CoverMyMeds

Erdos Institute Fall 2022

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Overview of project

Dataset: Claim billing data for prescription medications.

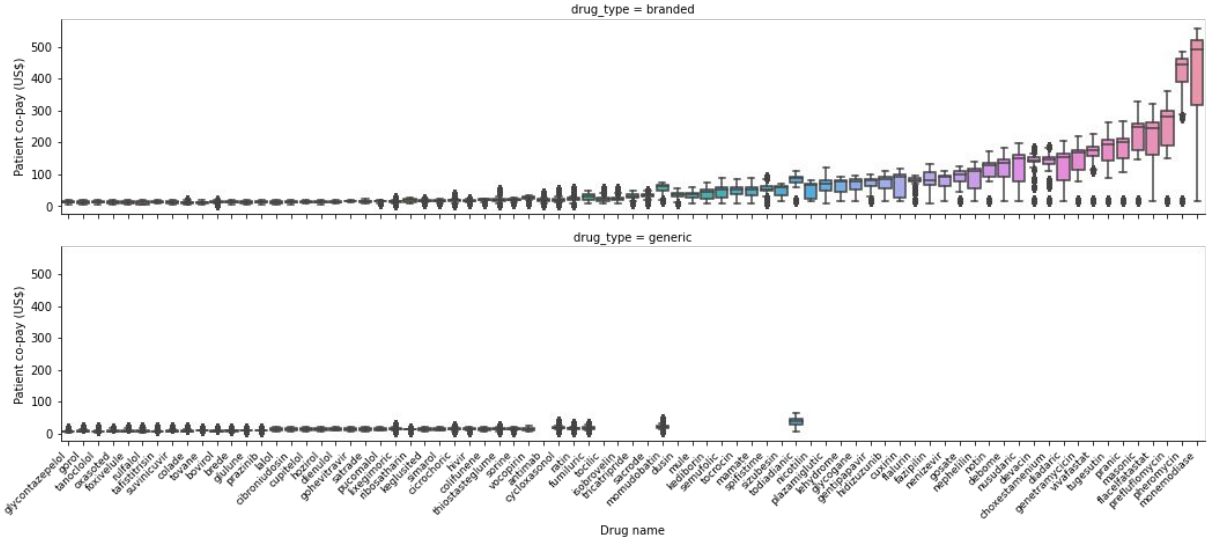
Goals:

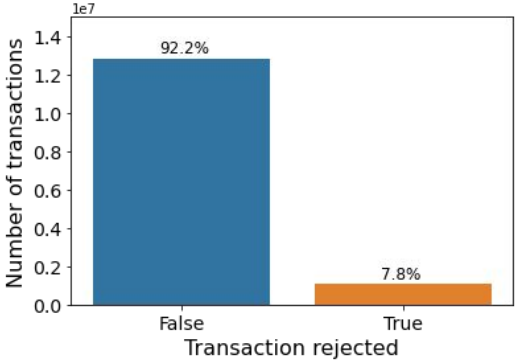
1. Predict whether a prescription medication request will be accepted or rejected.
2. Predict the amount of money the patient will be required to pay for the prescription.

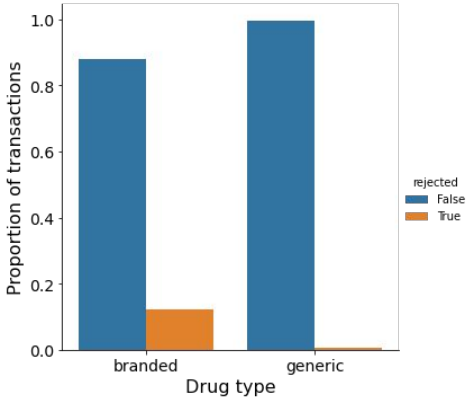
Stakeholders: Patients and providers

	tx_date	pharmacy	diagnosis	drug	bin	pcn	group	rejected	patient_pay
0	2022-01-02	Pharmacy #6	G99.93	branded tanoclolol	725700	1UQC	NaN	False	13.39
1	2022-01-02	Pharmacy #42	U60.52	branded oxasoted	664344	NaN	52H8KH0F83K	False	7.02
2	2022-01-02	Pharmacy #37	Q85.91	branded cupitelol	725700	1UQC	NaN	False	13.39
3	2022-01-02	Pharmacy #30	U60.52	generic oxasoted	571569	KB38N	6BYJBW	False	10.84
4	2022-01-02	Pharmacy #18	N55.01	branded mamate	664344	NaN	ZX2QUWR	False	47.00

Descriptive stats

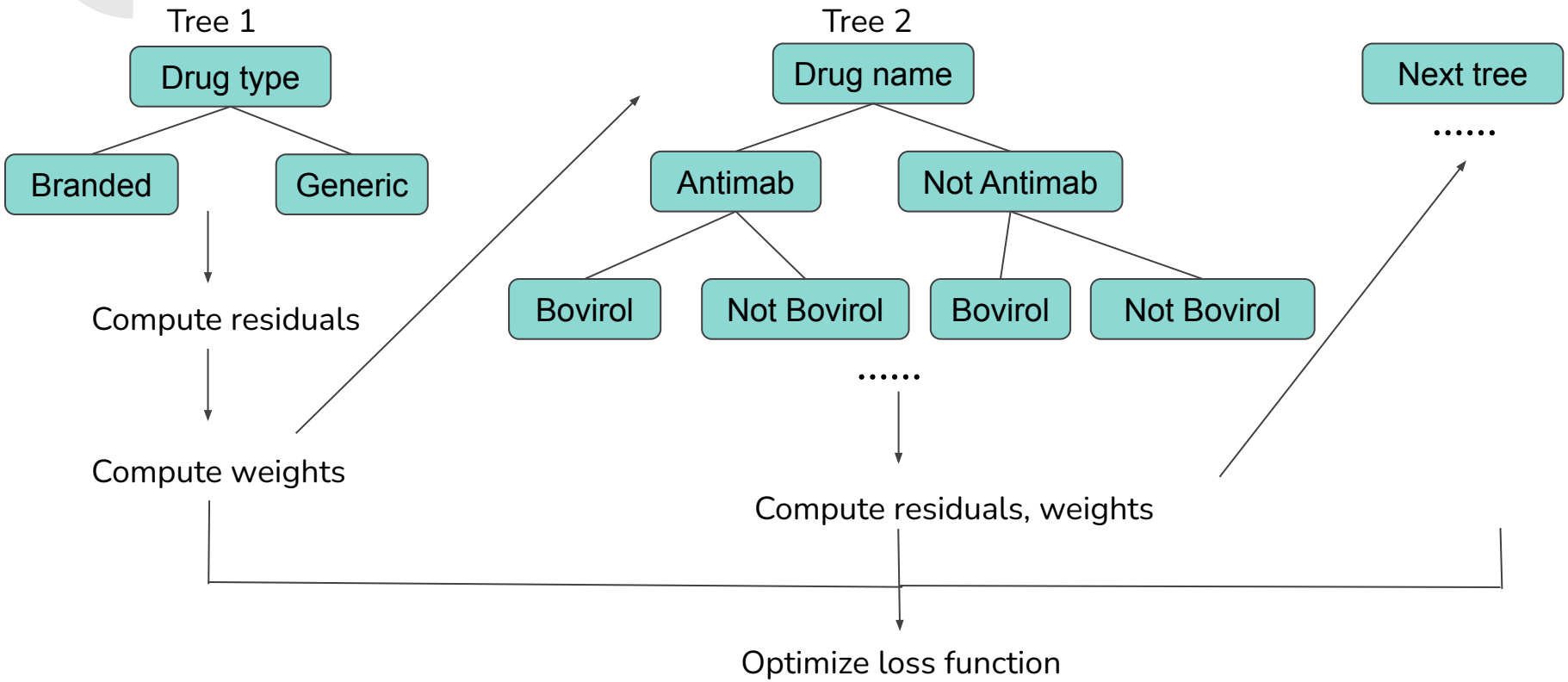






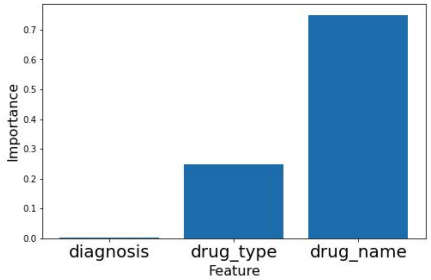
Models explored

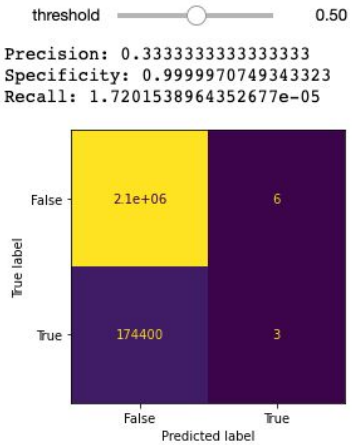
XGBoost tree method

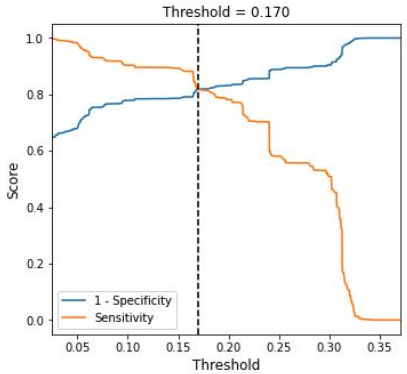


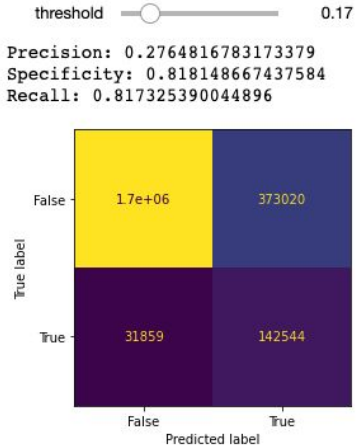
Final models and performance metrics

Goal 1: xgboost.XGBClassifier



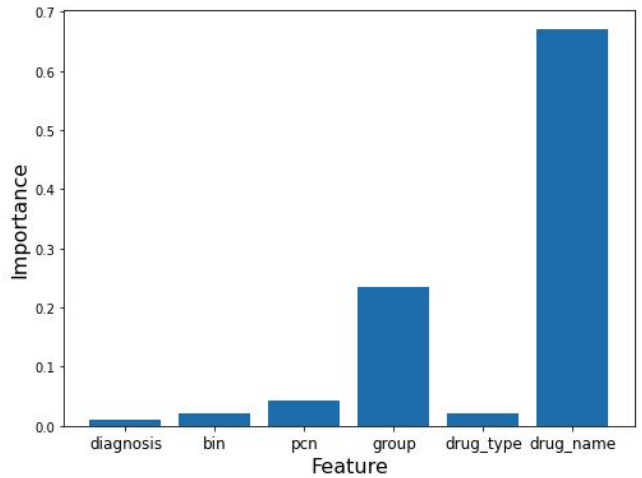






Final models and performance metrics

Goal 2: xgboost.XGBRegressor



Mean patient pay: $26.1
Baseline mean absolute error: $21.8
Model mean absolute error: $1.17

Conclusions and future steps

Conclusions

Our classifier was not great at predicting whether a medication would be accepted or rejected, but our regression model performed well to predict co-pays.

Future steps

Build tool that allows providers to see

- likelihood of acceptance/rejection
- cost of the medication to the patient
- potential alternative prescriptions for the diagnosis with better odds or lower cost