

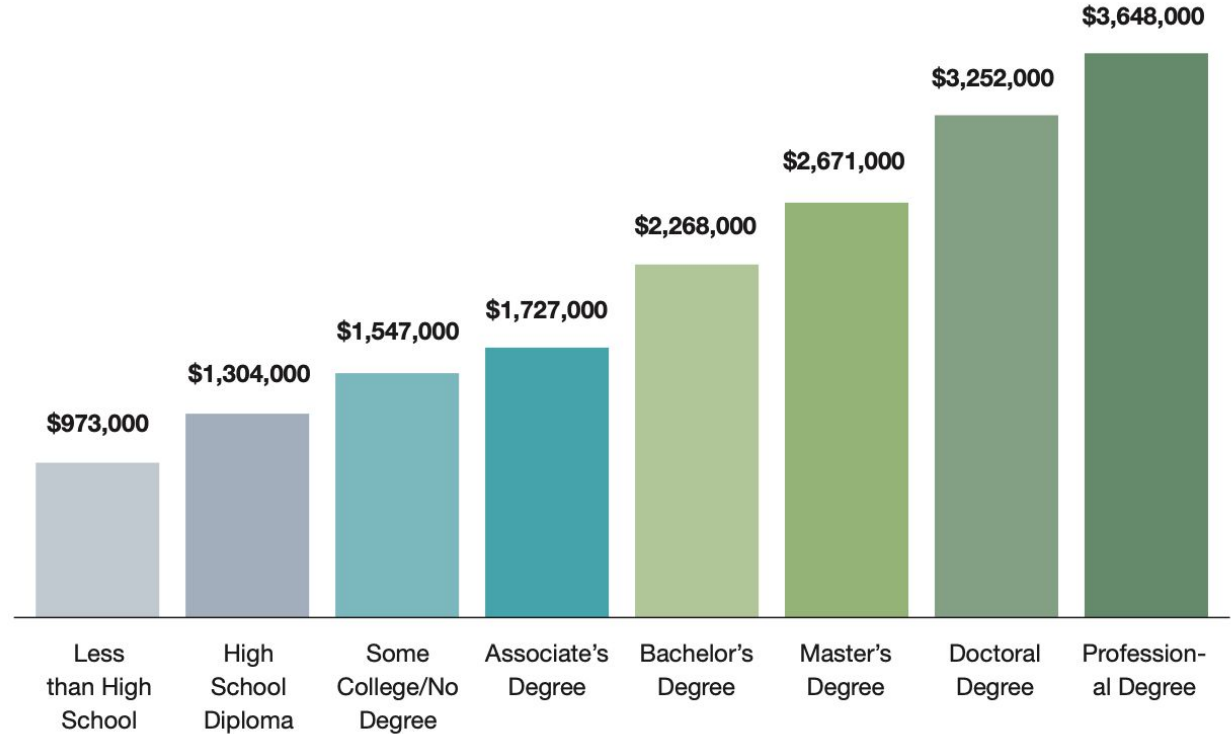


Predicting University Graduation Rates

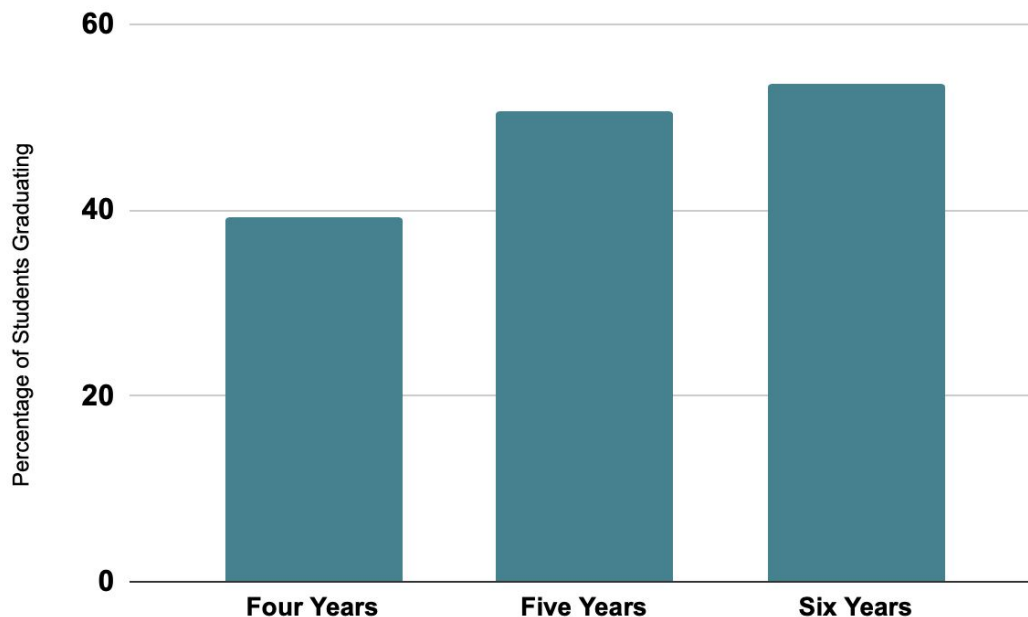
Lisa VanderVoort

The Added Financial Benefit of Education

Lifetime earnings increase with education levels.



Overall, graduation percentage rates from universities are low.



Methodology

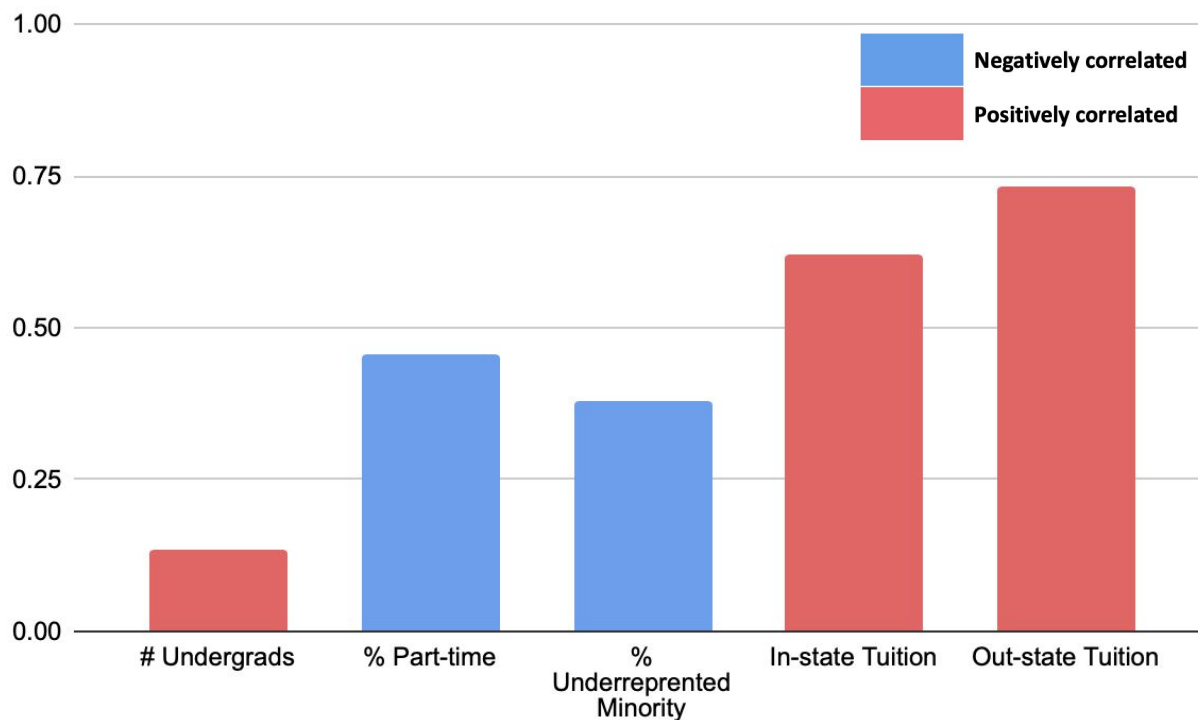
Data: University data was scraped from collegeresults.org

Universities selected: 1600 4-year public and private not-for-profit universities in the US

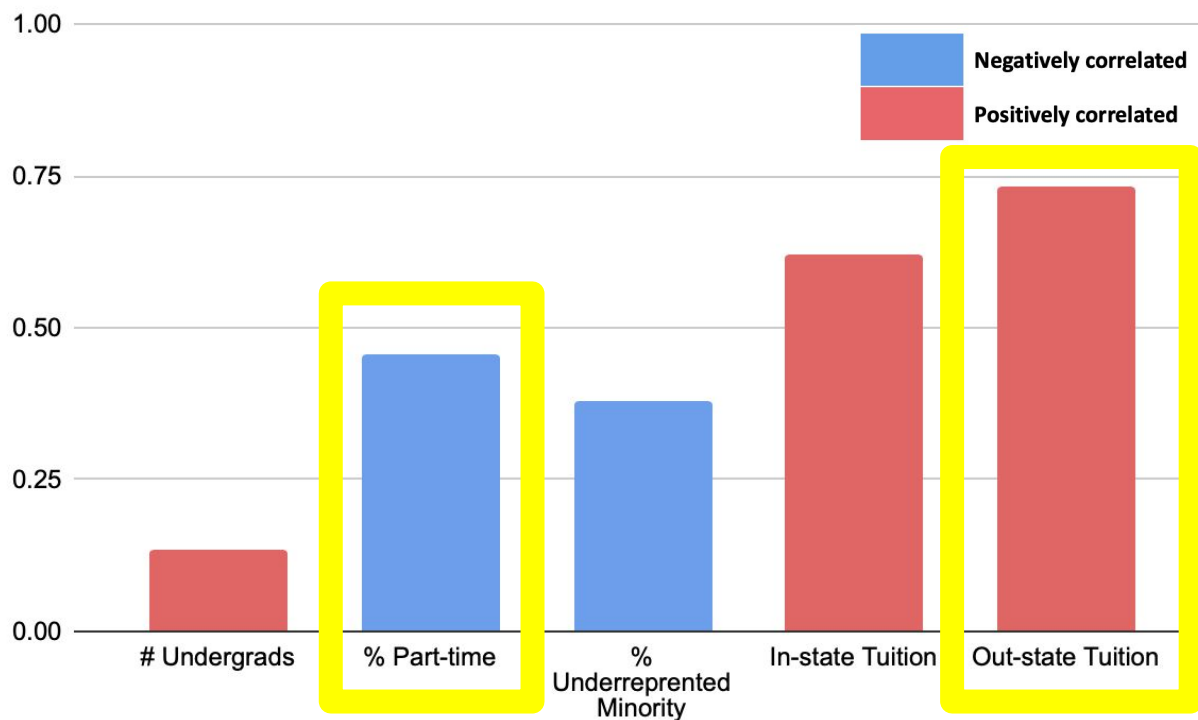
Target: 5-year graduation rates



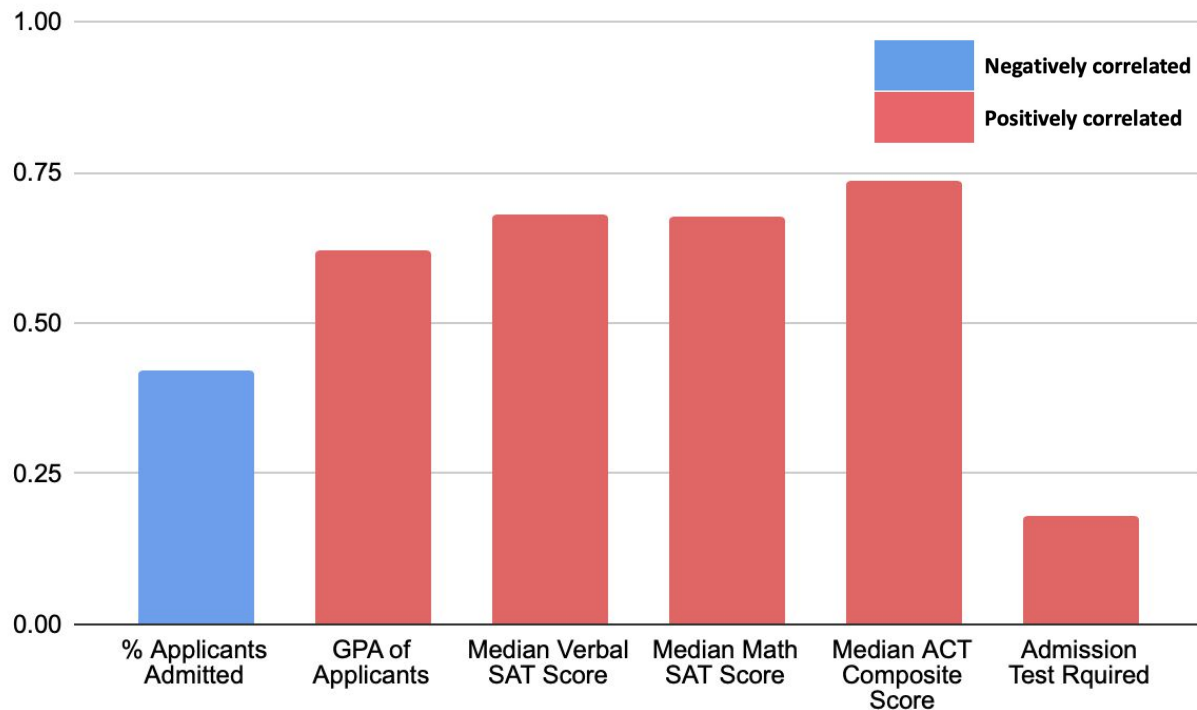
Overall University Features: Correlation to 5 year graduation rate



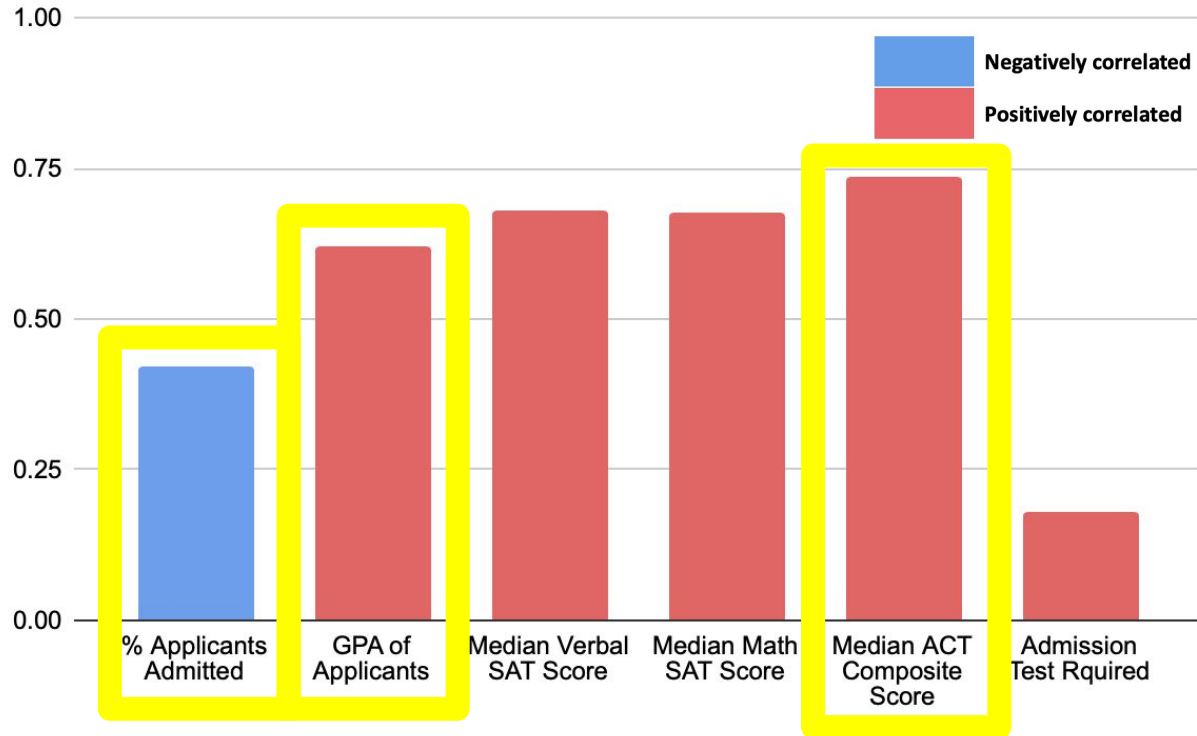
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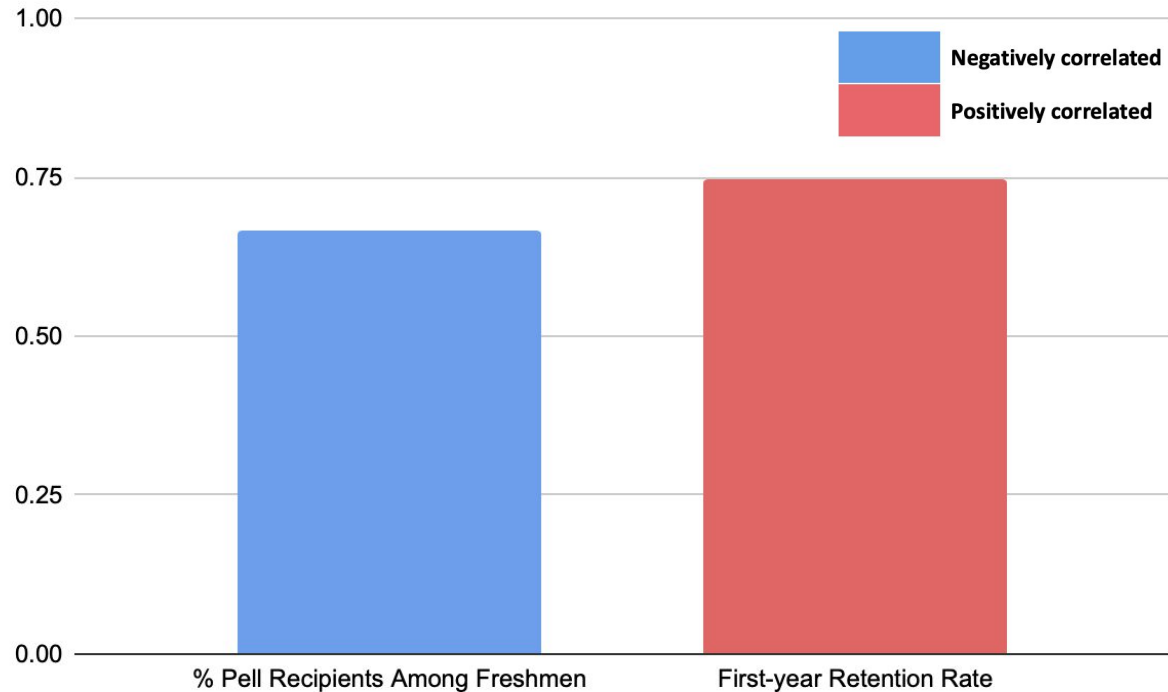
Applicant Specific Features: Correlation to 5 year graduation rate



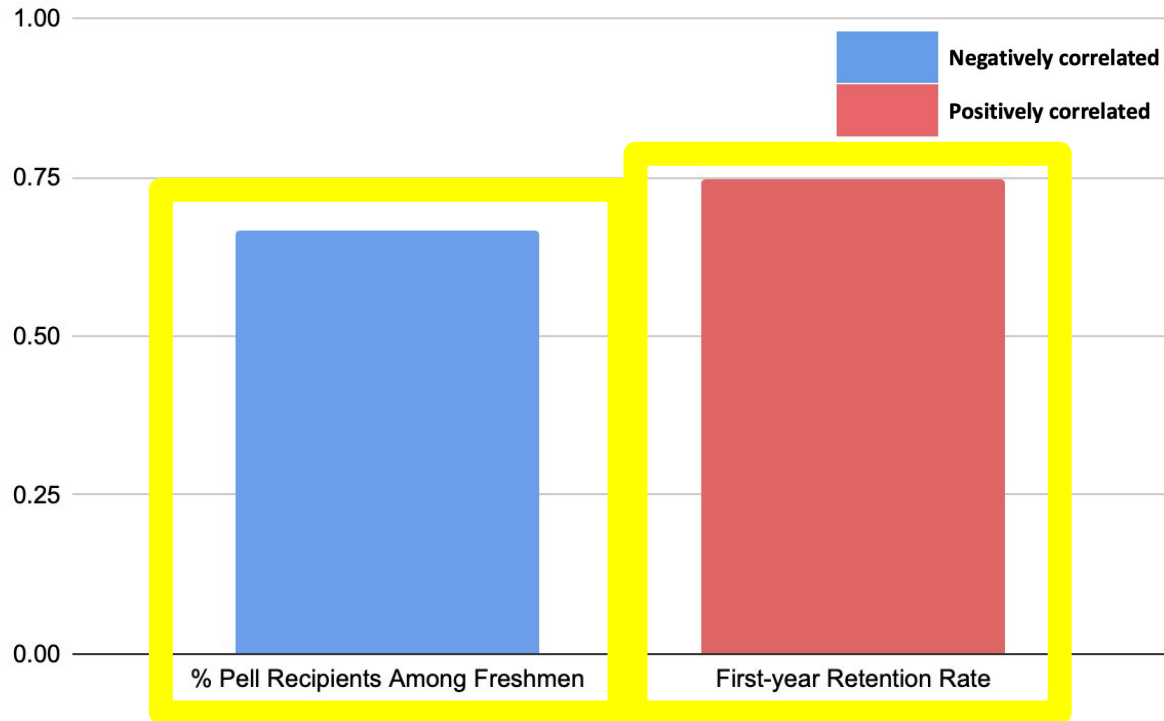
Applicant Specific Features: Correlation to 5 year graduation rate



First-year Undergrad Specific Features: Correlation to 5 year graduation rate



First-year Undergrad Specific Features: Correlation to 5 year graduation rate



Simple Linear Regression with Standardized Features

Features included in model:

- ❑ University: Out of state tuition, % Part-time
- ❑ Applicant: % Admitted, Average GPA, Median ACT composite, ACT and test required (created interaction term)
- ❑ First year undergrad: % Pell, Retention rate

Target:

- ❑ 5 year graduation rate

$$\begin{aligned} \text{Predicted 5 Year Graduation Rate} = & 6.23 * \text{out_state_tuition} + \\ & -2.18 * \text{percent_part_time} + \\ & -0.72 * \text{percent_admitted} + \\ & 1.46 * \text{average_gpa} + \\ & 3.37 * \text{median_act_composite} + \\ & 0.54 * \text{act_and_test_required} + \\ & -1.82 * \text{pell_percent} + 7.07 * \text{retention_rate} + \\ & 50.54 \end{aligned}$$

Results

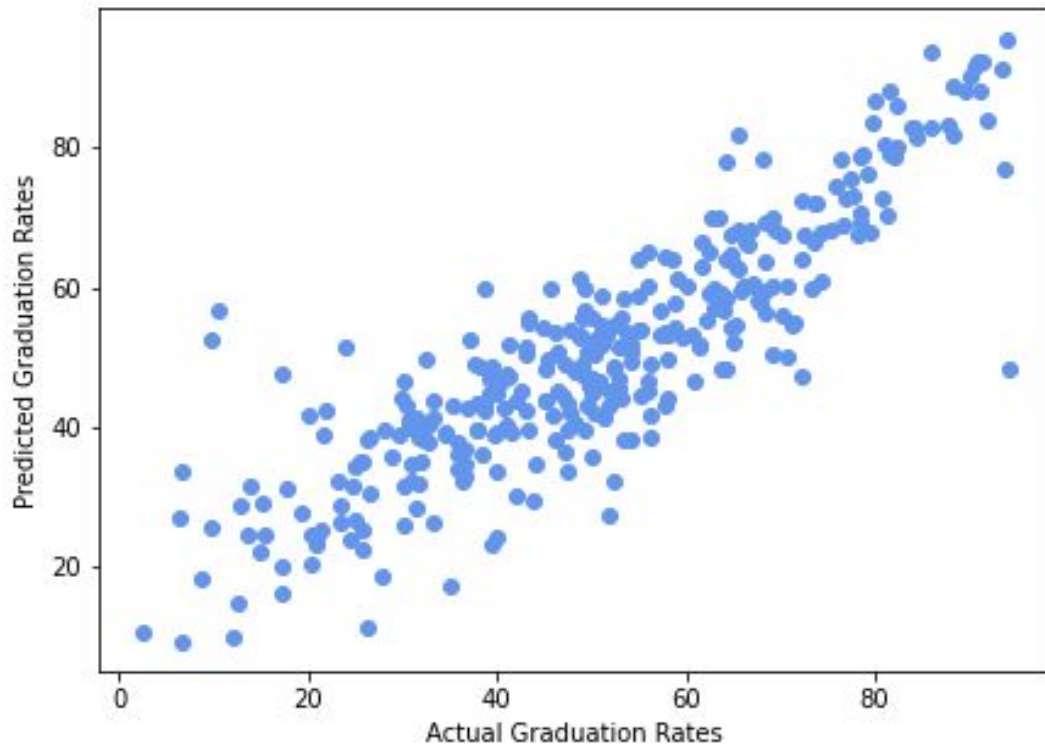


$$R^2 = 76\%$$

$$\text{RMSE} = 9.75$$

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Strong Relationship Between Actual and Predicted



Results



$$R^2 = 76\%$$

$$\text{RMSE} = 9.75$$

Predicted 5 Year Graduation Rate =

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Conclusions



1. Financial resources (in the form of tuition) play a large role in supporting graduation rates.
 - a. Additional funding (through private fundraising or government programs) can possibly support universities in improving graduation rates.

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Conclusions

1. Financial resources (in the form of tuition) play a large role in supporting graduation rates.
 - a. Additional funding (through private fundraising or government programs) can possibly support universities in improving graduation rates.
2. Improving freshman retention rates can have a profound impact on overall 5-year graduation rates.
3. There is considerable work to be done in regards to supporting the graduation rates of students who receive Pell Grants across universities.
 - a. It's likely that programs to support these students will lead to increased graduation rates overall.

Future Work: Zoom in on student level

- Develop a Freshman On-Track indicator for universities to use as a way to progress monitor students who might be at risk of not graduating
 - a. Number of course credits
 - b. Number of classes student is failing
 - c. Whether a student receives a Pell Grant

Questions?

Appendix

No Trend in Residuals

