What's behind the sticker pr\$ce of private college tuition and fees?

Final Project for Metis' Linear Regression and Web Scraping Module

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Introduction

• **Objective** - Understand what features of private non-profit institutions most influence the published price of their tuition and fees

 Goal - Help those involved in the decision-making process about higher education choices make more informed decisions

Methodology

Data Collection

Cleaned, engineered new features

and performed EDA on scraped data

Data Preparation

Ended up with **1322 schools** and **21 features** of each school

Modeling

Round 1 - *without* financial aid as a feature Round 2 - *with* financial aid as a feature

Models:

- Linear regression
- LassoCV regression
- Polynomial regression

Validation: cross-validation

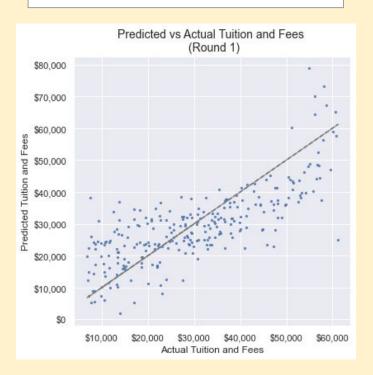
Evaluation metric: RMSE

Scraped data about **private non-profit colleges/universities offering Bachelor's degrees** from
the National Center for Education
Statistics (NCES)

Results

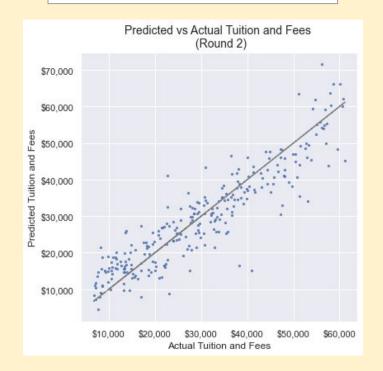
Round 1 - Modeling without financial aid

RMSE of LassoCV model: 10,048.67



Round 2 - Modeling with financial aid

RMSE of LassoCV model: 6,505.23



Results (cont.)

Round 1 - Modeling without financial aid

Final features (in order of importance)			Coefficient
Graduation rate			6,609
SAT/ACT scores are considered for admissions			5,485
# of application	S		3,803
Acceptance rat	COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK		1,939
Price of books a			1,035
Enrollment			961
Student-to-faculty ratio			656
# of full-time faculty		492	
# of part-time faculty			24

Round 2 - Modeling with financial aid

Final features (in order of importance)	Coefficient
Average amount of financial aid per student	11,051
Graduation rate	2,409
Price of books and supplies	1,602
# of applications	1,375
# of full-time faculty Yale	1,114
SAT/ACT scores are co UNIVERSITY	1,013
# of part-time faculty	789
Enrollment	376
Student-to-faculty ratio	176
Acceptance rate	55

Conclusions

• Don't succumb to sticker shock before checking out a school's financial aid offerings.

• Consider a school's outcomes, like graduation rate, when evaluating the monetary investment of a school!

- These models could use some more tweaking
 - Scrape and add new features
 - Do more data cleaning (i.e., remove outliers from some features)