

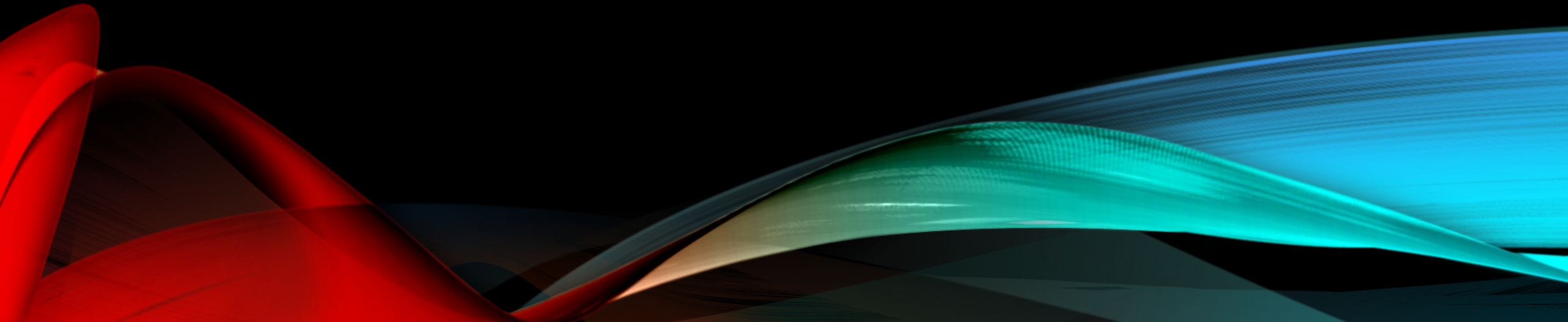


EDUCATION INEQUALITY

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PURPOSE

This project addresses inequality of educational opportunity in U.S. high schools. We will focus on average student performance on the ACT/SAT exams that students take as part of the college application process. The questions we want to ask is whether school performance is predicted by socioeconomic factors.



DATA

COMBINED DATA

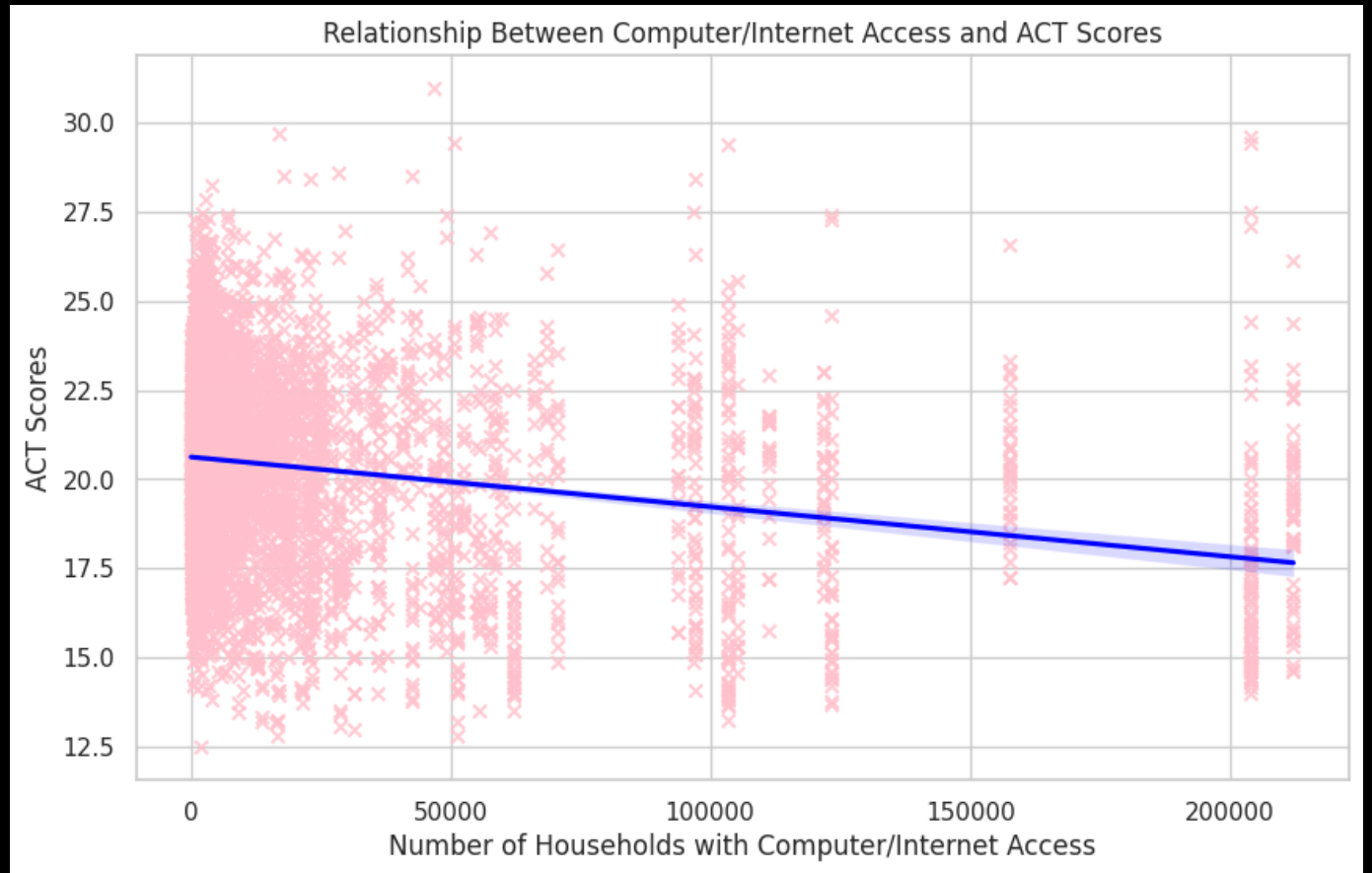
- EdGap
 - Primary data set from 2016
 - Includes average ACT or SAT scores for schools
 - Includes socioeconomic characteristics of the school district
- School Information Data (National Center for Education Statistics)
 - Secondary data set
 - Includes basic identifying information about schools

ADDITIONAL DATA

- Internet Data (National Center for Education Statistics)
 - Includes estimates of school district social characteristics for school-age children enrolled in public school in the U.S.

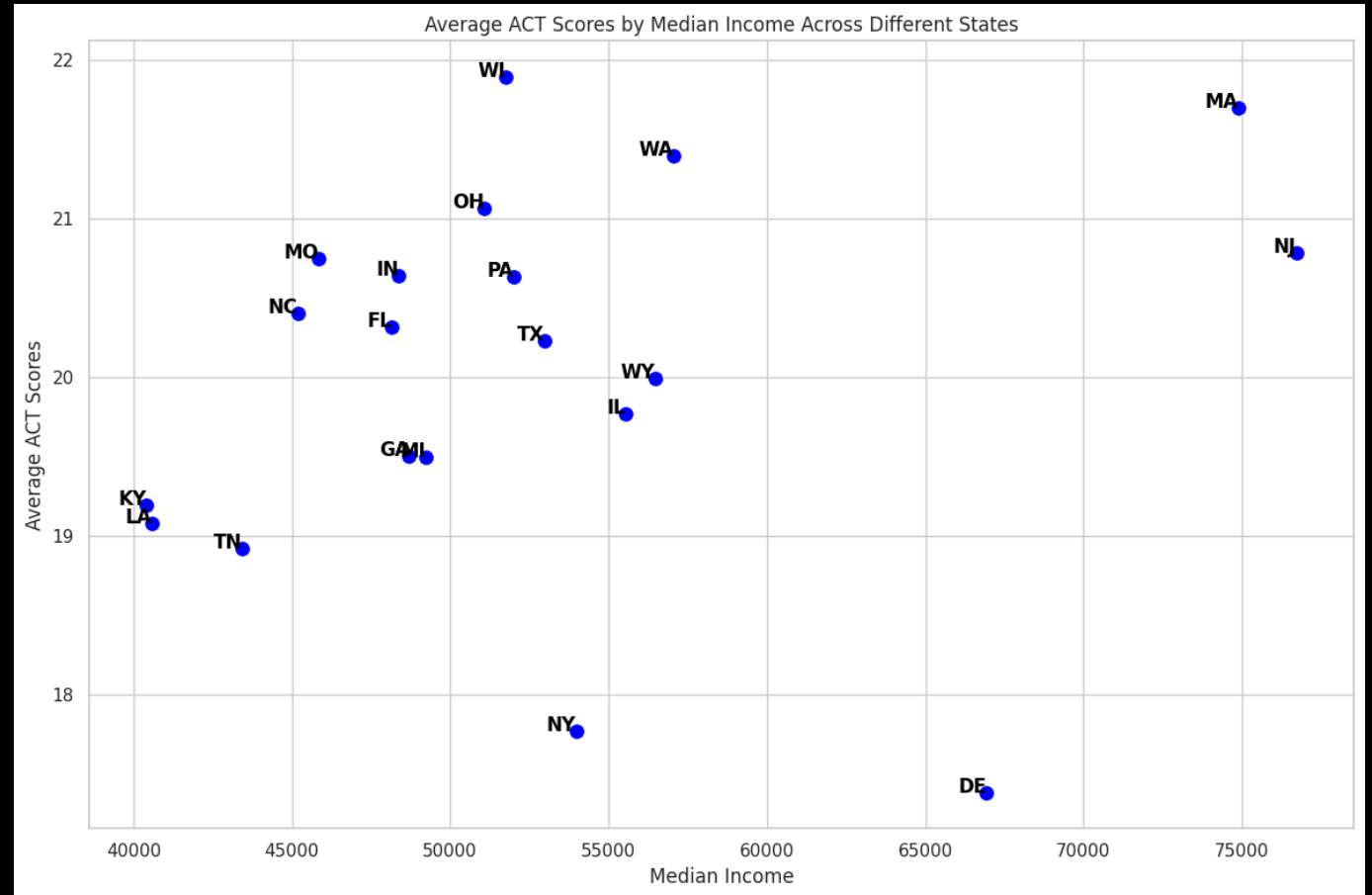
INTERNET ACCESS

- Type of graph: scatter plot
- Variables:
 - X = number of households with computer/internet access
 - Y = ACT scores
- Downward trend indicating that as the number of households with access increases, the average ACT scores slightly decrease



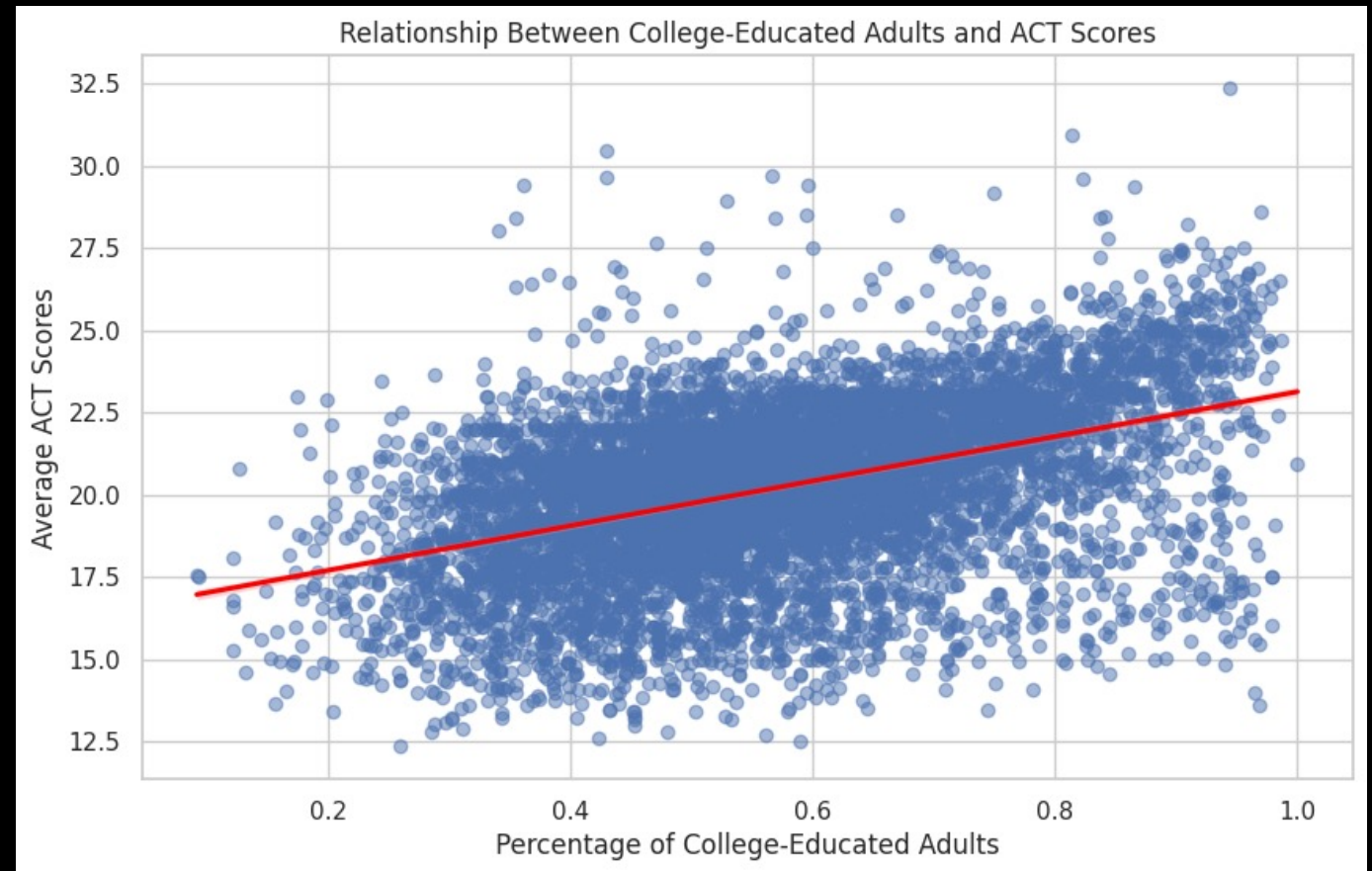
MEDIAN INCOME ACROSS DIFFERENT STATES

- Type of graph: scatter plot
- Variables:
 - X = median household income
 - Y = average ACT scores by state
- The data points are labeled by state initials and show variability, but generally, states with higher median incomes tend to have higher average ACT scores



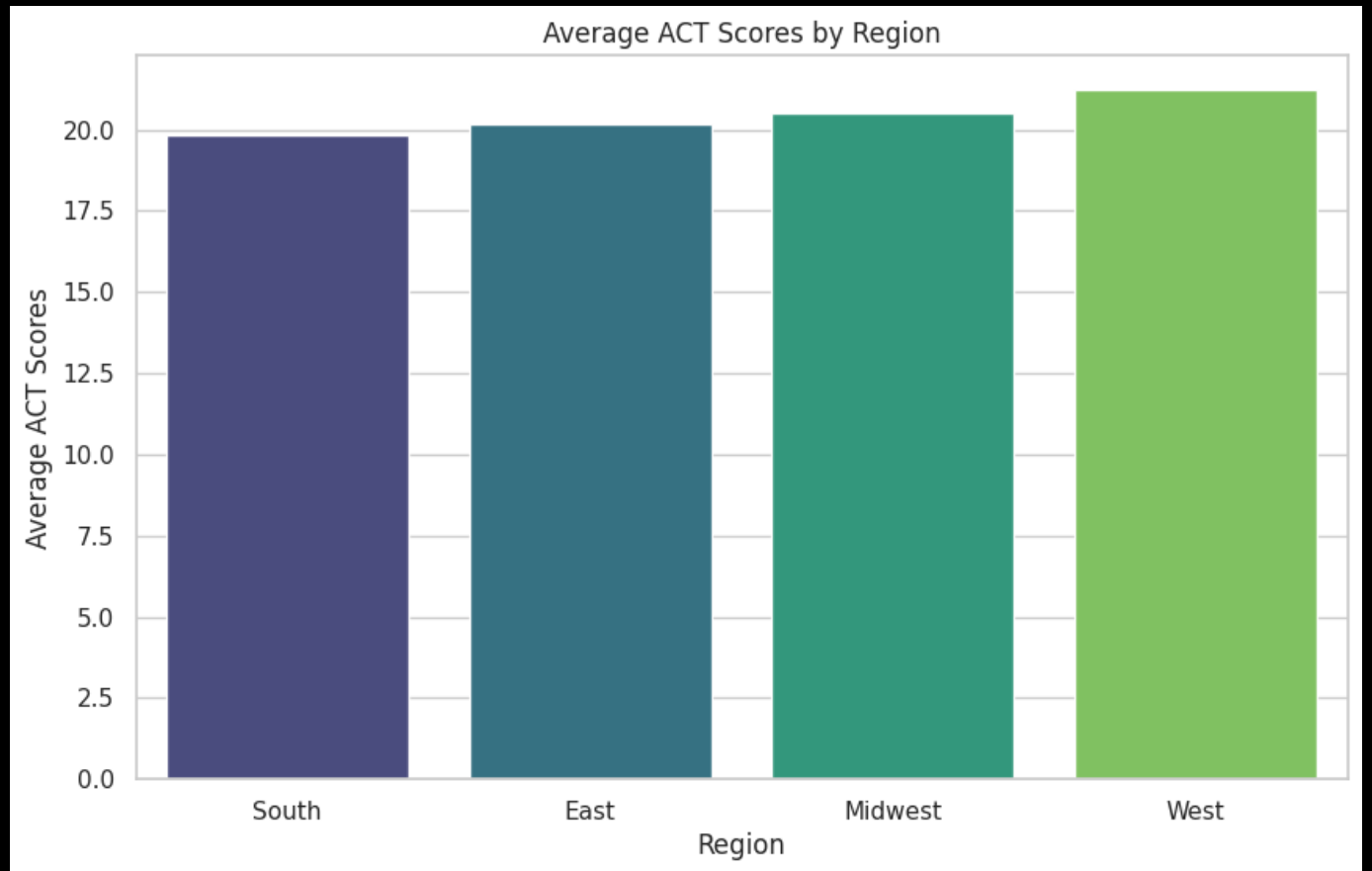
COLLEGE- EDUCATED ADULTS

- Type of graph: scatter plot
- Variables:
 - X = percentage of college-educated adults in a community
 - Y = average ACT scores of schools in that community
- A red line indicates a positive correlation, showing that higher percentages of college-educated adults correlate with higher average ACT scores



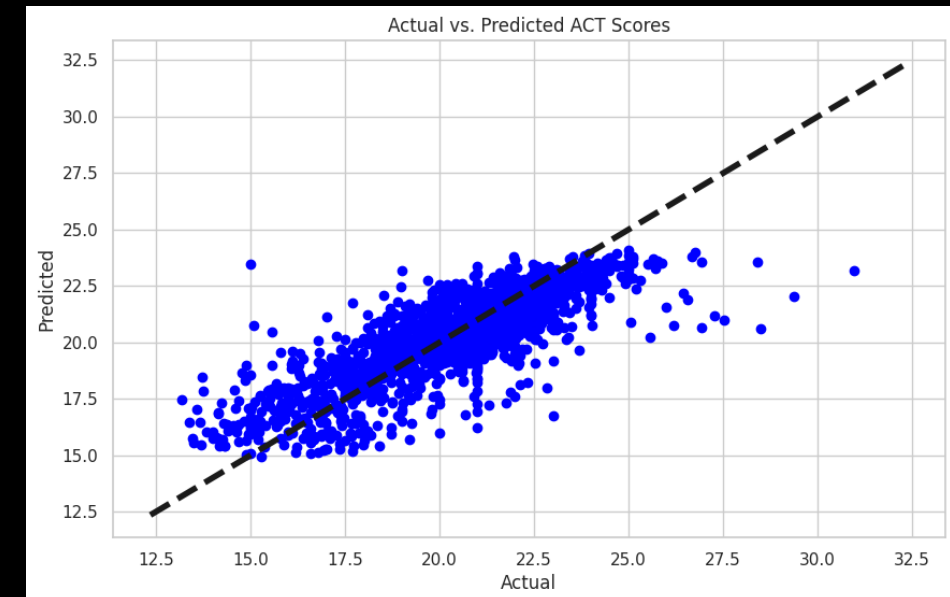
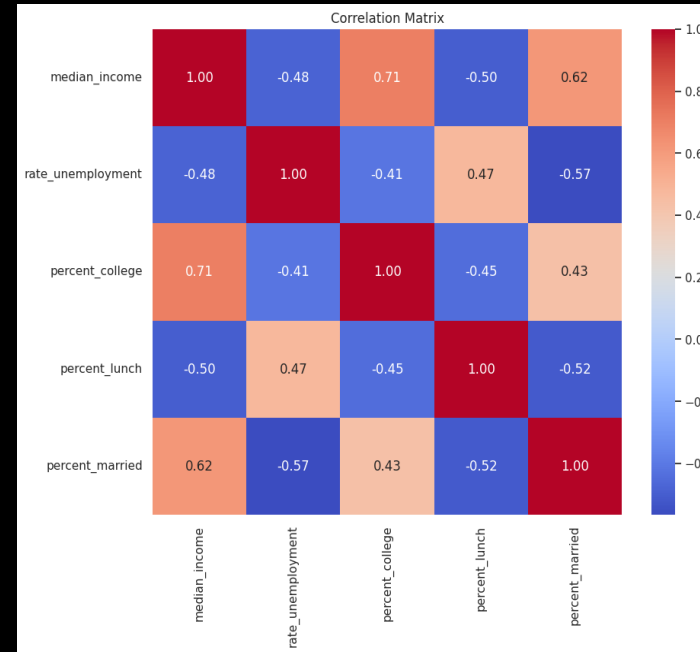
SCORES BY REGION

- Type of graph: bar graph
- Variables:
 - X = four different regions of the United States—South, East, Midwest, and West
 - Y = average ACT scores
- The average ACT scores are fairly consistent across the regions, with slight variations. The Midwest and West regions display slightly higher scores compared to the South and East.



REGRESSION ANALYSIS

- Initial Feature Inclusion
 - Started with all available features to capture comprehensive potential impacts
- Feature Selection Process
 - Features with high p-values were removed although model remained the same, indicating that remaining features captured essential variability
- Important Features
 - Median income and education levels obtained were positively correlated
 - Access to technology showed unexpected negative correlation or no significant effect



CONCLUSION

- **Model Accuracy:** The predictive regression model shows strong accuracy in forecasting ACT scores, indicating its reliability for educational assessments.
- **Economic Influence:** Higher median incomes in states are associated with better ACT performance, highlighting the role of economic stability in educational success.
- **Technology Access:** Surprisingly, greater access to technology does not guarantee higher ACT scores, suggesting that quality of use is more important than availability.
- **Community Education Levels:** Areas with higher percentage of college-educated adults see higher ACT scores, emphasizing the impact of a supportive and educated community on student outcomes.
- **Regional Variations:** Significant differences in ACT scores across regions reflect disparities in educational policies and resources, with the West outperforming other regions.