

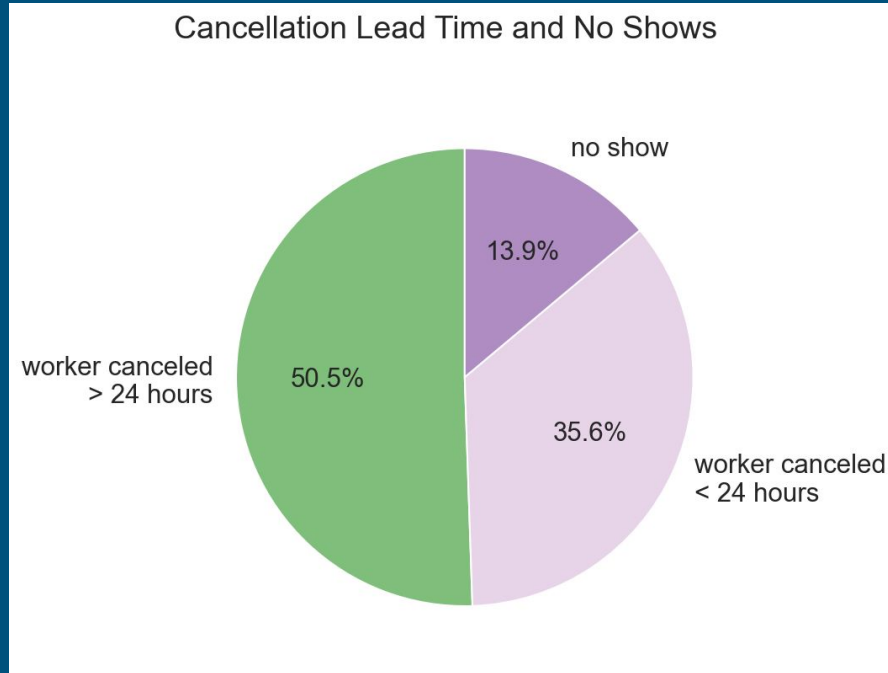


Predicting Shift Cancellation

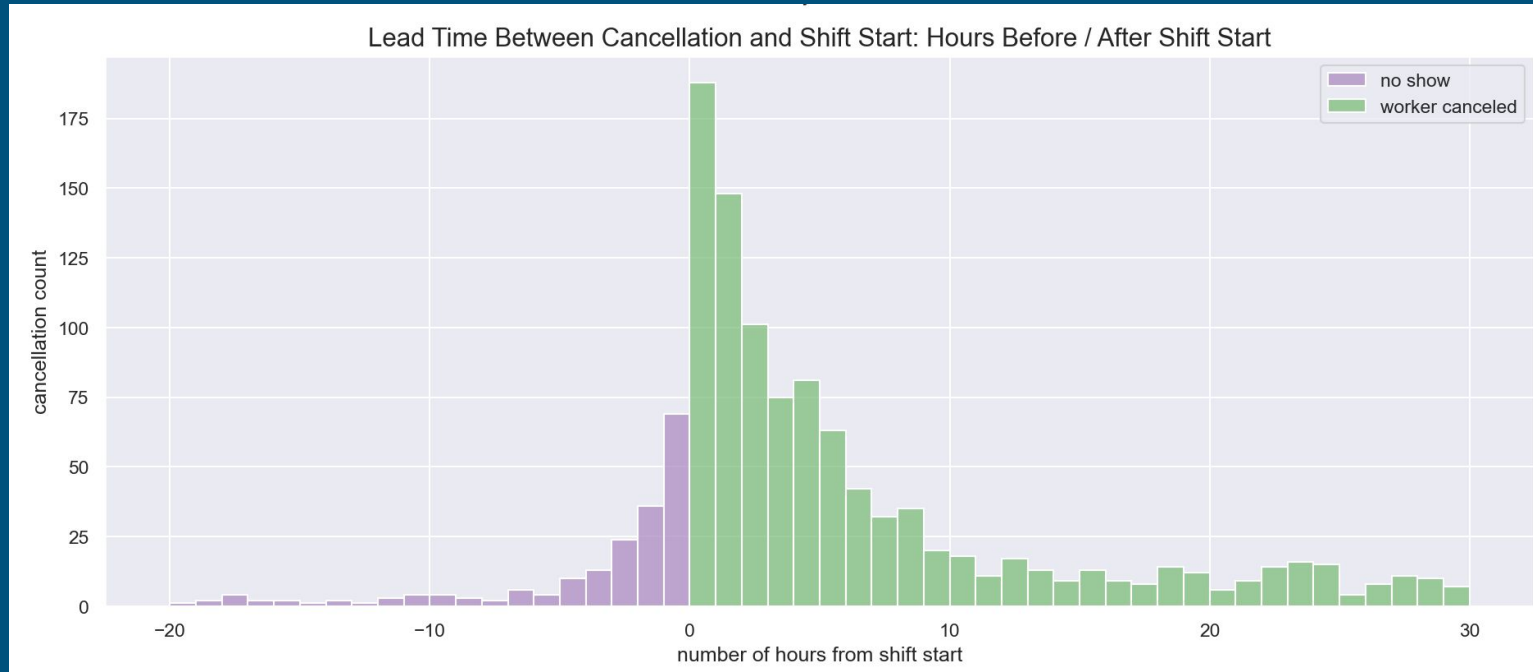
Classification Model for a Cleveland
Healthcare Provider



No Show and Short Term Cancellations



Cancellations Only Hours Before Shift



Winning Gradient Boost Model Accuracy 73%

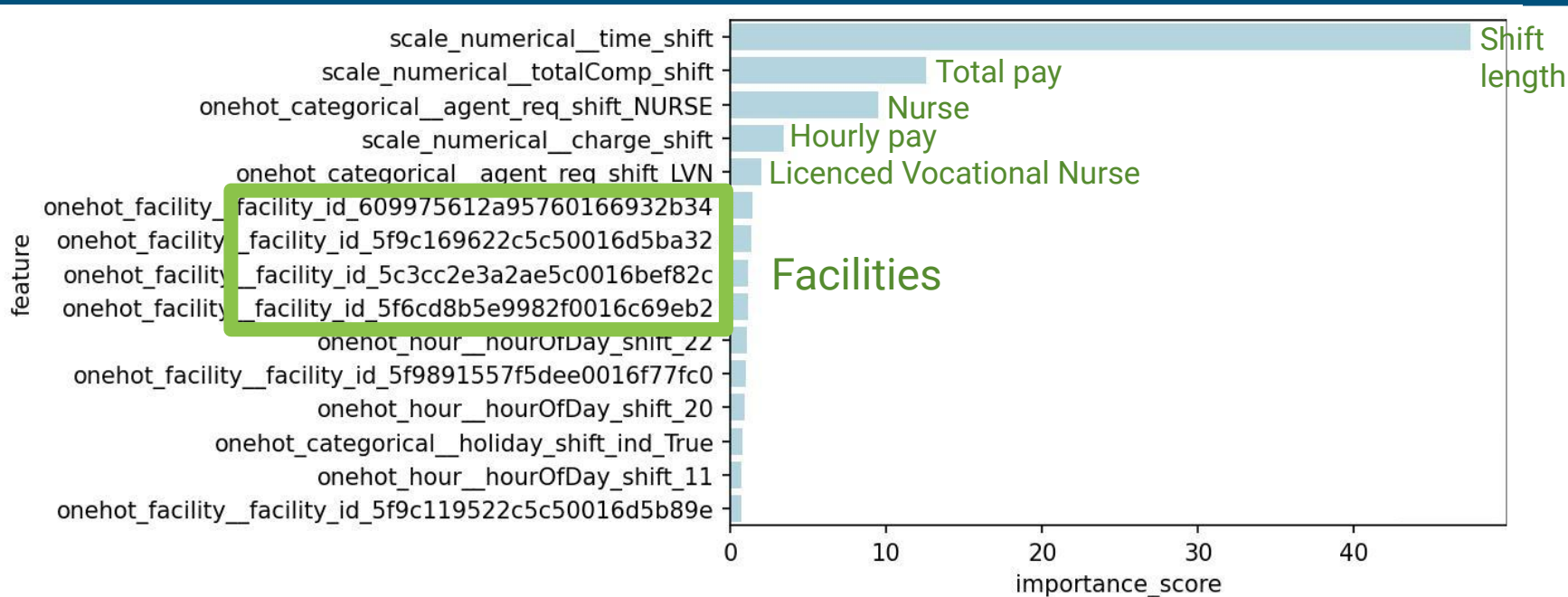
Model	ROC-AUC score	Accuracy
CatBoost	0.84	0.73
Decision Tree	0.75	0.60

Factors In Cancellations

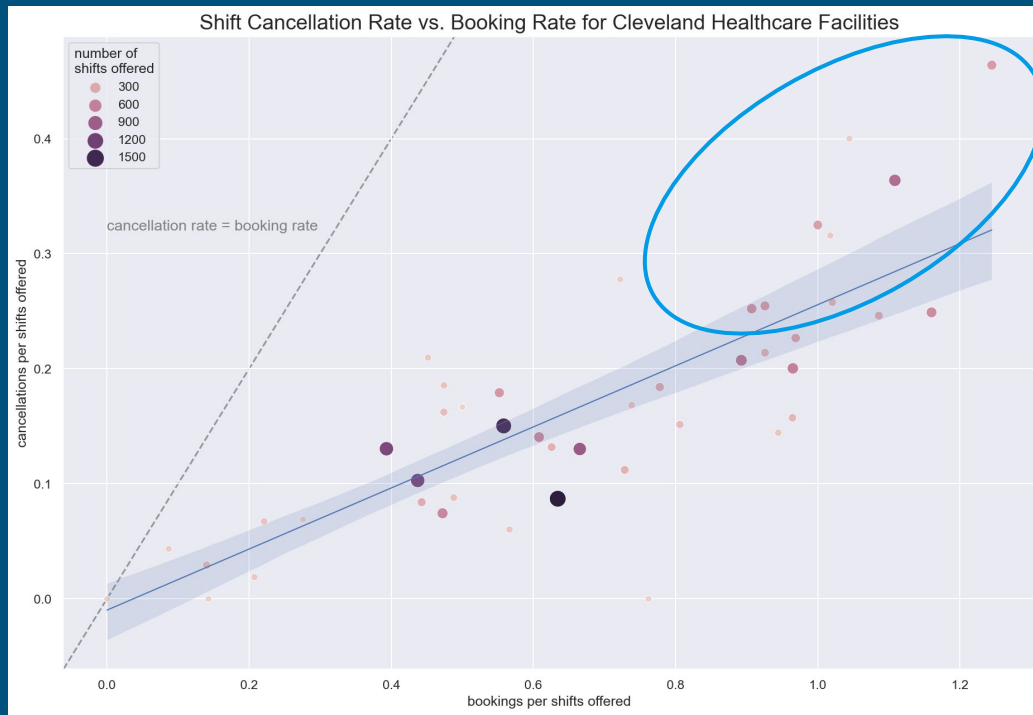
- Shift length over standard half or full day (> 3.5 or 7.5 hours)
- Nurses *not* RN or LVN
- Total compensation - proxy for shift length
- Hourly charge - proxy for type of worker (nurse, RN, LVN, CNA)
- Facility

RN: registered nurse, LVN: licensed vocational nurse, CNA: certified nursing assistant

Relative Importance of Factors



High Churn Facilities



Prioritize Standard Shift Lengths

- Limit shift lengths to just under half or full day
 - Long shifts may interfere with workers family obligations
- Make contingency plans ('on call') for shifts over standard length

Nurses may need pay boost

- Nurses on shifts not requiring RN or LVN status may actually be certified
 - Investigate whether there is 'drift' to shifts requiring RN or LVN

Investigate Facilities

- More data on facilities could help pinpoint issues
 - Facility size (number of workers)
 - Facility type (hospital vs. nursing home)
- Alternative: Feature engineering to use shift numbers as proxy

Fix Software Issues

- Erroneous facility IDs in cancellation and booking table