

Predicting High School Graduation Rates for Illinois Schools



Presented by Dann Morr

Project Goal - Predict the graduation rate future cohort

What can variables regarding:

- Instructional Setting
- Previous Cohorts' Experience

tell us about the Graduating Rate of Seniors?

Data

1 | Gathering

Datasets for

Academic Years
2012-13 thru 2018-19



Illinois State Board of Education



Data

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Academic Years
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2 | Compiling

- Identify common features
- Filter data
- Combine into one matrix

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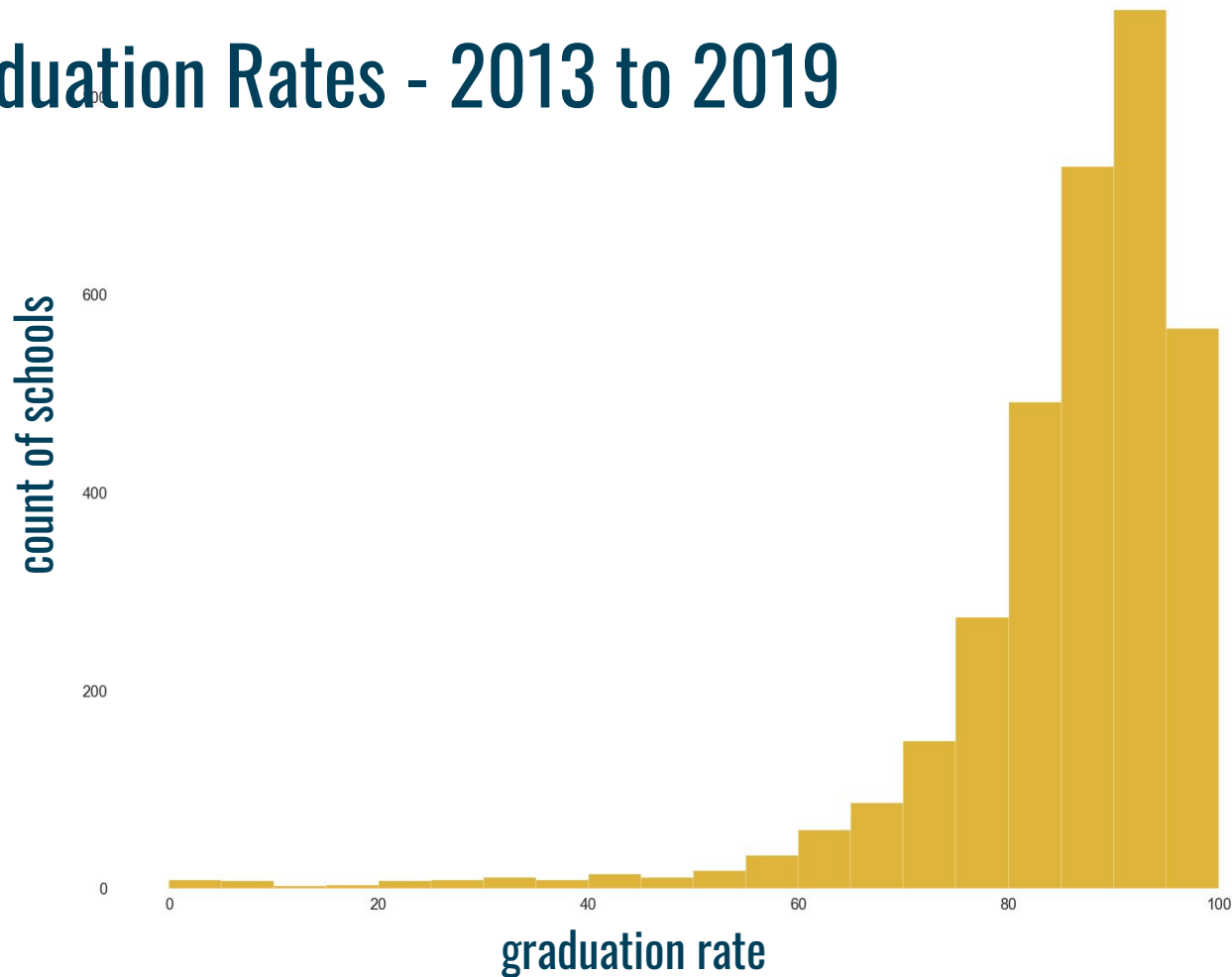
3 | Analyzing

- Identify target variable
- Find correlations
- Select models

Distribution of Graduation Rates - 2013 to 2019

Avg graduation rate:
85%

Majority of schools have
graduation rate above
88%



Definitions

4-Year Graduation

First year: 2016

Second year: 2017

Third year: 2018

Fourth year: 2019

Graduation: 2019

5-Year Graduation

First year: 2015

Second year: 2016

Third year: 2017

Fourth year: 2018

Fifth year: 2019

Graduation: 2019

First Simple Model

Linear Regression

Result

R-squared: 0.445

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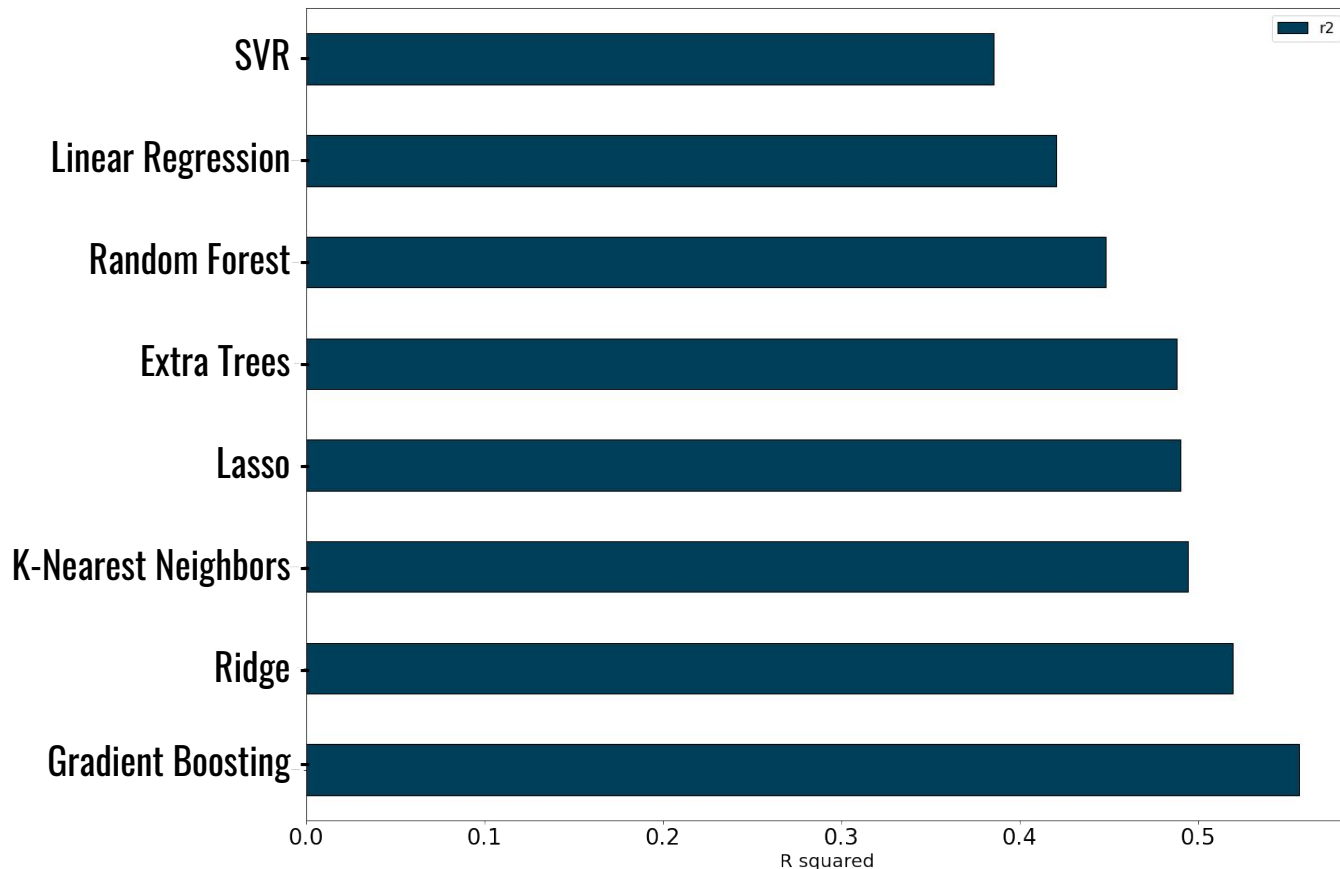
What does that mean?

Think of it as the percent of the answer that is explained by the model.

It's about 44.5% now.

I'm going to try to make it better

Comparing Model Performance - based on R squared value



**Gradient
Boosting returns
a score of 0.557**

Final Model

Gradient Boosting

Result

R-squared: 0.684

Final Model

Gradient Boosting

Result

R-squared: 0.684

It got better, didn't it?

It was at 44.5%

Now it's at 68.4%

How can we go higher?

Future improvement steps

- Hyper-tuning additional models
 - ◆ will different models perform better on test data?
- Feature selection and engineering
 - ◆ add features from district-level reporting
 - ◆ add school/municipality financial data

Contact

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