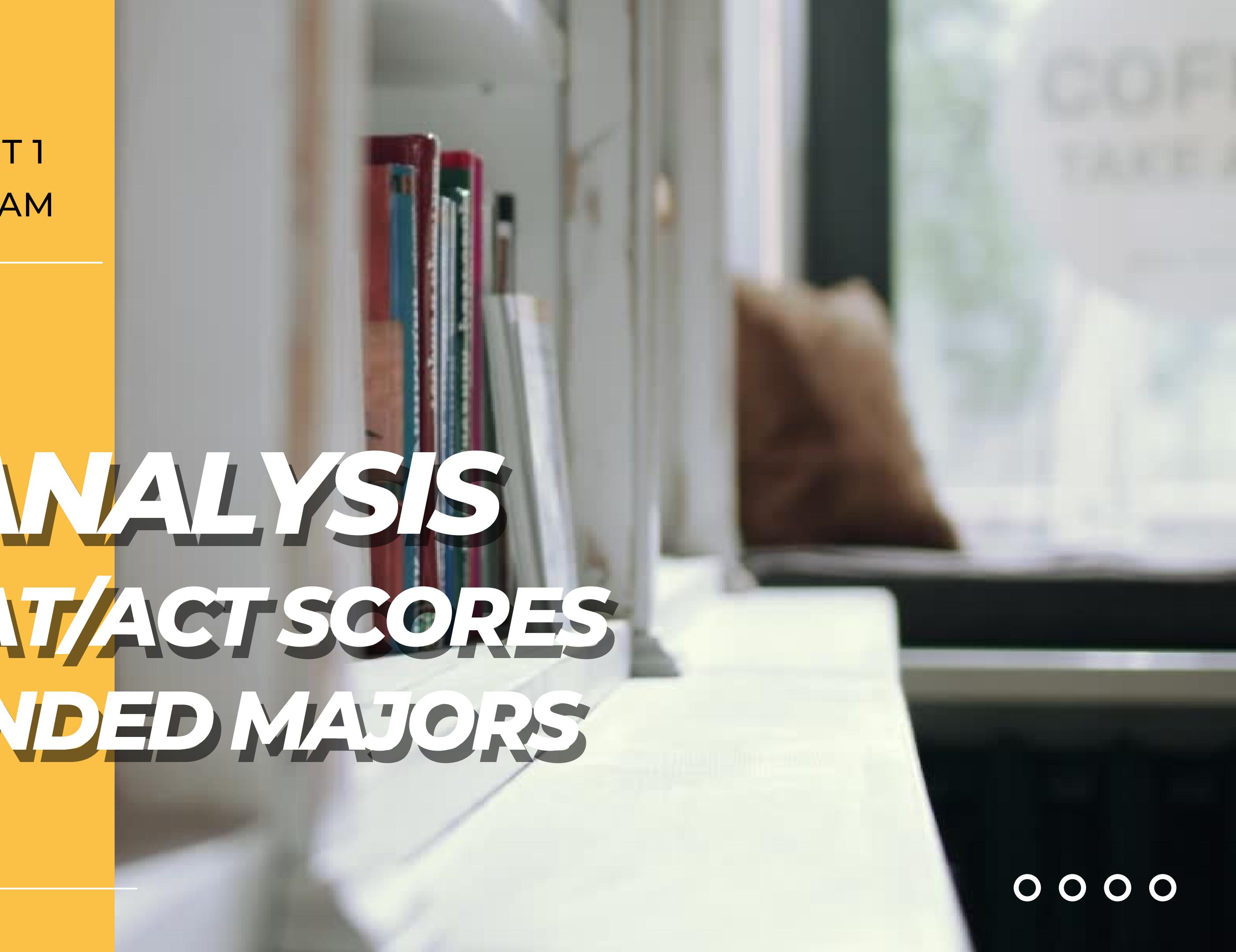


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DATA SCIENCE PROJECT 1
- BY CATHY KAM

DATA ANALYSIS OF 2019 SAT/ACT SCORES AND INTENDED MAJORS



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BACKGROUND & AIM

In 2019-20, 11 states used SAT School Day to measure student achievement under the Every Student Succeeds Act.

This project aims to evaluate the SAT/ACT performance of the states, highlight popular learning fields declared by the students and make relevant suggestions.



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PROBLEM STATEMENT

**1. Which state(s) and learning field(s)
should the Department of Education put
more resources in to make the students
stay competitive overall ?**



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DATASETS:

- **act_2019.csv**
- **sat_2019.csv**
- **sat_2019_by_intended_college_major.csv**



MY DATA ANALYSIS PROCEDURES

Exploratory Data Analysis



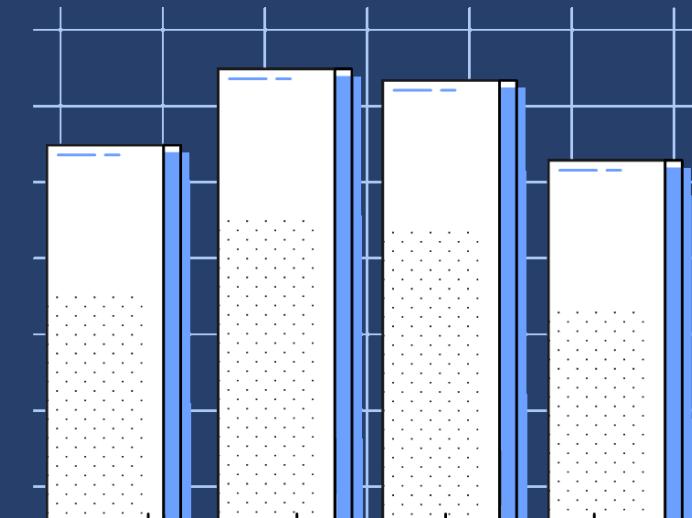
Conclusion / Suggestions



Data Cleaning



Visualization



TOP 3 STATES WITH HIGHEST AVERAGE 2019 SAT SCORE (RANGES FROM 1263 - 1284)



STATES WITH °°°°° LOWEST AVERAGE 2019 SAT SCORE (RANGES FROM 943 - 985)

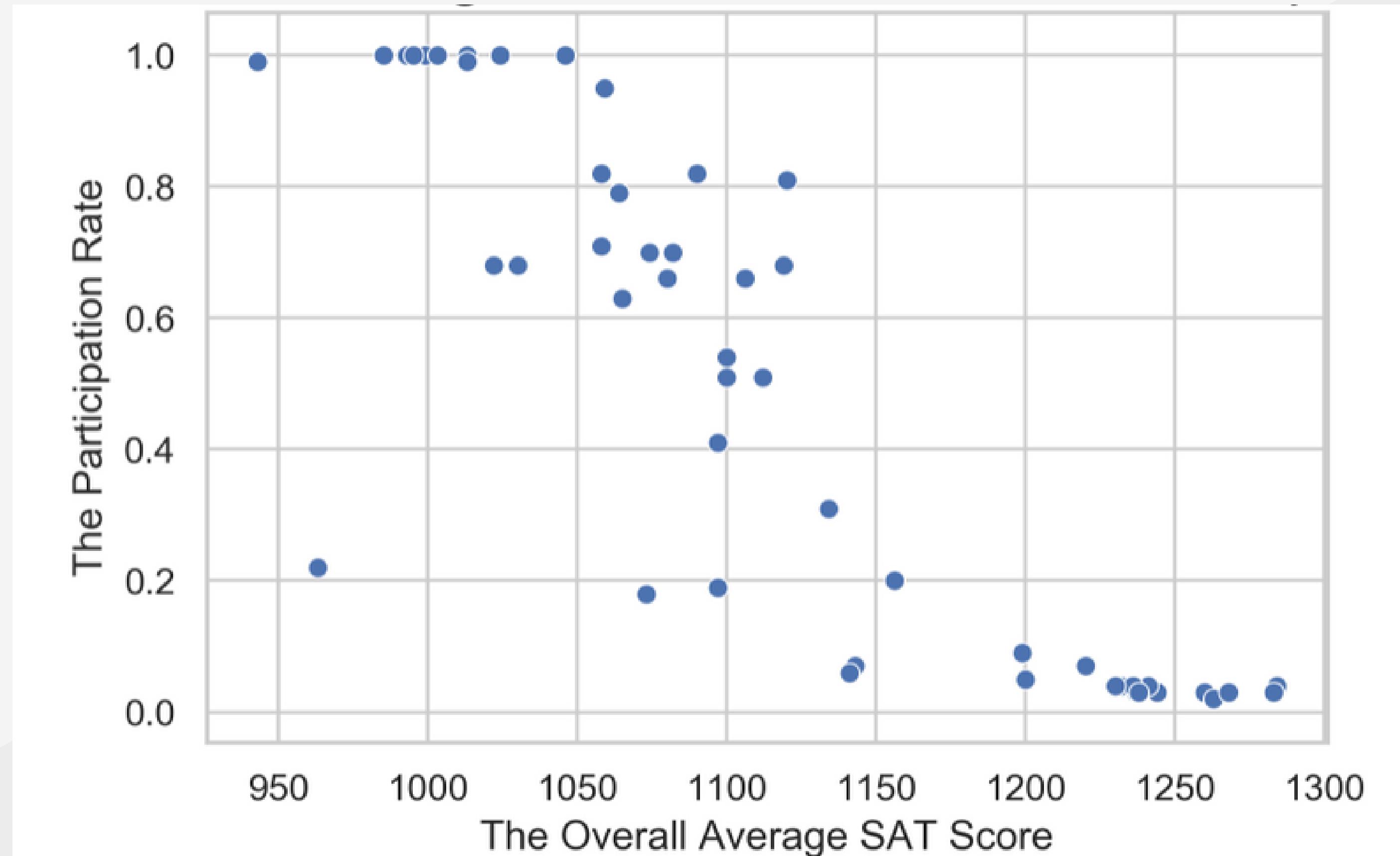




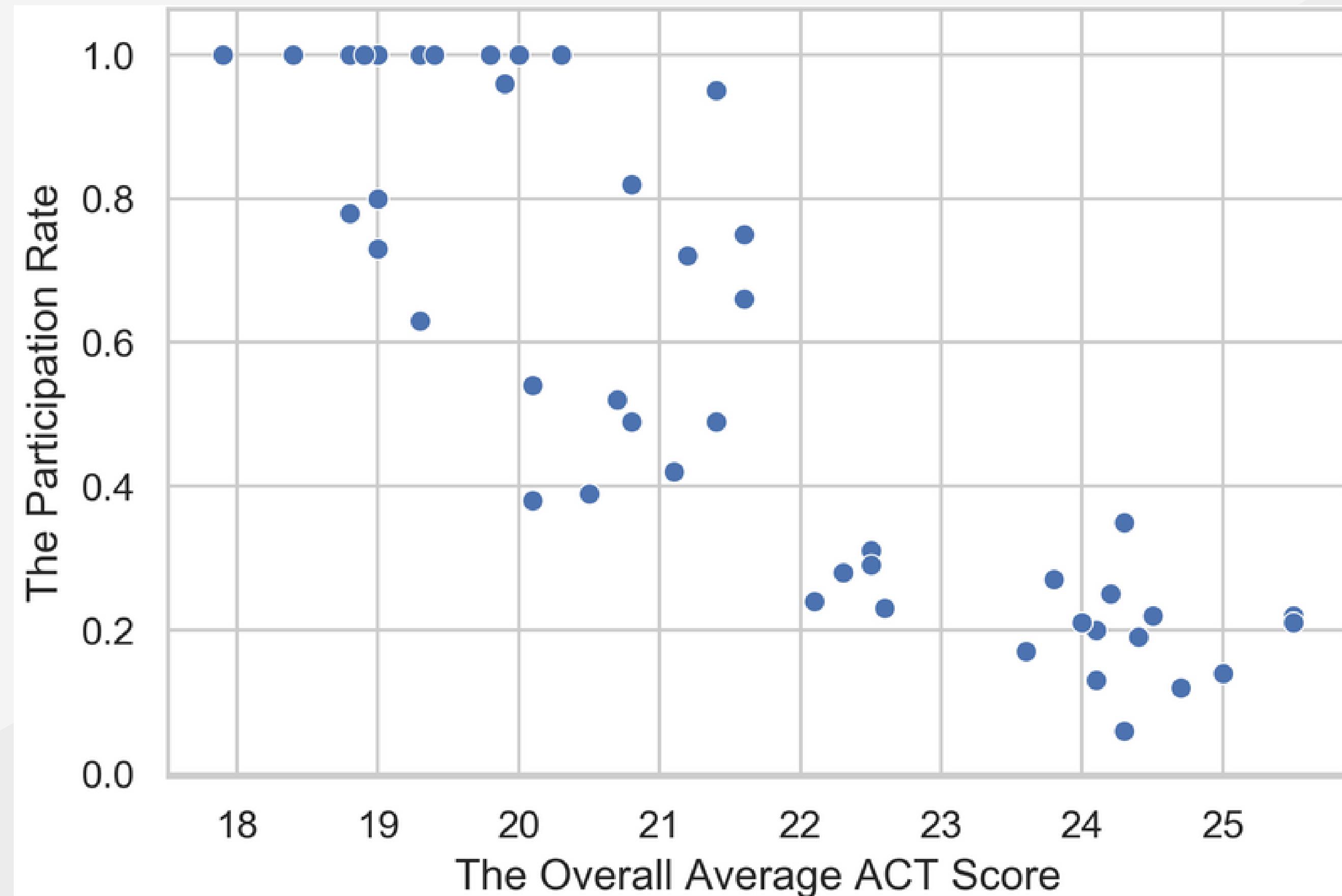
**WHAT IF
THERE'S
SOMETHING
MORE TO IT?**



The relationship between the SAT score and the participation rate



The relationship between the ACT score and the participation rate



Takeaway:

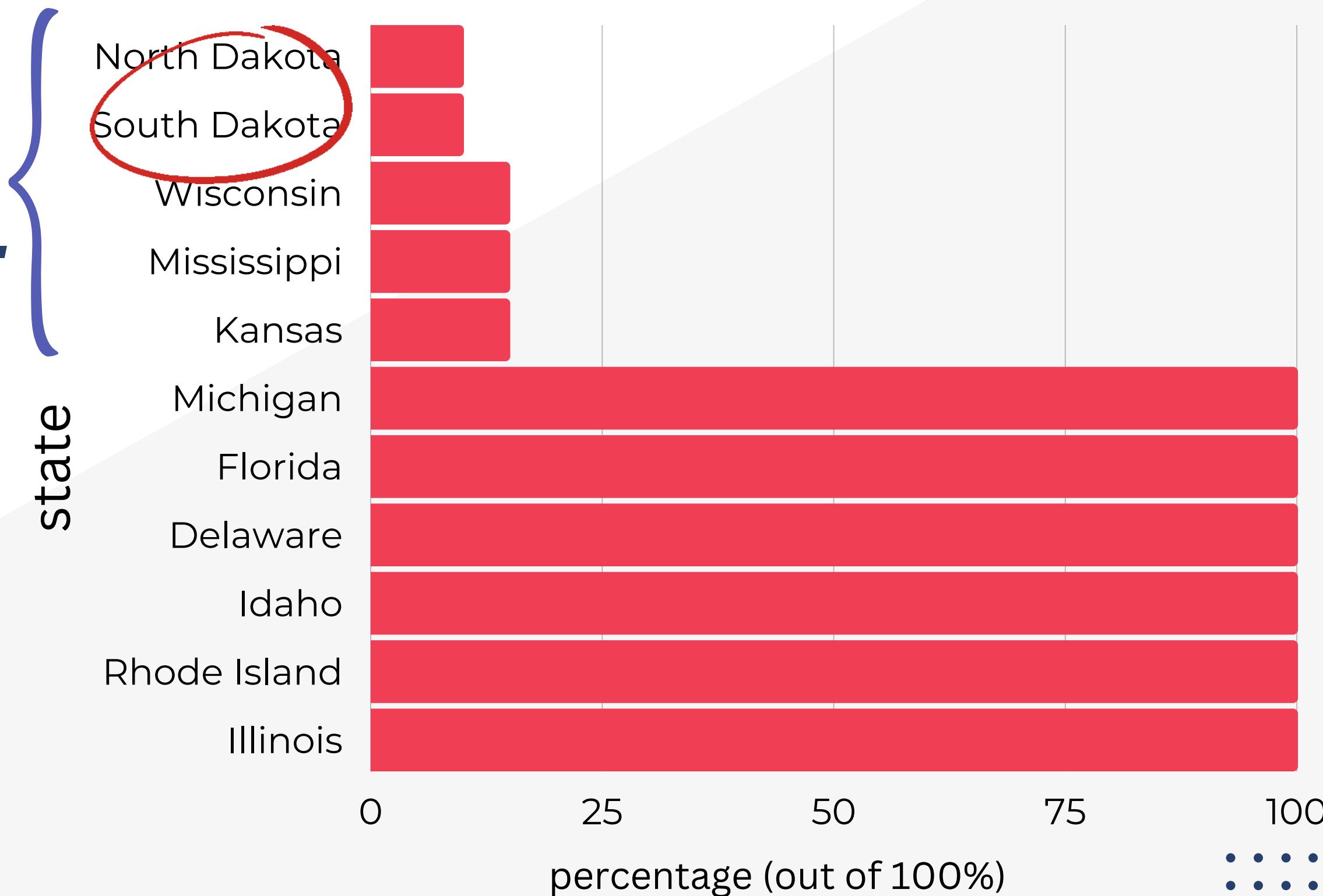
The higher-performing states tend to have lower participation rates.



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Participation rate of SAT 2019

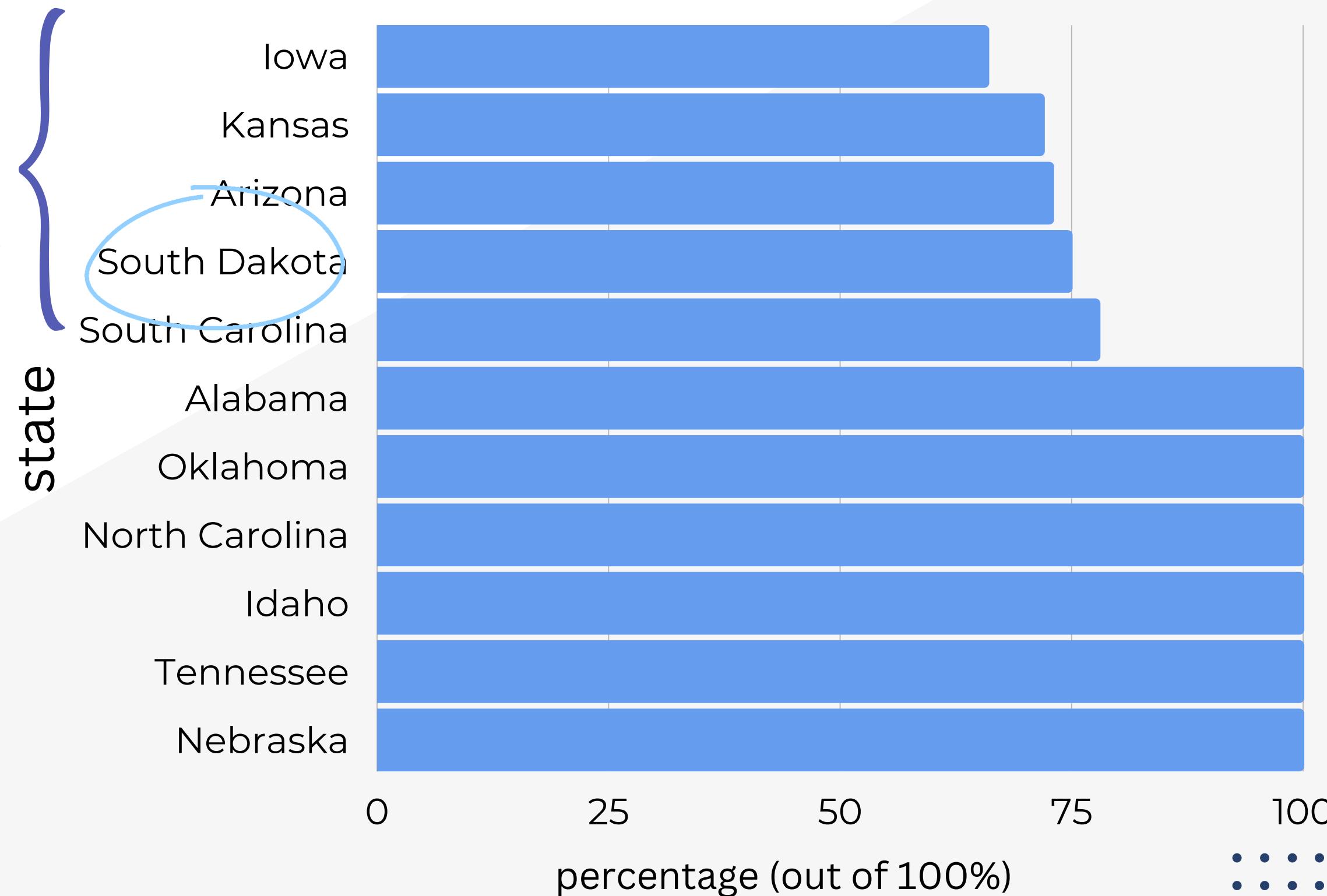
**THOSE HIGH
PERFORMING
STATES HAVE THE
LOWEST
PARTICIPATION
RATE (ALL < 20%)**



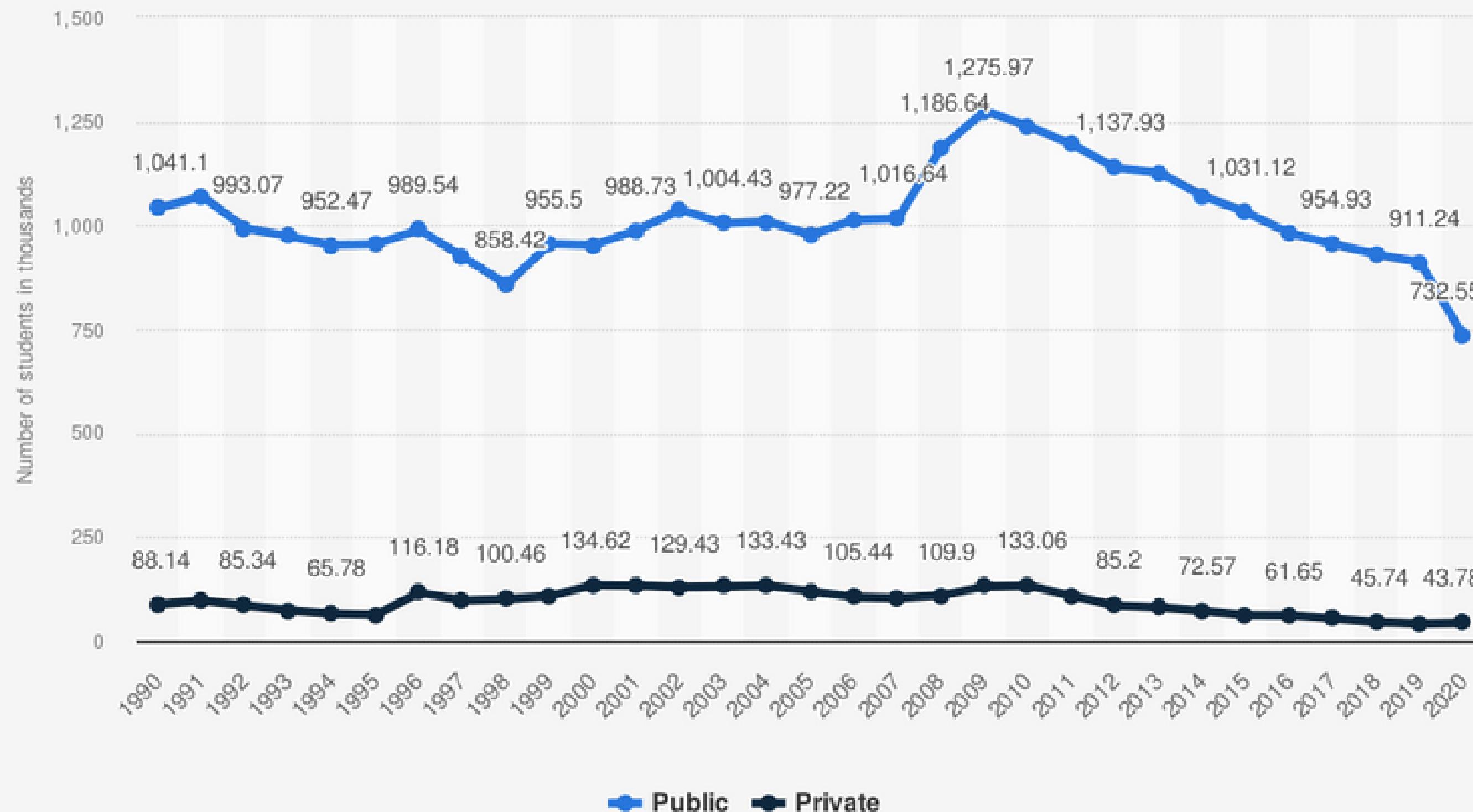
ooo

Participation rate of ACT 2019

**THOSE HIGH
PERFORMING
STATES HAVE THE
LOWEST
PARTICIPATION
RATE (ALL < 80%)**



Enrollment of first-time degree/certificate-seeking students in 2-year postsecondary institutions in the U.S. from 1990 to 2020, by institution type (in 1,000s)



Sources

US Census Bureau; NCES
© Statista 2022

Additional Information:

United States; 1990 to 2020; 16 years and older



SUGGESTIONS FOR SCHOOLS:

0 0 0 0

- 1. Free, compulsory SAT/ACT Preparatory Test Day -> improve test performance**

According to research from the College Board, 63% of students increase their SAT test score when taking the exam twice.

- 2. Mandatory SAT/ACT Graduation Policies --> improve participation rate**

Extend the mandate to not only 11 states, but all other states (especially South Dakota), where students will require to complete SAT/ACT to graduate high school.

- 3. Empower them with college alternatives --> for students who don't want standardized testings**

Provide vocational training schools, skill-based study paths, rather than restricting students to merely go for academia route.



SUGGESTIONS FOR COLLEGES: O O O O

3. Holistic College Admission Strategy

Apart from solely considering SAT/ACT:

- High school grade point average (GPA)
- High school course load and curriculum
- Participation in extracurricular activities
- Recommendation letters
- Application essays and personal statements

1

Health
Professions
and related
Clinical
Sciences



2

Business,
Management,
Marketing



Engineering

3

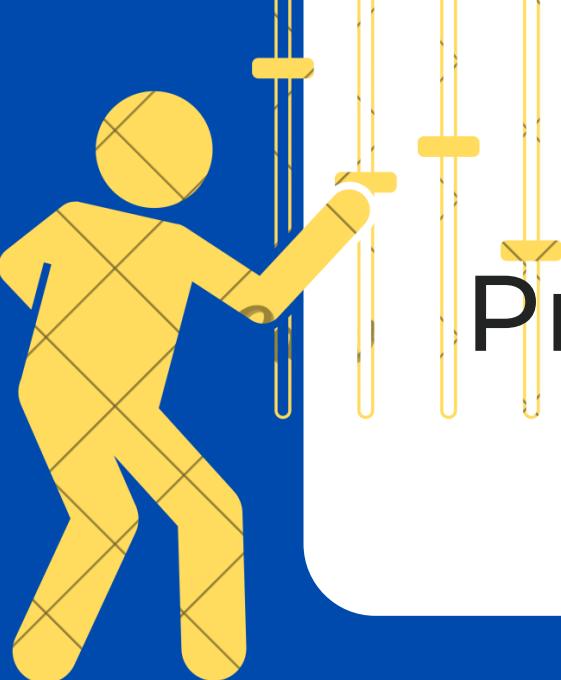
TOP 3 INTENDED COLLEGE MAJORS



1
Library
Science/
Librarianship



Precision
Production



2

TOP 3 LEAST PREFERRED COLLEGE MAJORS



3

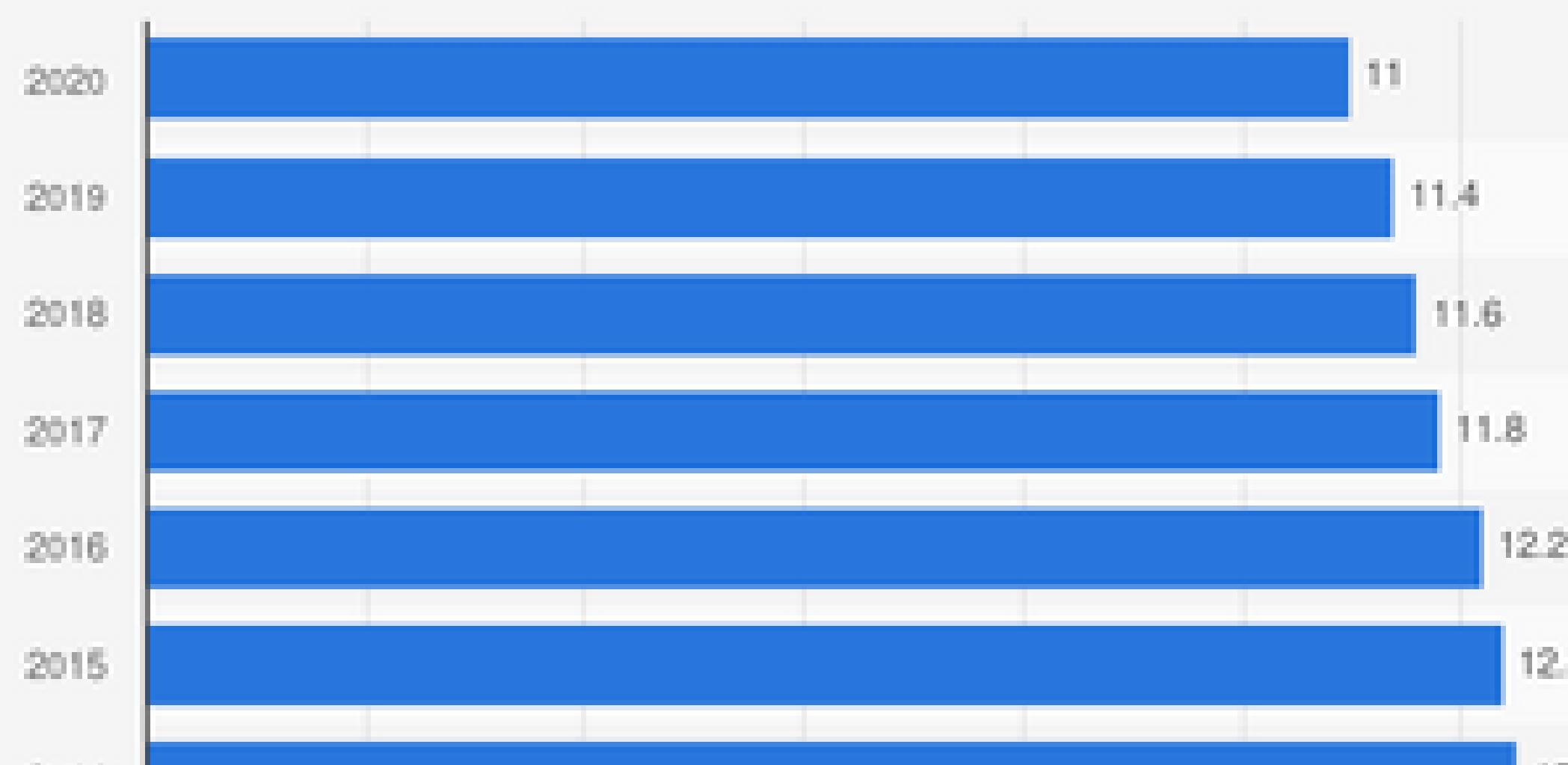
Transportation
and Materials
Moving



10 INDUSTRIES AI WILL DISRUPT THE MOST BY 2030 (SOURCE FROM SPICEWORK)

1. Healthcare
2. Customer Service and Experience
3. Banking, Financial Services, and Insurance
4. Logistics
5. Retail
6. Cybersecurity
7. Transportation
8. Marketing
9. Defense
10. Lifestyle

Birth rate in the United States from 1990 to 2020 (per 1,000 of population)





0 0 0 0

SUGGESTIONS FOR FUTURE CURRICULUM DEVELOPMENT:

- 1. Revamp the unpopular programs (librarianship, precision production and transportation) with AI elements.**
- 2. Add more fundings to enhance the current medical, business and engineering programs and import high quality teaching with an additional focus on AI.**



LET'S HAVE SOME
Q & A

THANK YOU

