

“Getting Testy with Me:”

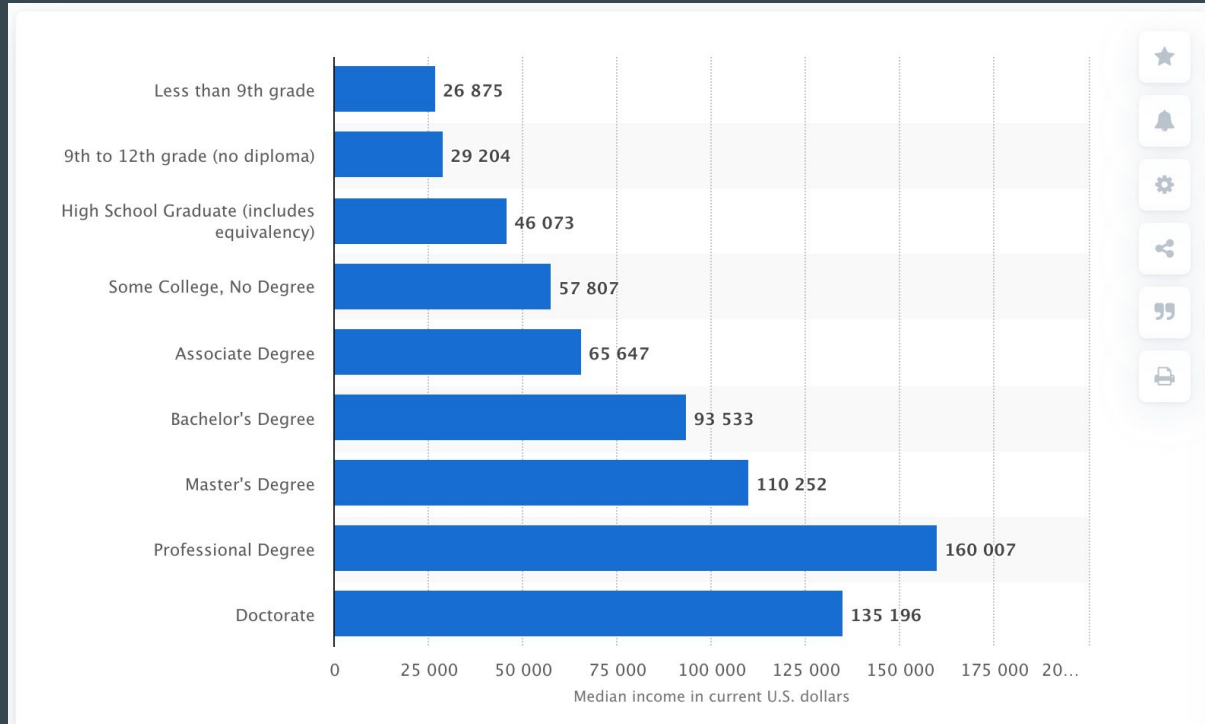
Statewide SAT-ACT Trends from 2017-2019

James Pecore,

Data Scientist

Why Do We Care?

Median US Household Income in 2018 (Education)



Data provided by 2018 US Census:

https://www.census.gov/library/visualizations/2016/comm/cb16-158_median_hh_income_map.html

Problem Statement

- Geographically, the United States remains divided by more than just geology. For each state, the participation rate of their high school students in the SAT vs ACT varies wildly. Yet, clear trends and correlations emerge.
- Why do some states remain loyal to only one test?
- Moreover, which specific factors influence the popularity of tests? Additionally, how do political and economic factors influence the layout of the test landscape?
- Finally, what can we suggest to increase participation rates?

Executive Summary

The ACT dominates 2017-2019 in participation. ACT Participation rates are high from State-Required Testing, Self-Selection, Economic Inequality, and Political Bias. To increase participation, we recommend that the SAT Board streamline the Fee Waiver Process, get rid of SAT Subject Test Costs, increase number of State-Required SAT Tests, add Science as its own Subject, and affirm the importance testing scores.

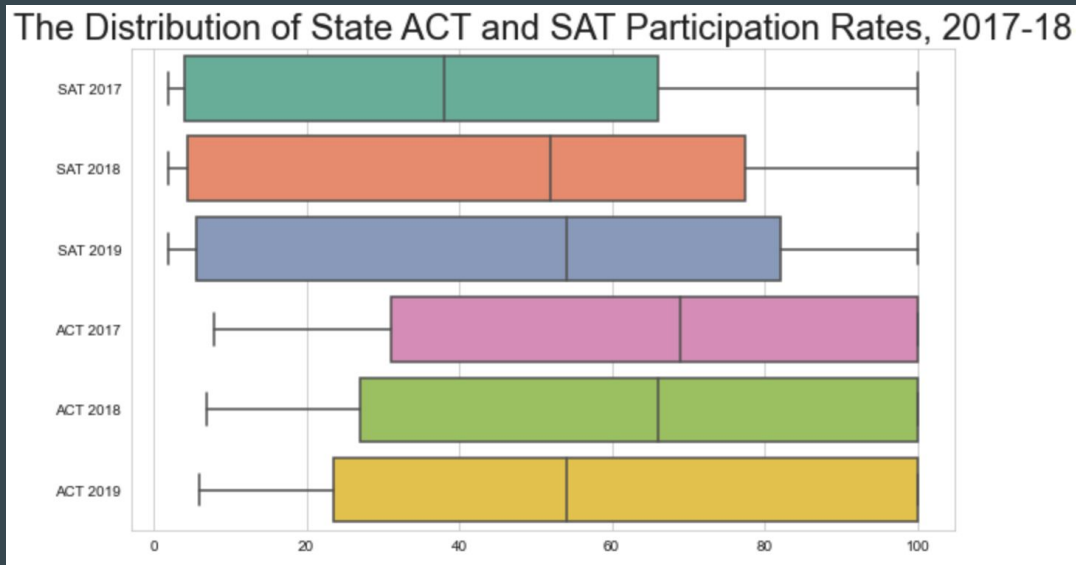
Data Cleaning Process

1. Imported data for 2017-2019 SATs and ACTs into Jupiter Lab.
2. Imported **numpy**, **matplotlib**, **seaborn**, and **pandas**.
3. Fixed improperly entered functions with **.at** string method.
4. Fixed improperly coded data types with **.astype** and **.map**.
5. **Renamed** and **lowercased** data columns.
6. Dropped unnecessary state data with **.drop**.
7. Merged 2017-2019 Data Frames.
8. Calculated statistical values with **.describe** like (mean, median, standard deviation, etc.)

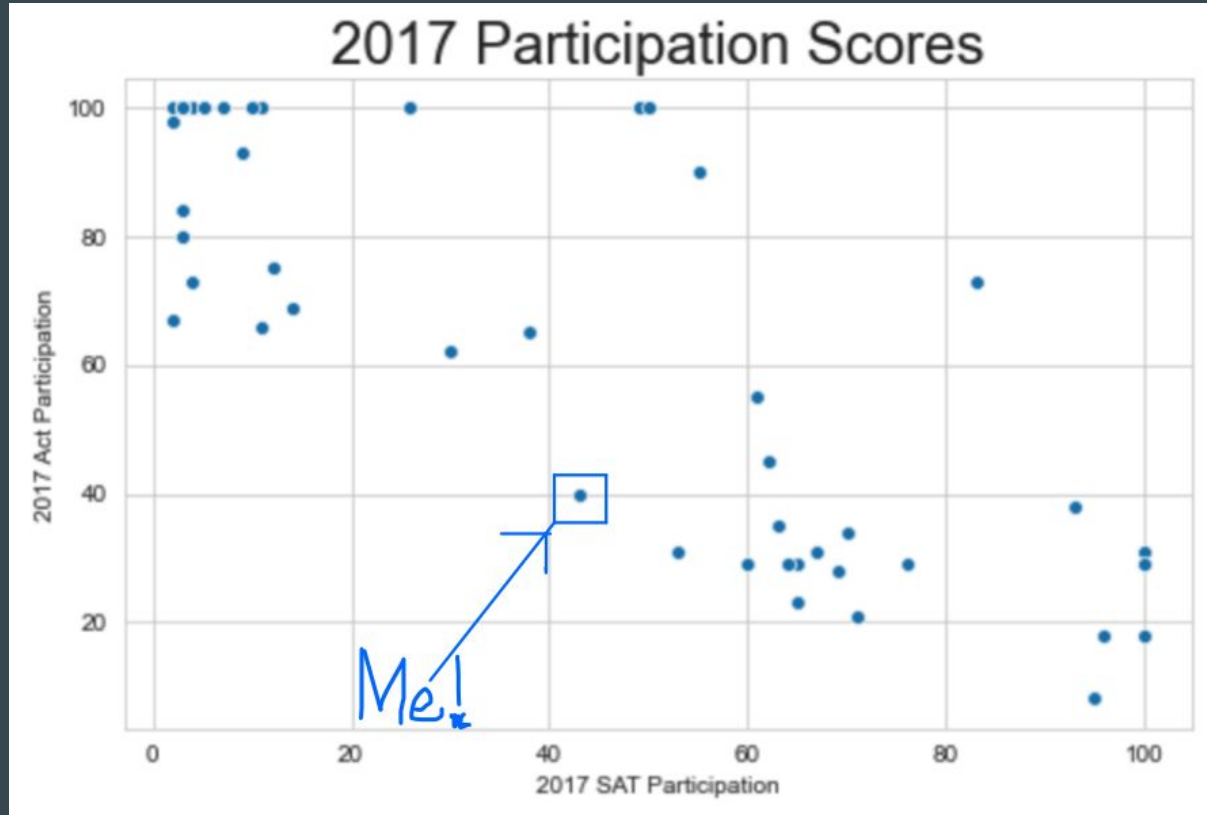
Keeping Up to “Par” (-ticipation):

ACT dominates the Participation Rat(e) Race

- More increased growth
- More “stronghold” states



Where is James??



Stronghold ACT States (12):

ACT 2017 Participation Rates (100%):

1. Alabama
2. Kentucky
3. Wisconsin
4. Utah
5. Tennessee
6. Oklahoma
7. North Carolina
8. Nevada
9. Montana
10. Mississippi
11. Louisiana
12. Wyoming
13. Arkansas
14. Colorado
15. Minnesota
16. Missouri
17. South Carolina

ACT 2018 Participation Rates (100%):

1. Alabama
2. Kentucky
3. Wisconsin
4. Utah
5. Tennessee
6. Oklahoma
7. North Carolina
8. Nevada
9. Montana
10. Mississippi
11. Louisiana
12. Wyoming
13. Arkansas
14. Colorado
15. Ohio
16. Nebraska
17. South Carolina
18. Missouri

ACT 2019 Participation Rates (100%):

1. Alabama
2. Kentucky
3. Wisconsin
4. Utah
5. Tennessee
6. Oklahoma
7. North Carolina
8. Nevada
9. Nebraska
10. Montana
11. Mississippi
12. Louisiana
13. Wyoming
14. Arkansas
15. Ohio

Stronghold SAT States (3):

SAT 2017 Participation Rates (100%):

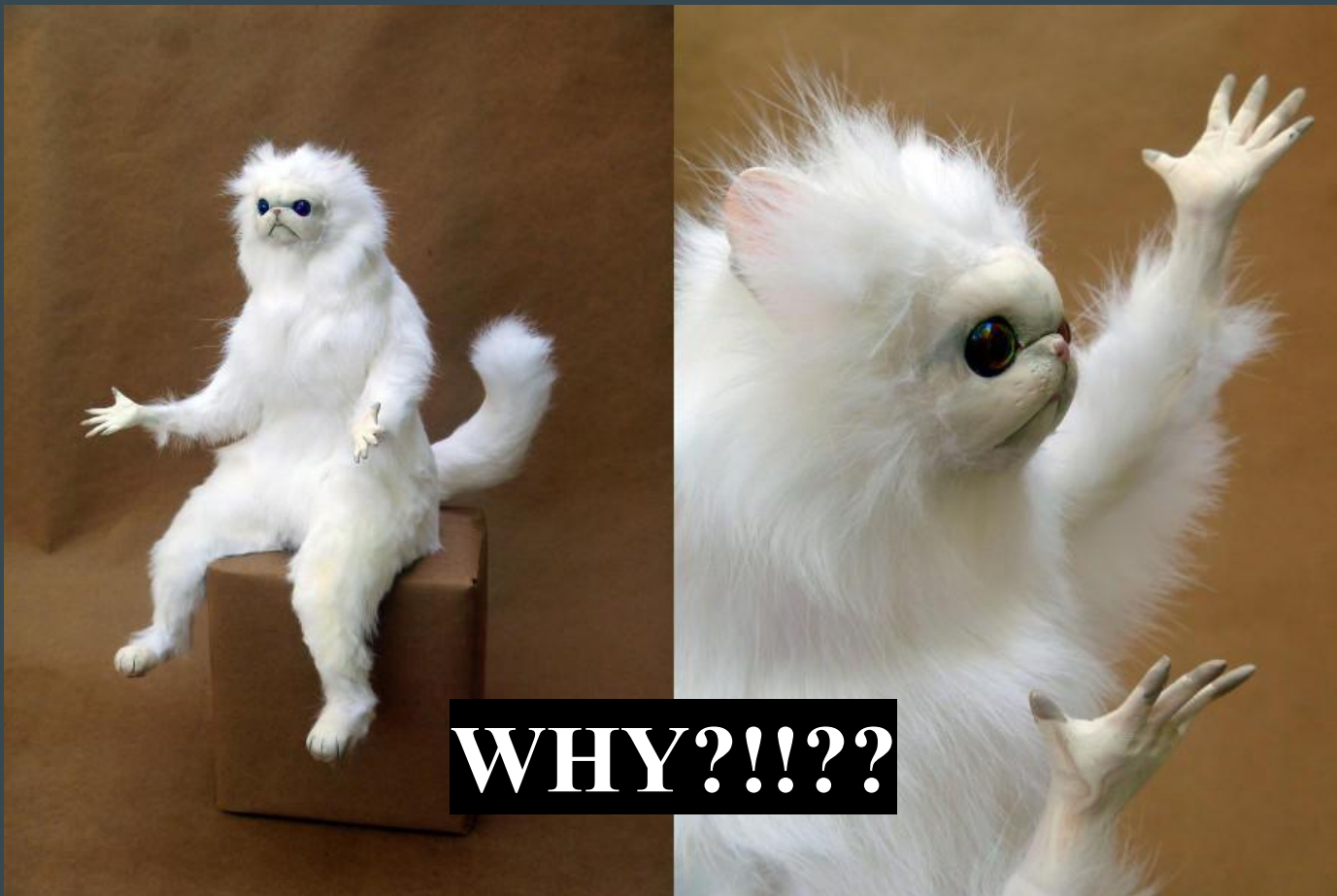
1. Delaware
2. Michigan
3. Connecticut

SAT 2018 Participation Rates (100%):

1. Delaware
2. Michigan
3. Connecticut
4. Colorado
5. Idaho

SAT 2019 Participation Rates (100%):

1. Delaware
2. Michigan
3. Connecticut
4. Colorado
5. Idaho
6. Delaware
7. Illinois
8. Rhode Island



2018 State-Required Testing

ACT Required Test States:

1. Idaho
2. Ohio
3. Tennessee
4. Alabama
5. Kentucky
6. Wisconsin
7. Utah
8. North Carolina
9. Nevada
10. Montana
11. Mississippi
12. Louisiana
13. Wyoming
14. Missouri
15. South Carolina
16. Nebraska
17. North Dakota
18. Hawaii

SAT Required Test States:

1. Idaho
2. Ohio
3. Tennessee
4. Delaware
5. Michigan
6. Connecticut
7. Colorado
8. Illinois
9. Maine
10. New Hampshire

Color Key

Green = State requires Both Tests

Red = State ACT Partic. 100%

Blue = State SAT Partic. 100%

White = Requires Only that Test

Data provided by Kevin March on Testive:

[https://www.testive.com/state-sat-act/#:~:text=Each%20U.S.%20state%20has%20a.student%20achievement%20using%20standardized%20tests.&text=In%20addition%2C%20free%20\(but%20mandatory.to%20consider%20applying%20to%20college.](https://www.testive.com/state-sat-act/#:~:text=Each%20U.S.%20state%20has%20a.student%20achievement%20using%20standardized%20tests.&text=In%20addition%2C%20free%20(but%20mandatory.to%20consider%20applying%20to%20college.)

Self-Selection Bias

Correlation Heatmap shows:

- Significant pos. corr. of High Test Score Mean to High Part. Rate
 - Significant negative corr. of Low Test Score Mean to Low Part Rate.
-
- “I will take the test at which I excel.”
 - “I will NOT take a test I will do poorly in.”

Economic Disparities

ACT Median Income States:

\$60,000 or more

- Utah (UT)
- Wyoming (WY)

\$50,000 to \$59,999

- Nevada* (NV) (Swing State)
- Wisconsin (WI)

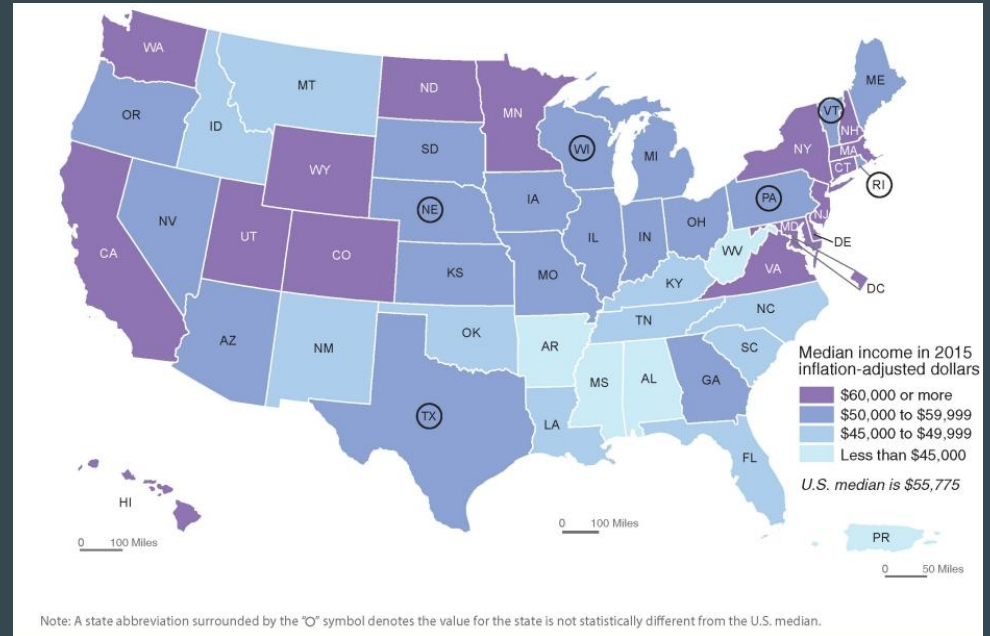
\$45,000 to \$49,999

- Kentucky (KY)
- Tennessee (TN)
- Oklahoma (OK)
- Montana (MT)
- Louisiana (LS)

Less than 45,000

- Alabama (AL)
- Mississippi (MS)
- Arkansas (AR)

The ACT costed less than the SAT to take from 2017-2019
(SAT costed around \$52 + \$20 per Subject Test)
(ACT costed around \$45)



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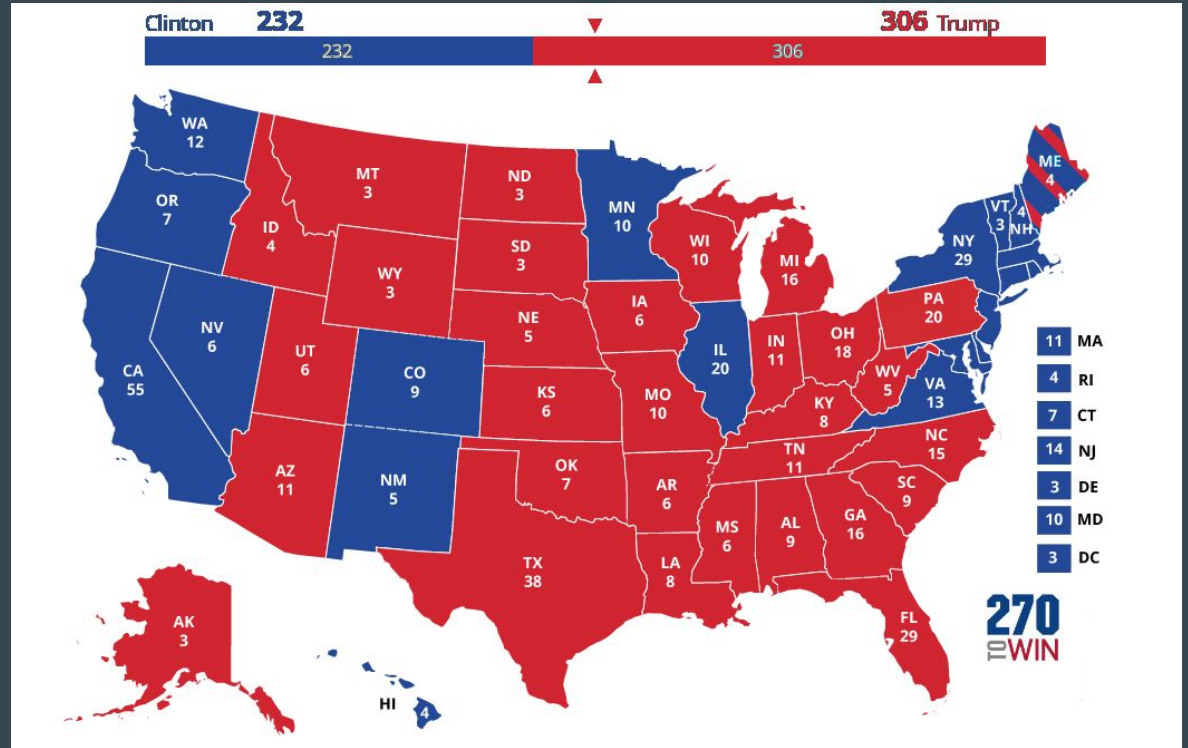
Politics

ACT Strongholds by Politics:

1. Alabama (AL)
2. Kentucky (KY)
3. Wisconsin (WI)
4. Utah (UT)
5. Tennessee (TN)
6. Oklahoma (OK)
7. Montana (MT)
8. Mississippi (MS)
9. Louisiana (LS)
10. Wyoming (WY)
11. Arkansas (AR)
12. Nevada* (NV) (Swing State)

SAT 2017 Participation Rates (100%):

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Americans' Views on Standardized Admissions Tests, by Party

	Democrats	Republicans
Colleges should require tests	26%	56%
Colleges should make the tests optional	35%	18%
Colleges should not consider tests	18%	10%
Not sure	21%	16%

Data provided by Scott Jaschik on Inside Higher Ed:

<https://www.insidehighered.com/admissions/article/2018/06/25/younger-people-and-democrats-more-likely-back-test-optional-admissions>

Recommendations for SAT Board

1. Streamline the process to claim a Fee Waiver
2. Get rid of SAT Subject Test Fees
3. Increase State-Required Testing
4. *Add “Science” as an SAT Subject (like on the ACT)
5. *Democrats need to push for necessity of SAT Test Score

Questions?

Brainstorming Questions?:

- What is the fee per student for all tests?
 - SAT, SAT + Essay, (+SAT Retakes), SAT Subject Tests (Higher Cost)
 - ACT, ACT + Essay, (+ACT Retakes)
- What are the statistics of fee waivers?
 - Racially, economically, etc.? Is it easy to get one?
- Which test is more popular by gender?
- Which test is more popular by racial identity?
- What are the statistics of people who take BOTH tests versus just taking either SAT or ACT?