

Delaware Education Staffing Levels

...

By Andrew McLaughlin

Can Delaware's performance on English assessments improve?

Yes, with proper staffing levels of key positions, Delaware student performance on English assessments can improve.



Delaware Sits Below the National Average on Reading Assessments

Delaware 4th Graders sit 8 points below national average according to NAEP testing.

Delaware 8th Graders are 6 points below national average according to NAEP testing.

Year	Nation (public)	Delaware
2022	216	208
2019	219*	218*
2017	221*	221*
2015	221*	224*

Year	Nation (public)	Delaware
2022	259	253
2019	262*	260*
2017	265*	263*
2015	264*	263*

Delaware DOE does not spend entire Budget on Staff

In the fiscal year 2022, the State of Delaware allocated 1.1 billion dollars to be spent on Personnel costs in the Department of Education.

Close examination of the data reveals that the State spent in fact only 840 million dollars on Personnel costs that year.

(95-02-00) District and Charter Operations	
Division I Units (10,571):	
Personnel Costs	1,116,810.8

Would Scores Improve with more Staff?

With this surplus of over 250 million dollars in the budget, would state reading scores improve if that money was spent on more staff?

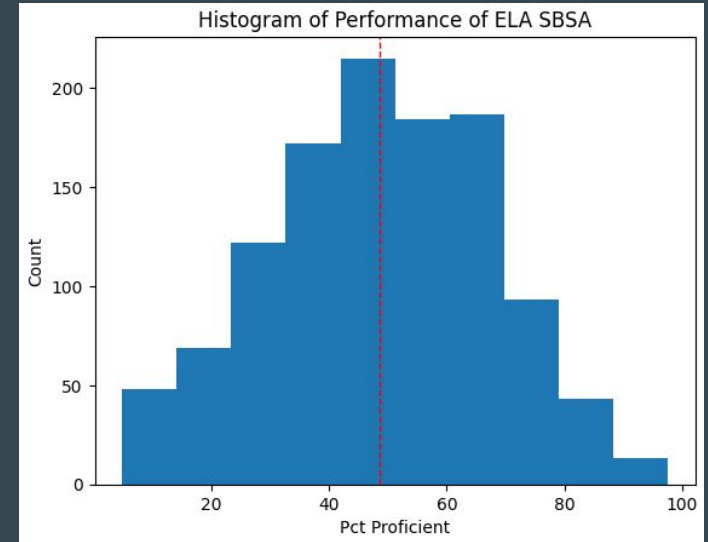
Which staff roles in particular should be targeted with increases?

Proficiency Scores on ELA tests are normally distributed.

State schools are normally distributed on performance of the ELA version of the Smarter Balanced Summative Assessment, the most common assessment in the state.

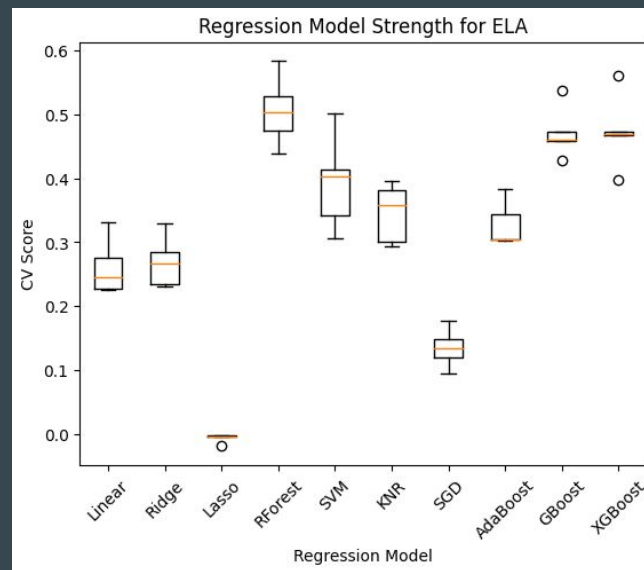
The average schools has 48% of students proficient

The state in general has 41.7% of students proficient



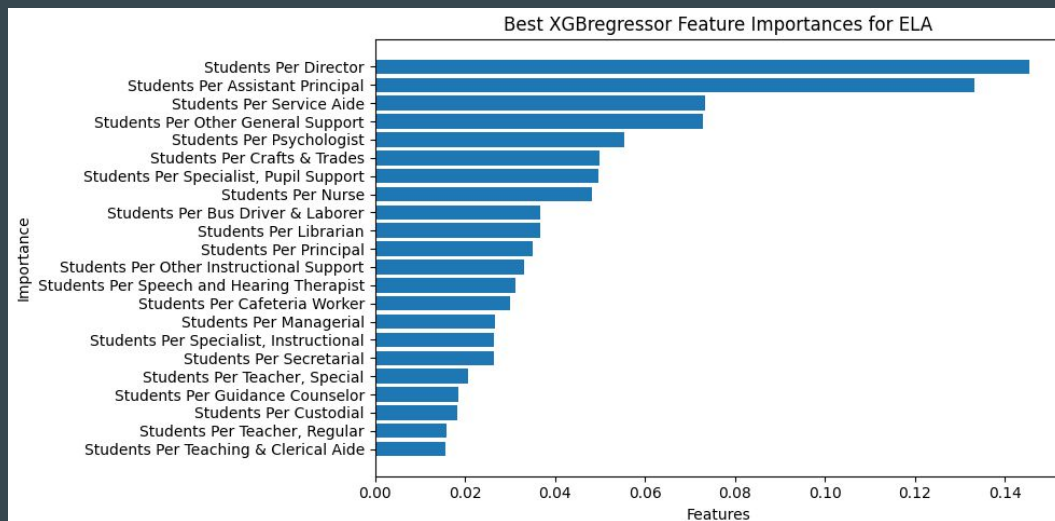
Different Regression Models were tested, XGBoost was Best

XGBoost regressor showed best balance between a high R-score of .6, speedy implementation and an explainable model.



XGBoost model suggests Assistant Principals and Directors are Important

Students Per Director and Students Per Assistant Principal are two most important features when creating the model.



Model Closely Matches State Performance

State of Delaware has 41.7% of students proficient on ELA test.

Model suggests that at current staffing levels state should have 39.4% of students proficient.



Increasing Number of APs improves the model results

An increase in the number of assistant principals in the state by 77 new positions improved model student proficiency from 39.4% to 51.4%



How much would that much staff cost?

At the average assistant principal salary of \$110000, it would cost state about 8.6 million dollars to add 77 assistant principals statewide.

This is a mere fraction of the 250 million dollar staffing budget surplus.

Overtime, increasing proficiency by 25% will cause Delaware's reading scores to match and surpass the national average.