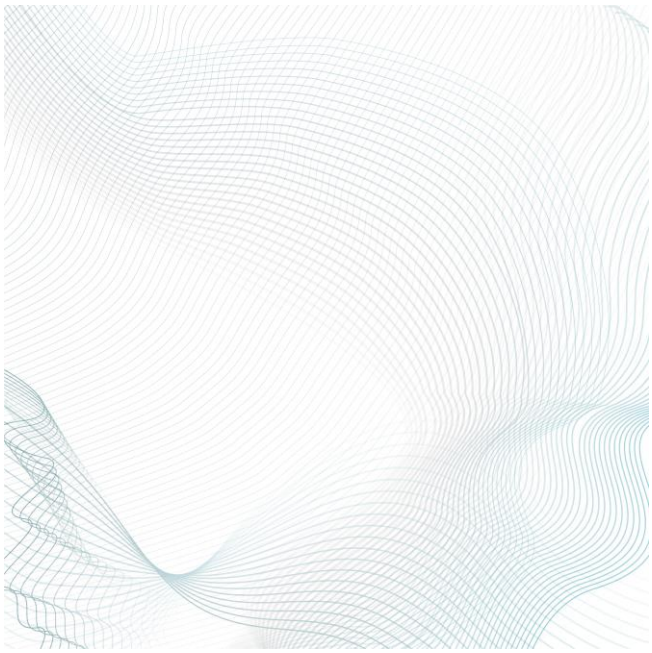

QUANTIC

an analytics company

WEEK 10 - DELIVERABLES

This project delves into the pivotal realm of Exploratory Data Analysis (EDA), strategically designed to confront organizational challenges while harmonizing with business objectives. Following a meticulously structured project lifecycle embedded with definitive timelines, this initiative accentuates the significance of a thorough data cleansing and preparation phase. The implementation of a meticulous data intake report serves as the linchpin, ensuring data integrity and relevance, thereby fortifying the project's triumph and augmenting its capacity to unveil actionable insights. Through the application of EDA techniques, this study intends to illuminate untapped patterns, correlations, and trends within datasets, empowering informed decision-making and fostering a data-driven organizational culture.

Ansel Vallejo | Data Scientist
LISUM25

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About Us

Quantic is an analytics company that places a strong emphasis on healthcare. We are dedicated to the idea that data can be a catalyst for positive change in the healthcare industry. With a talented team of data scientists and analysts, our primary objective is to tackle complex healthcare challenges and enhance patient outcomes. Our distinctive approach combines state-of-the-art data analytics with deep healthcare sector knowledge to deliver actionable insights, fostering informed decisions and meaningful advancements in healthcare provision. At Quantic, we are committed to a future where healthcare is not only data-driven but also healthier and more efficient.

Our Team

Name	Email	Country	Institution	Specialization
Ansel Vallejo	msavg@hotmail.com	Japan	Flatiron School	Data Science

Overview

One of the persistent challenges faced by pharmaceutical companies lies in comprehending the duration of drug persistence as per physician prescriptions. To solve this problem, ABC Pharma Company recognized this issue and engaged Quantic to streamline and automate the identification process. By leveraging data analytics, the pharmaceutical company aimed to gain valuable insights into drug persistency patterns, ultimately enhancing their decision-making and ensuring better patient care. The collaboration between ABC Pharma and Quantic demonstrates a commitment to harnessing data-driven solutions to address critical industry challenges. Through this initiative, they strive to advance pharmaceutical practices and optimize patient outcomes.

Business Scope

The project scope entails the development of an automated system in collaboration with Quantic to analyze and identify drug persistency patterns within the pharmaceutical domain. This data-driven solution will enhance decision-making for ABC Pharma Company, ultimately leading to improved patient care and the advancement of pharmaceutical practices.

Data Intake Report

Name: *Healthcare_dataset*
Report date: *October 26th 2023*
Internship Batch: LISUM25
Version:1.0
Data intake by: Ansel Vallejo
Data intake reviewer: N/A
Data storage location: N/A

Tabular data details:

City

Total number of observations	3424
Total number of files	1
Total number of features	69
Base format of the file	.CSV
Size of the data	899 KB

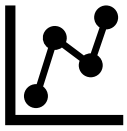
Proposed Approach:

- Check data for any missing values.
- Check for outliers.
- Check for skewed data.

Problem Description

This study delves into the intricate realm of patient drug persistency duration within the pharmaceutical industry, aiming to leverage the potency of Exploratory Data Analysis (EDA). The pivotal challenge lies in comprehending the duration of patient adherence to prescribed drug regimens, a decisive factor influencing treatment effectiveness, patient well-being, and the optimization of pharmaceutical strategies. Focused exclusively on EDA methodologies, this research embarks on a comprehensive journey encompassing rigorous data exploration, meticulous anomaly detection, and insightful distribution analysis. The primary objective of this study is to unearth nuanced and subtle patterns inherent in patient drug persistency. By harnessing the prowess of EDA, this research aspires to alleviate data quality concerns, thereby advancing our understanding of patient adherence patterns. Ultimately, this endeavor seeks to fortify pharmaceutical practices with actionable, data-driven insights, fostering a more informed and responsive landscape within the pharmaceutical domain.

Exploratory Data Analysis (EDA)



Scope:
Its scope encompasses a comprehensive exploration of data structures, patterns, and characteristics related to adherence to prescribed drug regimens. Through meticulous data profiling, visualizations, and summary statistics, EDA aims to illuminate the landscape of patient drug persistency. Ultimately, EDA aims to derive actionable insights critical for refining pharmaceutical strategies, treatment planning, and interventions aimed at enhancing patient adherence and optimizing pharmaceutical practices.

Exploratory Questions:

- *What gender is most persistent of taking the drug?*
- *Is age a big contribution to drug persistency?*
- *What is the percentage of persistency based on race?*
- *What risk factor contributes to the rate of persistency of a drug?*
- *Do fragility fracture play a role in persistency?*

Exploratory Data Analysis (EDA)

Data analysis approach used to scrutinize, summarize, and visually explore datasets to understand their key characteristics, patterns, and relationships, facilitating insights and hypothesis generation.

- ***What gender is most persistent of taking the drug?***

The data related to drug persistency categorized by gender. It includes columns denoting persistency flags, gender, counts for non-persistent and persistent cases, corresponding percentages, and the total count for each gender category.

Analysis:

- There were 2018 cases of non-persistent drug use and 1212 cases of persistent drug use, representing 37.52% and 62.48% respectively, totaling 3230 cases.

- Similarly, for males, there were 117 non-persistent cases and 77 persistent cases, accounting for 39.69% and 60.31% respectively, totaling 194 cases.

*Males tend to have higher persistency than Females by **2.17%**, whereas Females have higher non-persistency than Males by **2.17%.***

- ***Is age a big contribution to drug persistency?***

The provided data summarizes drug persistency based on age groups. It categorizes individuals into four age brackets:

Analysis:

- Those aged over 75 accounted for 1439 cases, constituting approximately 42.03% of the dataset.

- Individuals between 65 and 75 years old represented 1086 cases, approximately 31.72% of the total.

- The age group of 55 to 65 contributed 733 cases, making up around 21.41%.

- Individuals below the age of 55 constituted 166 cases, approximately 4.85% of the dataset.

*Age group of 65-75 has the highest percentage of drug persistency at **39.87%** out of the others, exceeding the mean persistency by **2.27%** from all age groups.*

- ***What is the percentage of persistency based on race?***

  - For individuals identified as African American, there were a total of 95 cases. 65 cases non-persistent drug use, accounting 68.42%, while 30 cases were persistent, making up about 31.58% of the total cases in this racial group.

  - Among individuals categorized as Asian, there were 84 cases. Within this group, 43 cases represented non-persistent drug use, making up approximately 51.19%, while 41 cases were classified as persistent, accounting for about 48.81% of the total cases.

  - The category of Caucasians consisted of 3245 cases. Within this racial group, 2027 cases were non-persistent, constituting approximately 62.47%, while 1218 cases were persistent, making up about 37.53% of the total cases.

Therefore, based on the calculated differences, African Americans exhibit the most substantial contrast in drug persistency percentages between persistent and non-persistent cases among the provided racial groups.

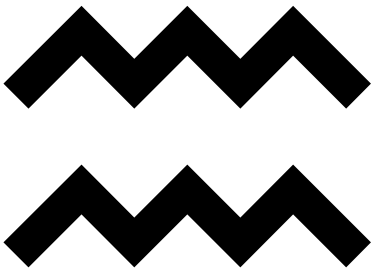
Further analysis coming soon

References

Github

https://github.com/anvadev/Healthcare-Drug_Persistency/tree/main/Week%2010%20-%20Exploratory%20Data%20Analysis

End of Documentation



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