

Team Pecan - Executive Summary

CoverMyMeds project

Problem Description

The out-of-pocket cost that a patient will pay in a pharmacy is determined by complex contracts between many stakeholders including pharmacy, insurance company, and drug manufacturer. Due to the complex nature of the medication billing process, it is hard for patients to predict the amount they will pay, or even whether they can actually get a medicine. We would like to prevent such situations.

Our goals are the following. Based on the simulated pharmacy transaction data provided by CoverMyMeds,

1. Predict the payments that patients will actually encounter at the pharmacy.
2. Predict whether a claim will be rejected or not.

Proposed Solution

By analyzing the pharmacy transaction data, we figured out some features of observations are related to the copayments and rejection rate of claims. Such features include, but not limited to, type of drugs(branded or generic), insurance plans, or month when the claim is made etc.

We investigated various machine learning models to predict payments and classify rejected claims. Our conclusion is that XGBoost regression/classification models provide the best prediction. It predicts the patient payments within \$3 of error and identifies rejected claims with more than 92% of accuracy.

Value

It is expected that physicians can predict whether the claim will be accepted and how much the patient will pay at the pharmacy without letting patients to visit the pharmacy.

For patients, this will prevent the situation that patients go back home empty-handed and visit the clinic again, which is a huge effort. Also, they can expect how much they will pay in the pharmacy so that the bill does not come as a surprise.

For physicians, if the prescription is expected to be rejected, the physician can look for alternatives in advance.

Future Directions

We would like to create a model that can suggest alternative drugs if a given prescription is expected to be rejected or patients are expected to pay too much at a pharmacy.

Also, with more investigation, we expect the better precision of the model for payments and rejection prediction.