

Predicting Teacher Turnover

BUSINESS CONTEXT

- Teacher turnover is key factor in teacher shortages.
- High turnover rates = ↓ student achievement & ↑ costs
- Schools in Philadelphia have turnover rates of 25% +



BUSINESS CONTEXT

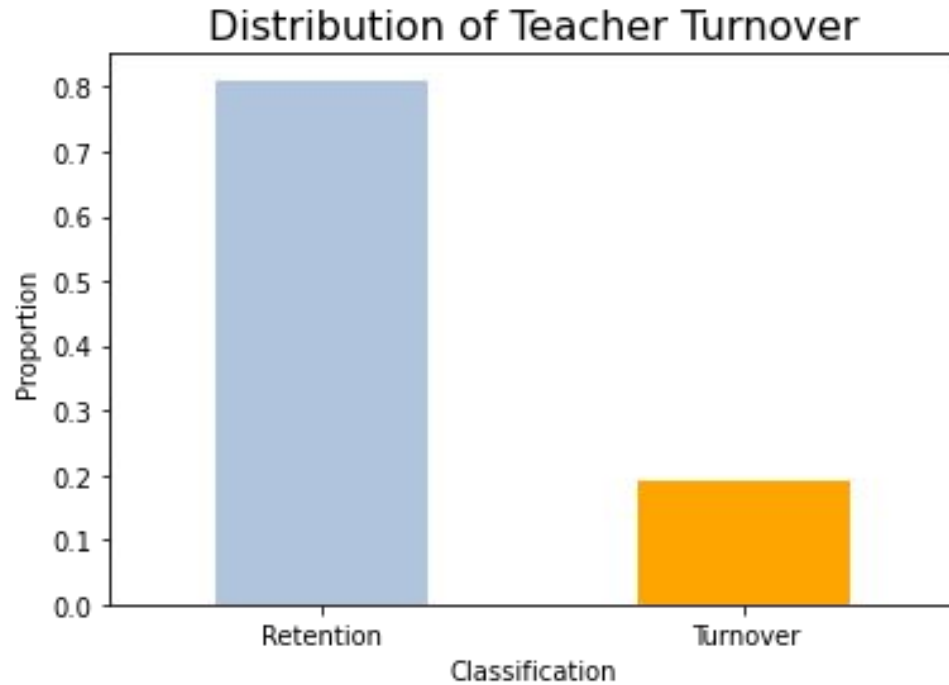
- The School District of Philadelphia can use the model to identify teacher turnover.
- Allows administrators to provide intervention or prepare earlier to fill vacancies.

DATA UNDERSTANDING

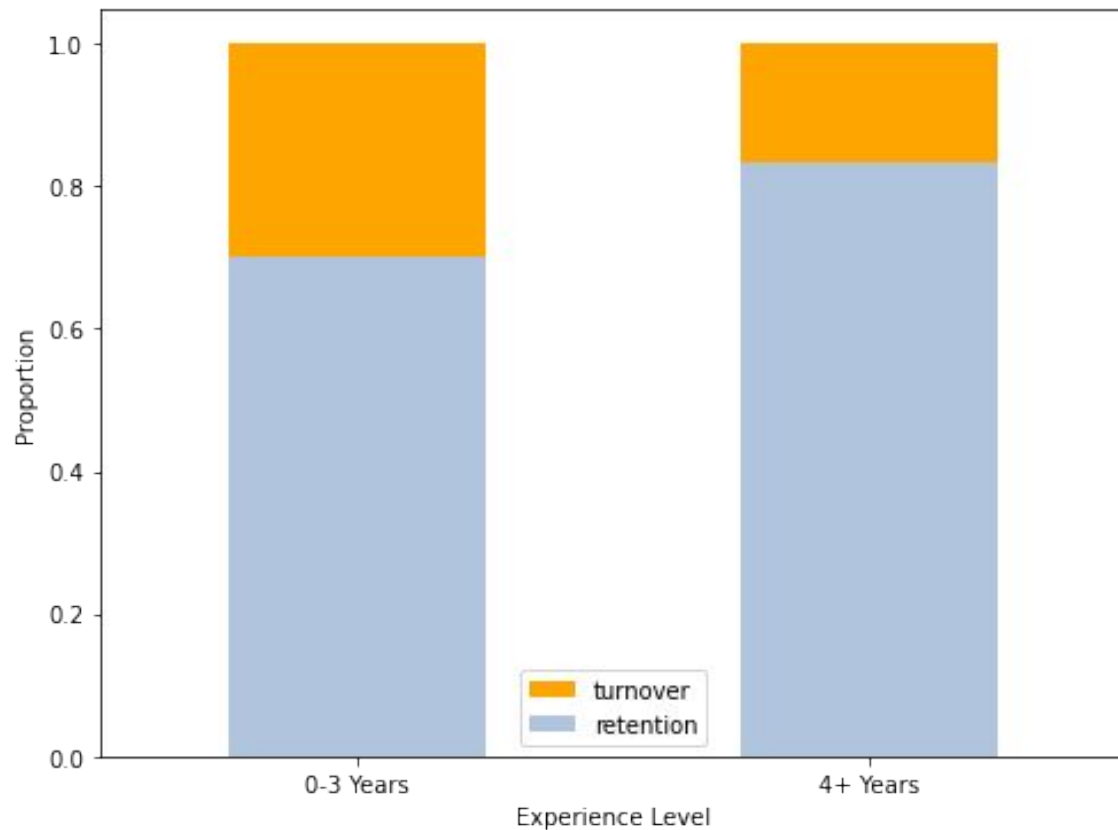
- ~8K teachers from 2017-2018 SY
- Datasets include:
 - ▷ Employee Information
 - ▷ School Progress Reports
 - ▷ School Demographics Information



DATA UNDERSTANDING



Teaching Experience vs. Teacher Turnover

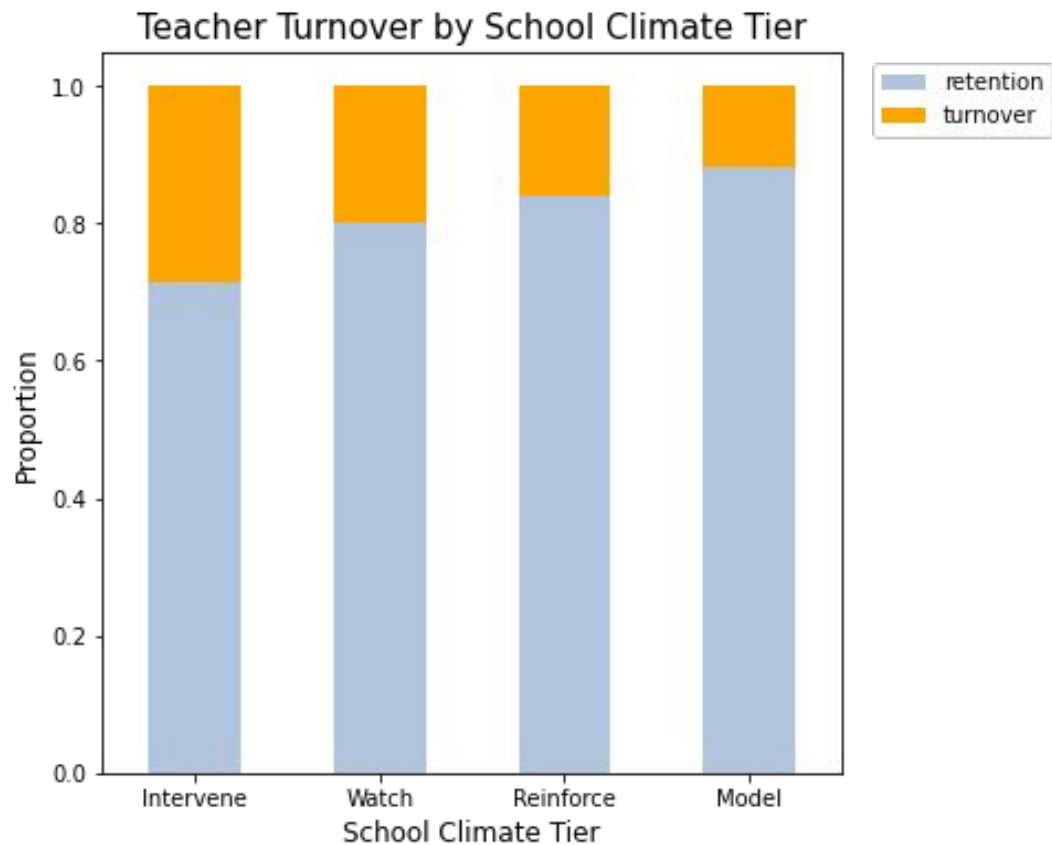


INTERVENE Earned 0-24% of possible points

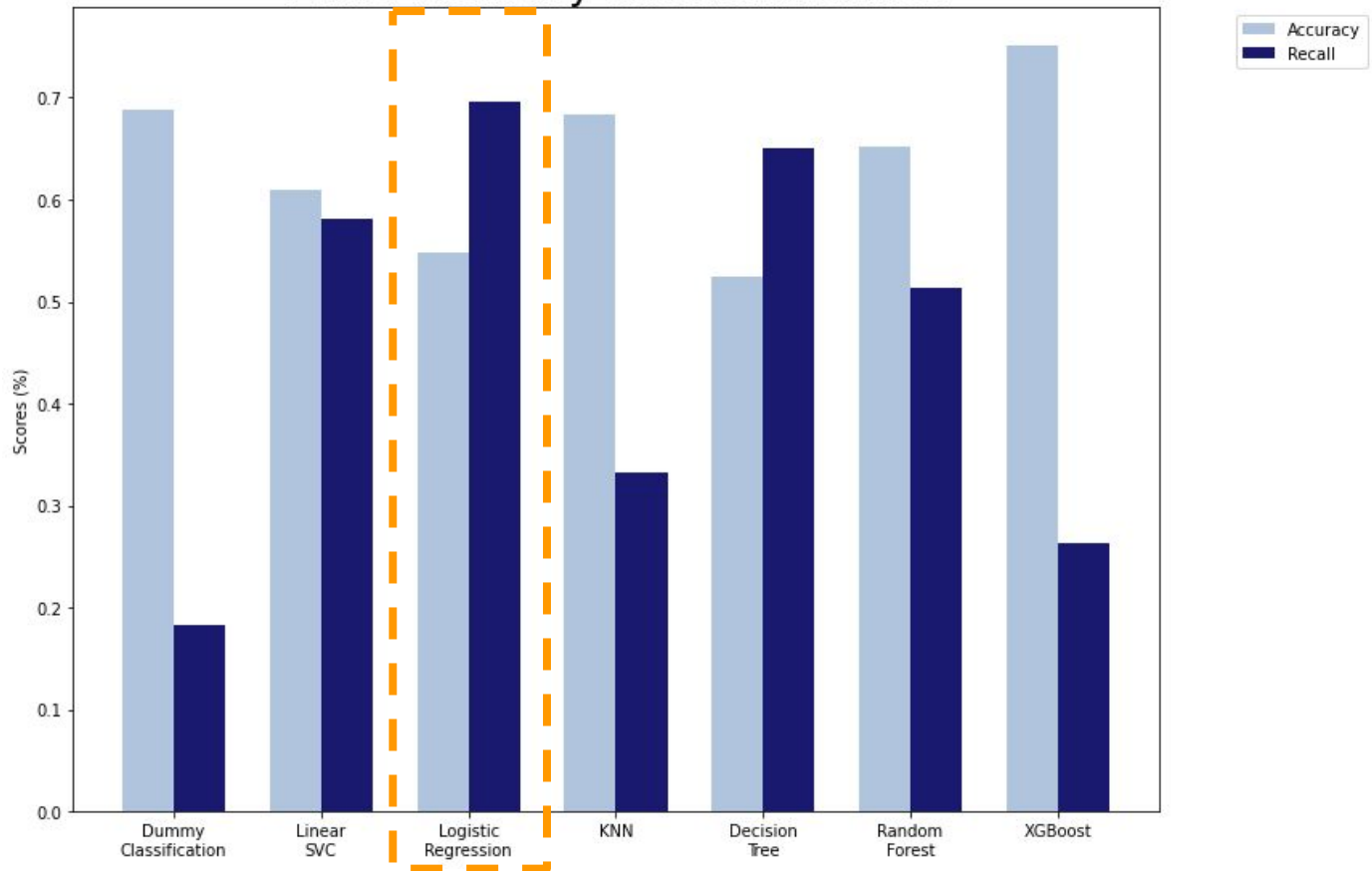
WATCH Earned 25-49% of possible points

REINFORCE Earned 50-74% of possible points

MODEL Earned 75-100% of possible points



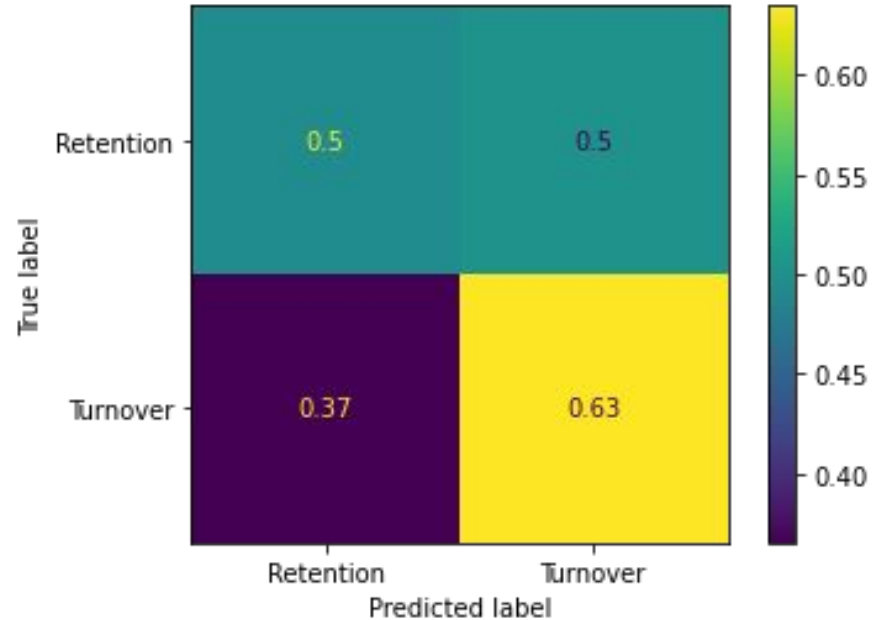
Model Accuracy and Recall Scores





MODEL PERFORMANCE

- **Recall:** 63%
- Reduces false negatives



CONCLUSIONS

- Recall maximized in Logistic Regression model.
- Model could be deployed to School District of Philadelphia to predict teacher turnover.

FUTURE EXPANSIONS

1. Include additional teacher level data such as certification pathway, subject taught, and evaluation scores.
2. Expand model for use in other large urban school districts.



Thank you! Any questions?

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