Drop-off Analysis

Introduction

In the realm of healthcare, understanding the dynamics of patient treatment adherence is critical for ensuring the effectiveness of medical interventions. For Problem 2 of our assignment, we delve into the analysis of drop-off rates associated with the "Target Drug." Our primary goal is to gain insights into how patients discontinue this treatment and identify the key events that lead to this phenomenon. This analysis is essential for healthcare professionals seeking to improve patient care and address potential issues or side effects associated with the "Target Drug."

The specific objectives of this analysis are as follows:

1. Assess the drop-off rate: We consider the ideal treatment duration for the "Target Drug" to be one year. We aim to evaluate the drop-off rate, defined as the number of patients discontinuing treatment each month. By doing so, we gain an understanding of how and when patients tend to stop taking the "Target Drug."
2. Identify driving events: In addition to calculating the drop-off rate, we analyze the specific events that drive patients to discontinue the "Target Drug." This part of the analysis provides valuable information for healthcare professionals to make informed decisions regarding treatment strategies and potential interventions.

The analysis utilizes essential libraries and data from the assignment's training dataset. Python libraries such as pandas, numpy, seaborn, and matplotlib are employed to process and visualize the data effectively.

Results

The drop-off analysis of the "Target Drug" has yielded valuable insights into patient treatment adherence and the factors that lead to discontinuation. In our evaluation of the drop-off rate, we discovered intriguing trends and patterns over time. Notably, in August 2020, there was a significant surge in drop-offs, with nearly 1800 patients discontinuing their treatment. This represents the highest number of drop-offs observed since February 2017.

Moreover, in our analysis of events driving patients to stop taking the "Target Drug," we identified significant patterns. It appears that a considerable number of patients discontinue treatment after receiving their primary diagnosis. In contrast, the fewest patients drop off after taking Drug Type 17. These findings offer healthcare professionals critical insights into areas where intervention and patient education may be warranted.

This analysis provides essential information that can help healthcare practitioners make informed decisions to improve patient care and treatment outcomes. By understanding the dynamics of drop-offs and the events associated with them, healthcare providers can tailor their approaches to enhance patient adherence to treatment plans.