

Sample Group

By: Andrew Culbertson, Raquel Fellman, Linh Tran, Maxwell Welge, Evan Vallo, and Charles Bacher

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Why are readmissions
rate so important?



Patient Care Quality



Factors that lead to
more impactful
health risk

Financial Burden



Data Processing

- Removed non-informative features
- Encoded categorical variables as integer IDs
- Applied K-fold target encoding for high-cardinality categories
- Standardized numerical features using Z-score normalization
- Ended with 20 features





Models



XGBoost: 1000 trees with a max depth of 6

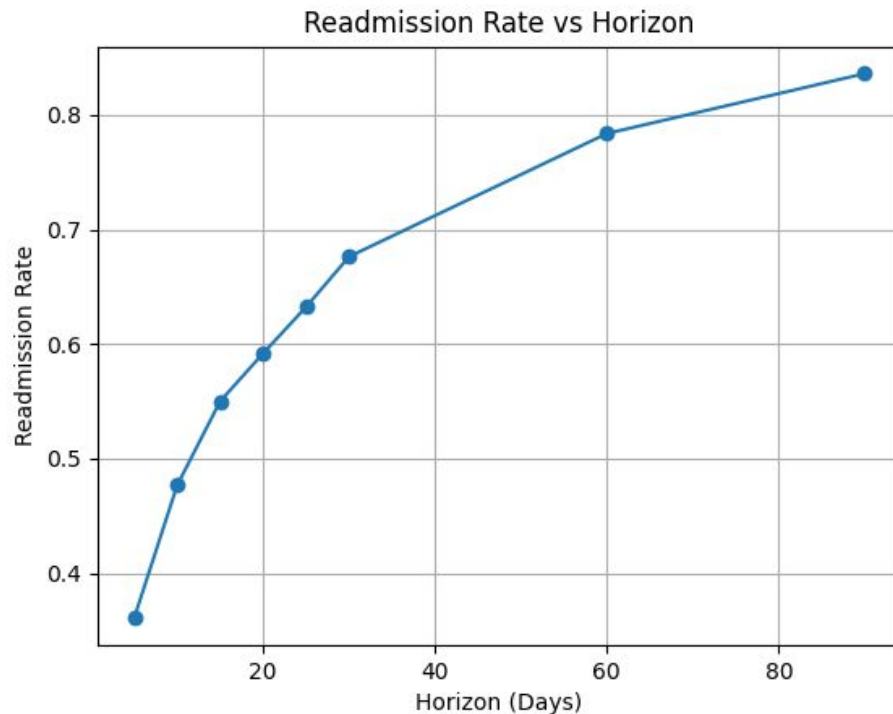
Random Forest: 200 trees of depth 12



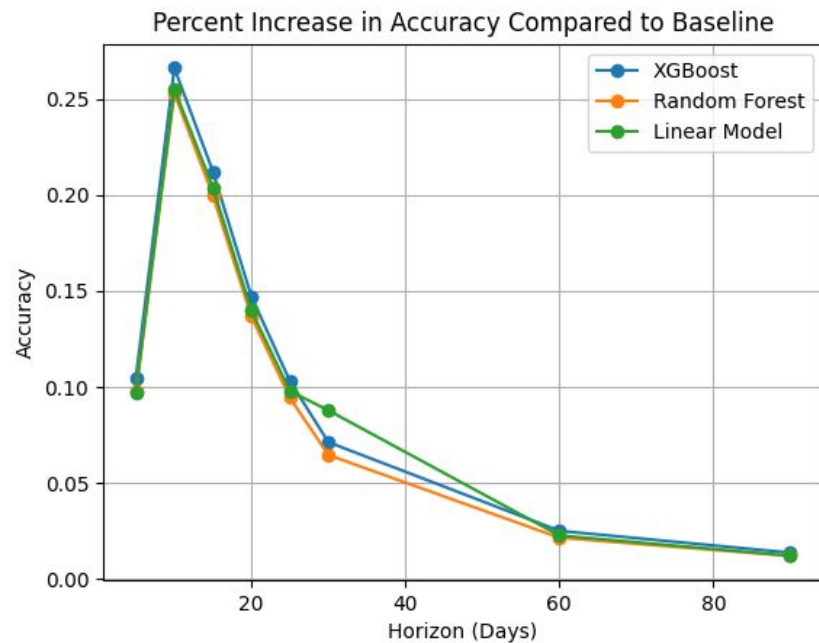
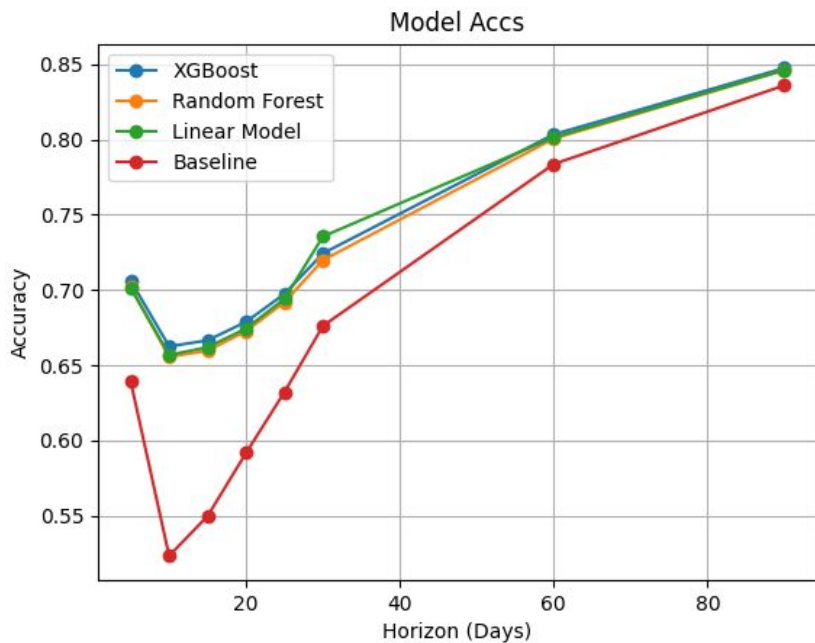
Feedforward Neural Network: 2 hidden layers of width 64

Readmission Rates

- Evaluated on multiple horizons.
- Each horizon represents readmission within X days.

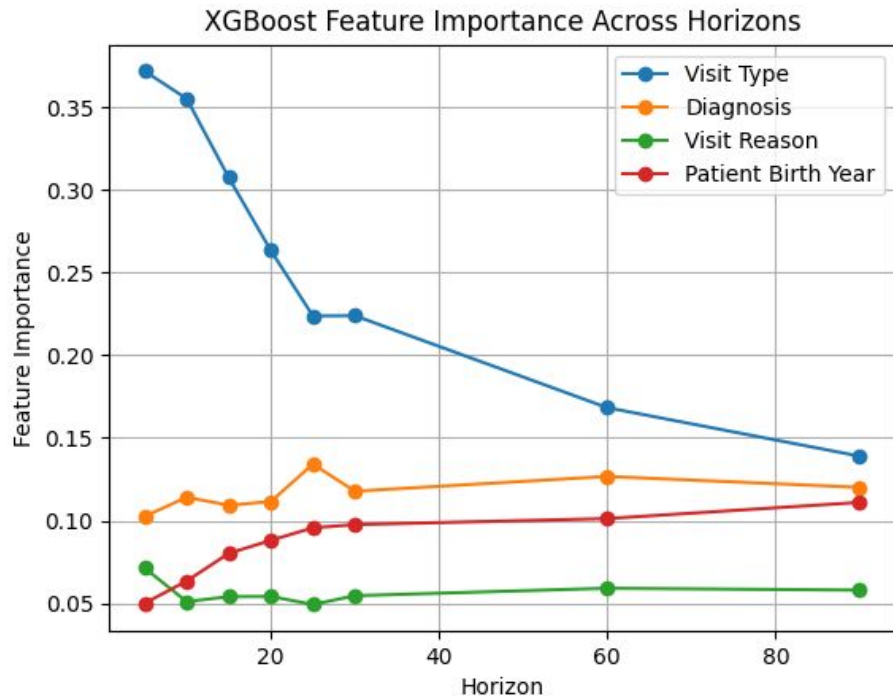


Results - Accuracy

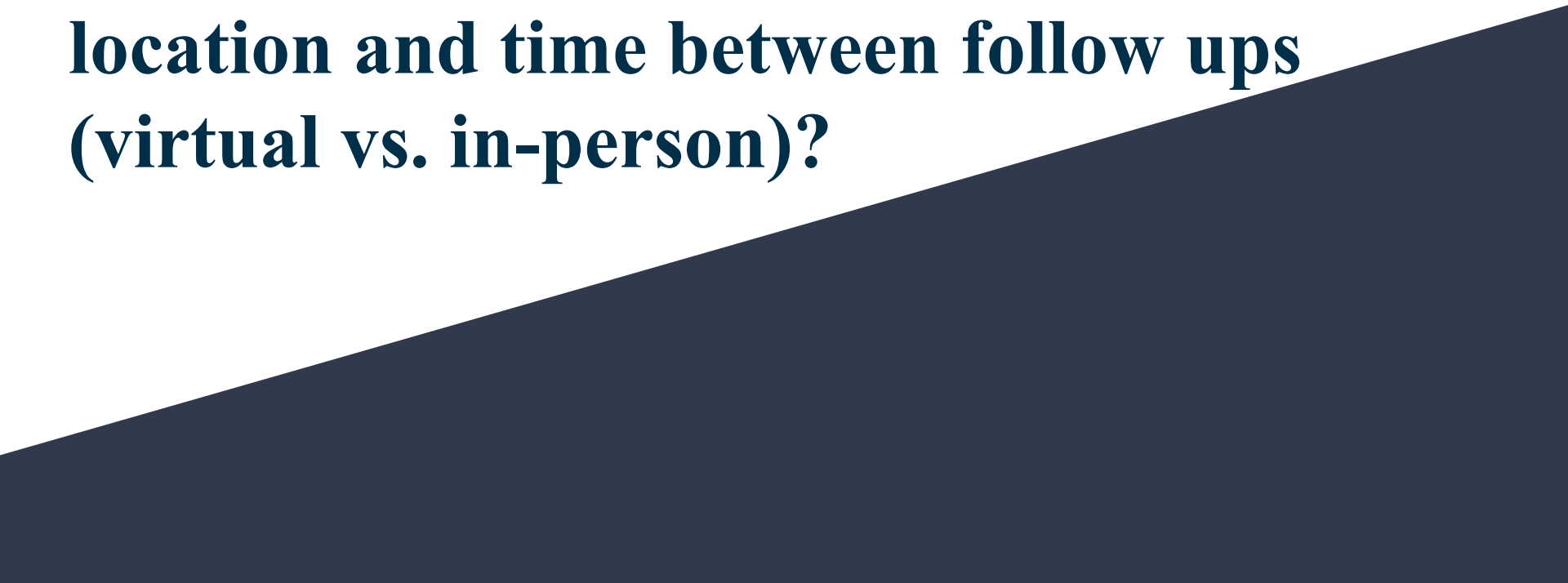


Results – Feature Importance

- Visit Type
- Visit Reason
- Diagnosis
- Patient Birth Year



Is there a relationship between patient location and time between follow ups (virtual vs. in-person)?

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Results

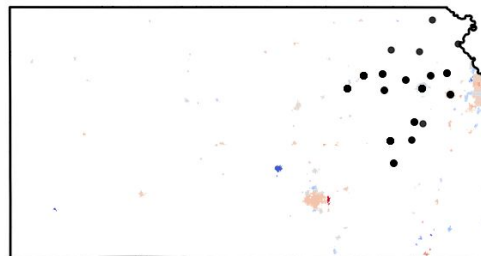
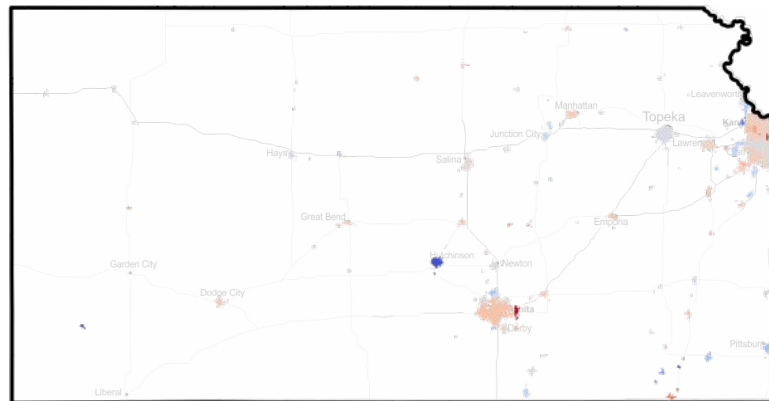
Red Regions: On average, there are more days between any previous visit and the next face-to-face visit

- i.e., patients from these regions have virtual visits sooner after a previous visit

Blue Regions: On average, there are more days between any previous visit and the next virtual visit

- i.e., patients from these regions have in-person visits sooner after a previous visit

Difference Between Days Between Face to Face vs. Virtual Follow-ups



*Only hospitals with specified locations are shown

