Executive Summary
Team Ranger – CoverMyMeds Drug Prediction

Overview
To predict copay for prescribed drugs and provide alternative drugs that are more likely to be covered by insurance and/or cheaper.

Problem Statement
Modern medicine has been able to treat more illnesses and cure more diseases than ever before. In fact, Americans spent over $400 billion on prescription drugs in 2019[1]. Yet despite this, not every person who is prescribed drugs can necessarily afford them, even with insurance.

CoverMyMeds wants to increase accessibility to affordable medication. We are provided simulated data of drug prescriptions and are asked to predict the amount of copay expected from that patient. They also ask if we can provide a formulary status for drugs, which would allow for substitute drugs in the situation when the drugs are not covered by insurance or too expensive for patients to afford. This would allow doctors to have better judgment in prescribing medication which their patients will ultimately receive.

Analysis and Proposed Solution
Initial analysis showed that insurances prefer to cover generic drugs over brand-name drugs. Additionally, certain drugs might have a higher average price, and insurance is more likely to reject higher priced drugs.

Based off this, we recommend prescribing generics over brand-name. Additionally, we have found, for each diagnosis and insurance, a list of prescribed drugs along with their median price. We would recommend the cheapest drug in this list.

Value
Without access to the formulary status, physicians are lacking a vital metric to reduce the end cost to patients when determining treatment. We found, that when calculating the savings of choosing the highest formulary ranked drug cost from the average drug cost, chosen without consideration of the formulary status, the patient's average out of pocket expense dropped by $20.50. The greatest savings we found was $241.55.

Future Work
While we can find prospective drugs as alternative choices, we would like to improve our copay predictions. Our model predicting drug copay consistently predicts prices too low. We conjecture that this might be due to insurance rejection corresponding to a copay of 0, which while technically true is misleading.

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[1] https://www.kff.org/health-costs/state-indicator/total-sales-for-retail-rx-drugs/