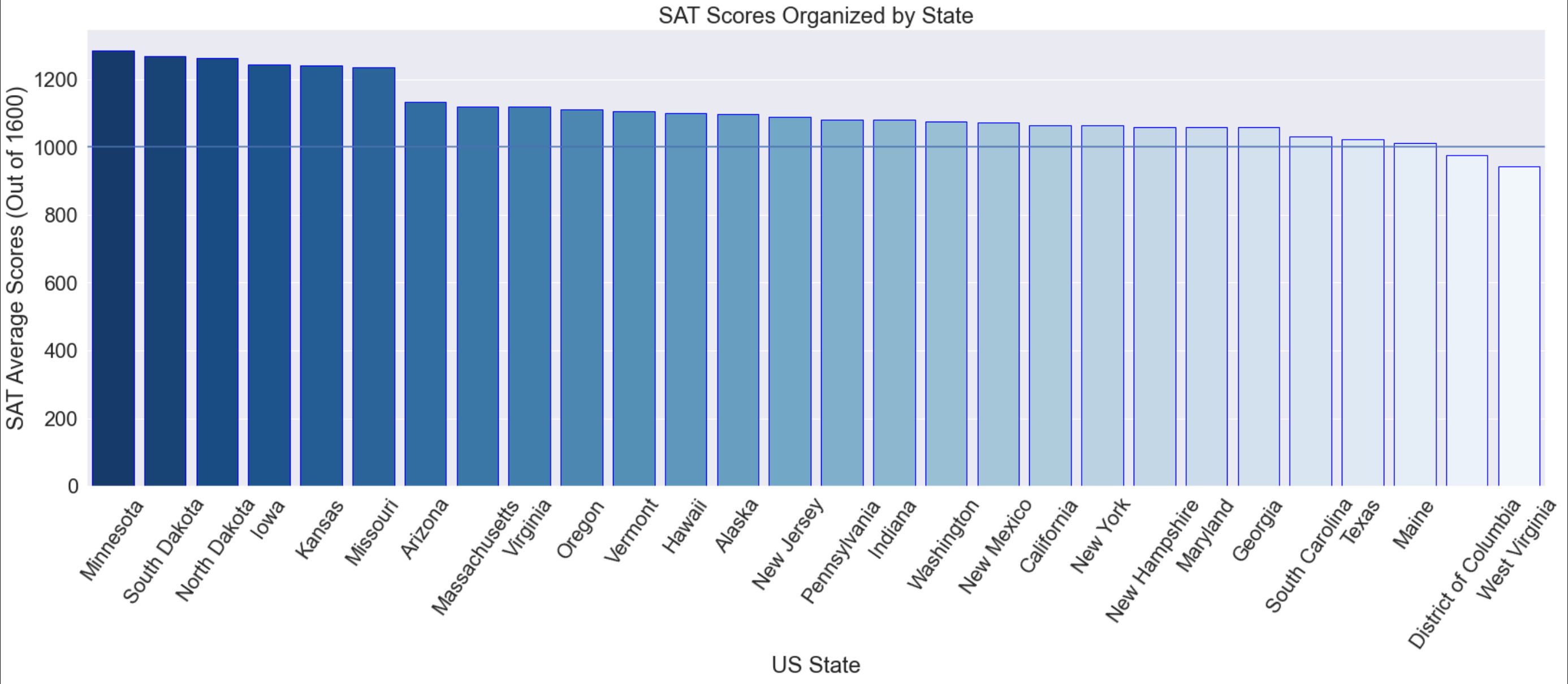


Fig. 13, SAT Average Scores by State, Barplot

# Appendix

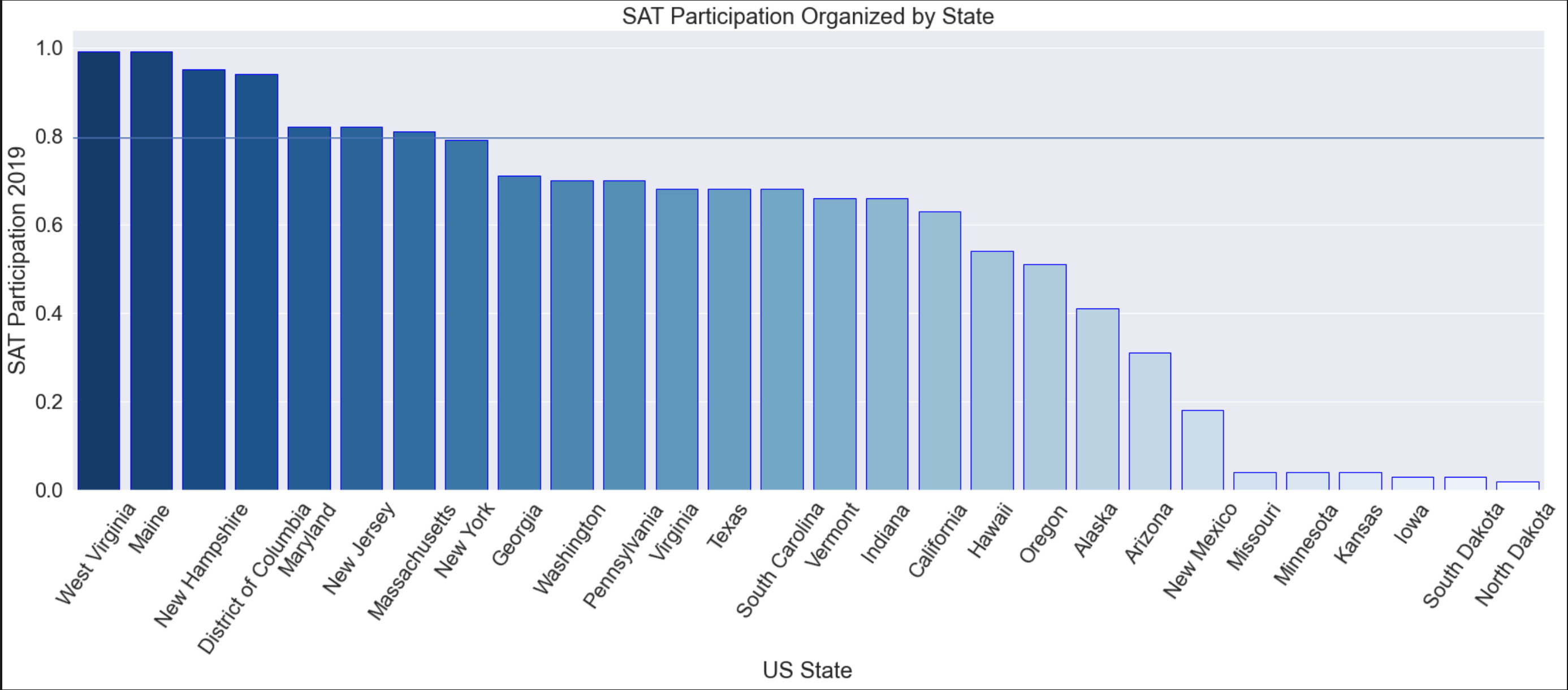


Fig. 14, SAT Participation Rates by State, Barplot

# Appendix

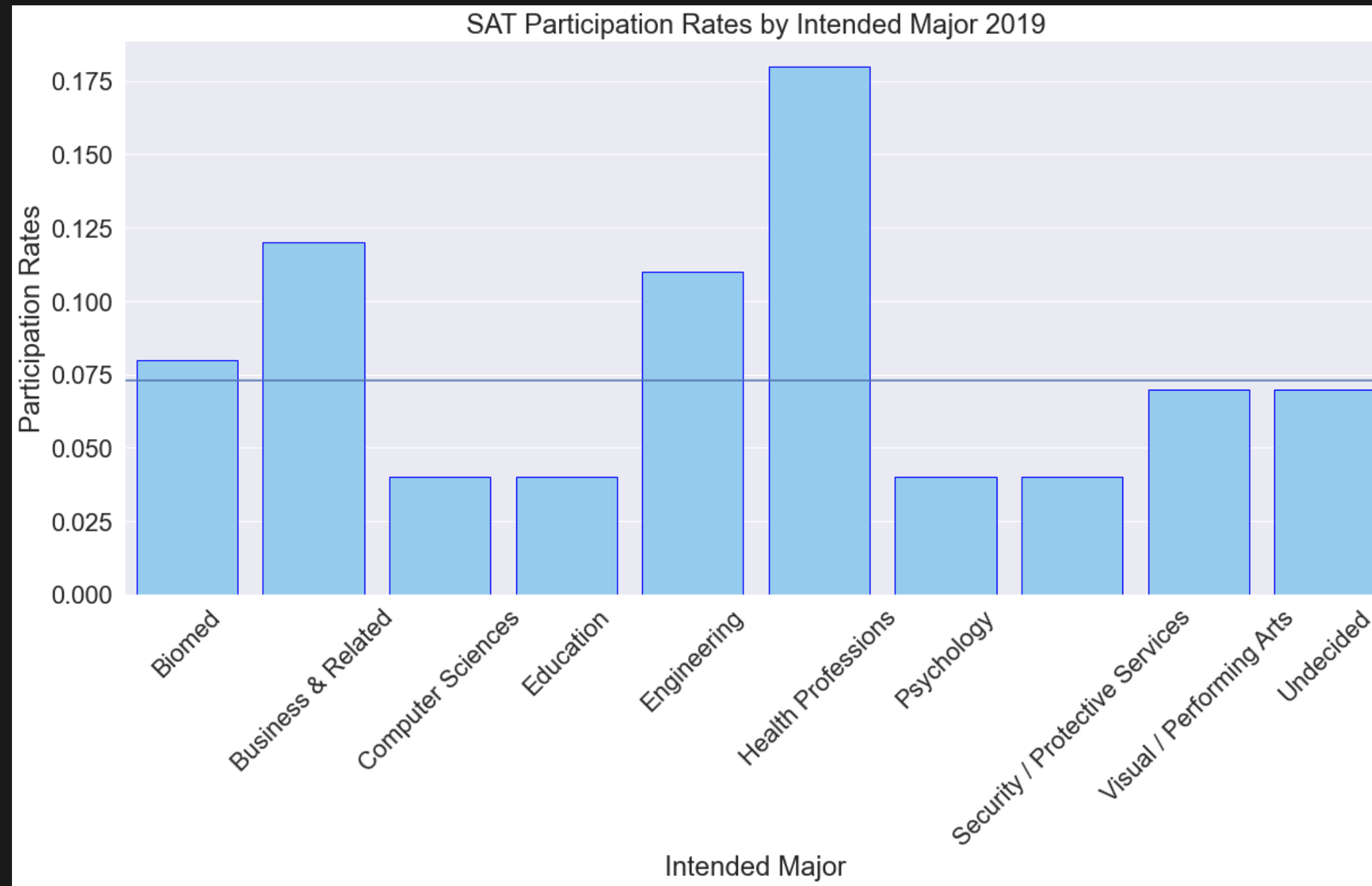


Fig. 15, SAT Participation Rates by Intended Major, Barplot

# Appendix

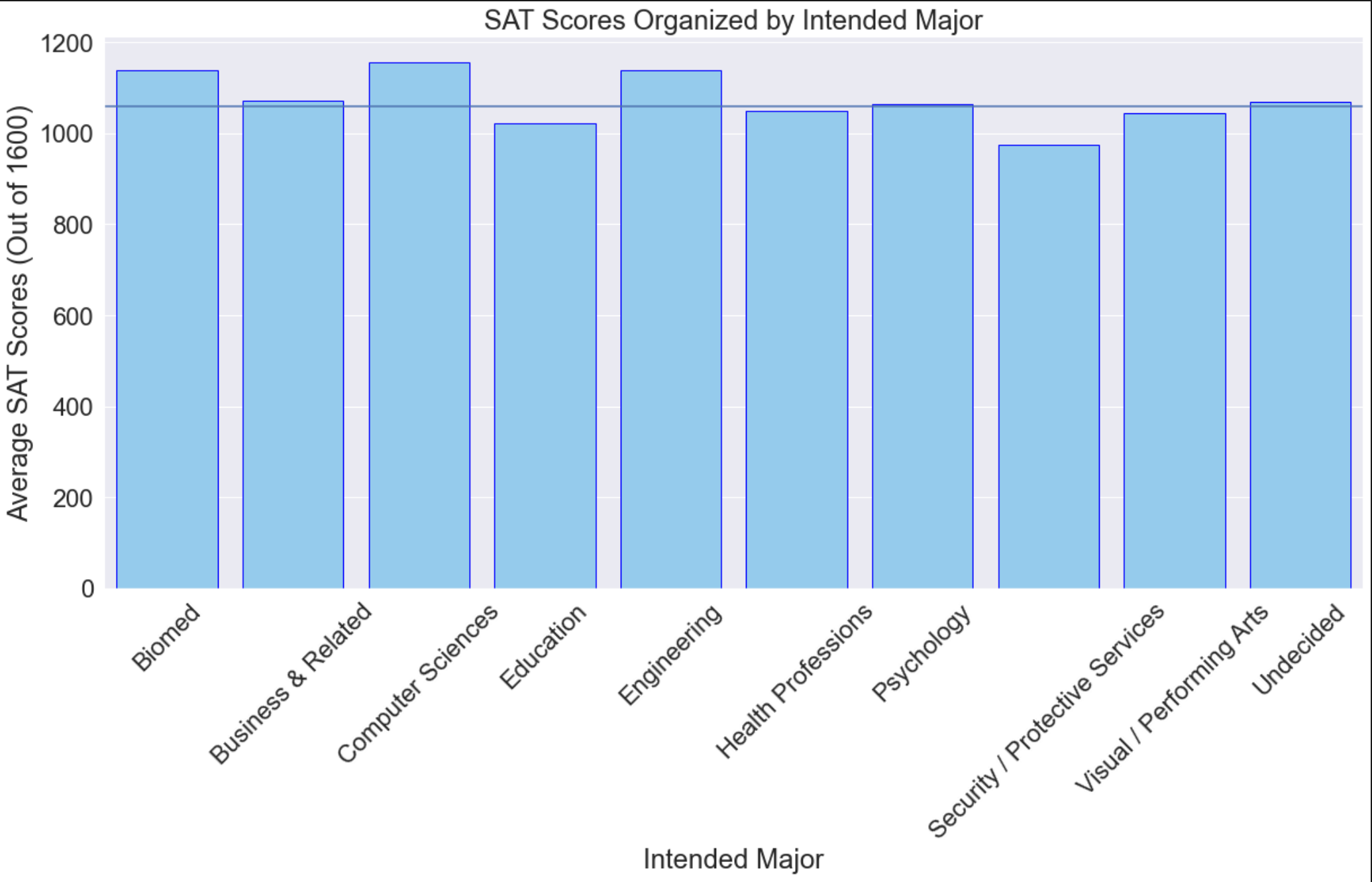


Fig. 16, SAT Scores by Intended Major, Barplot