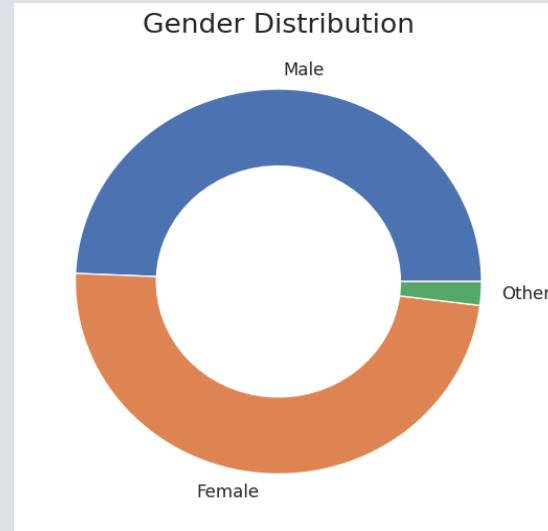
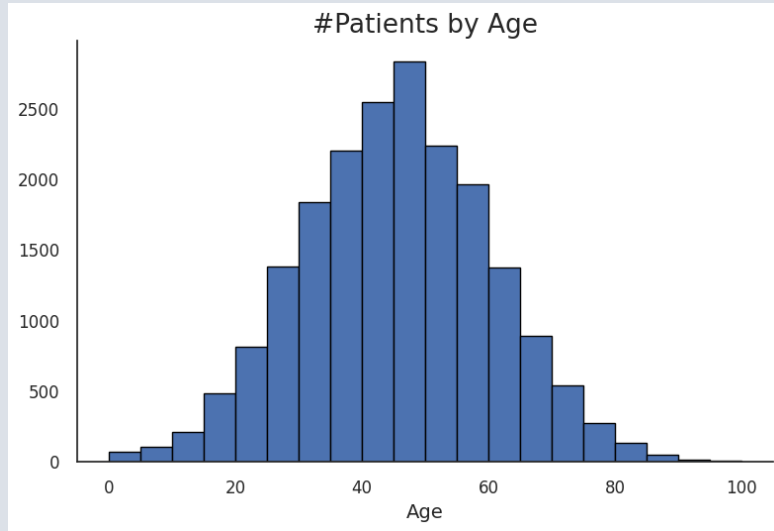


Healthcare Data Analysis Overview

Presented by Hamid Lu
June 2025



Patient Demographics

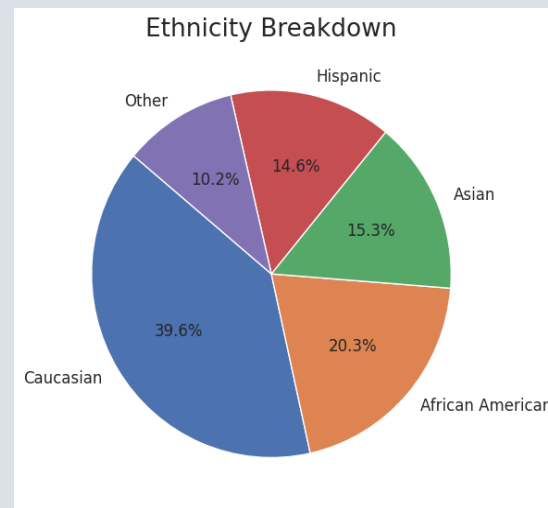
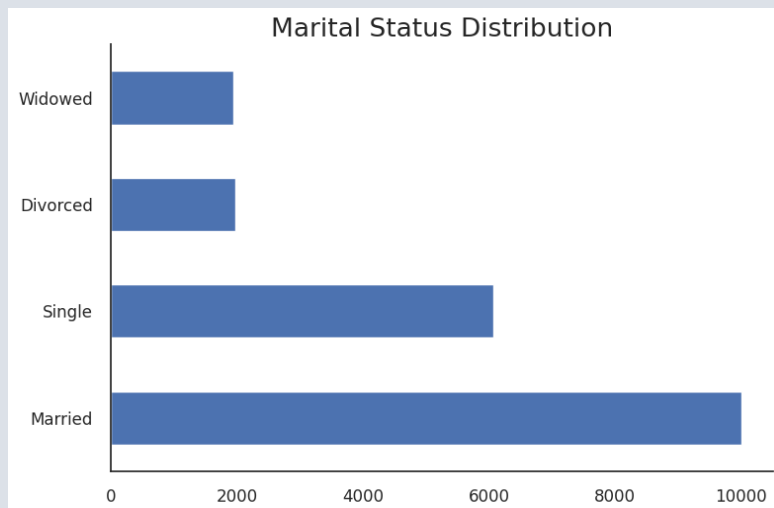


Age Distribution

- Most patients are middle-aged.

Gender Distribution

- The number of male and female patients is about equal.



Marital Status Distribution

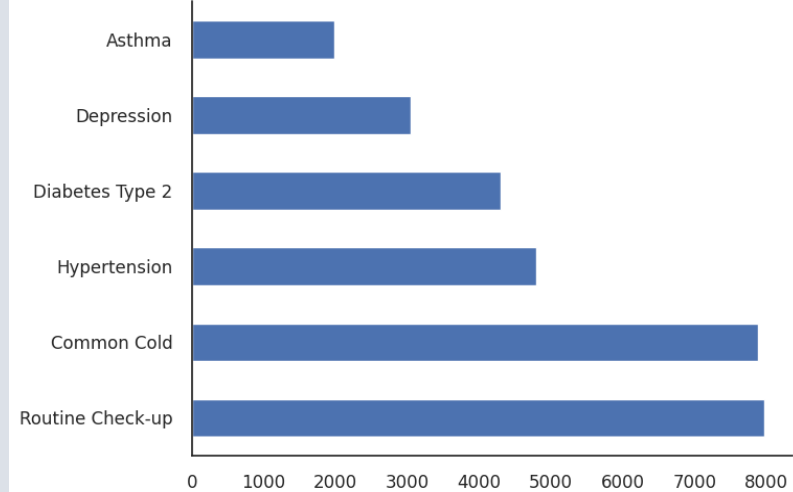
- Most patients are married.

Ethnicity Breakdown

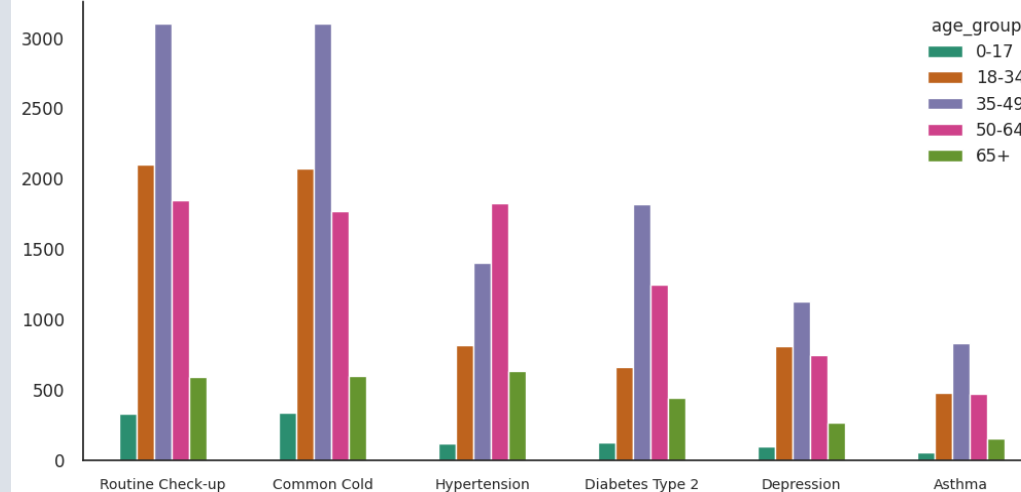
- Caucasian patients make up the largest group.
- There is a good mix of African American, Asian, Hispanic, and Other ethnicities.

How do common diagnoses vary across age, gender, and ethnicity?

Most Common Diagnoses



Diagnosis by Age Group



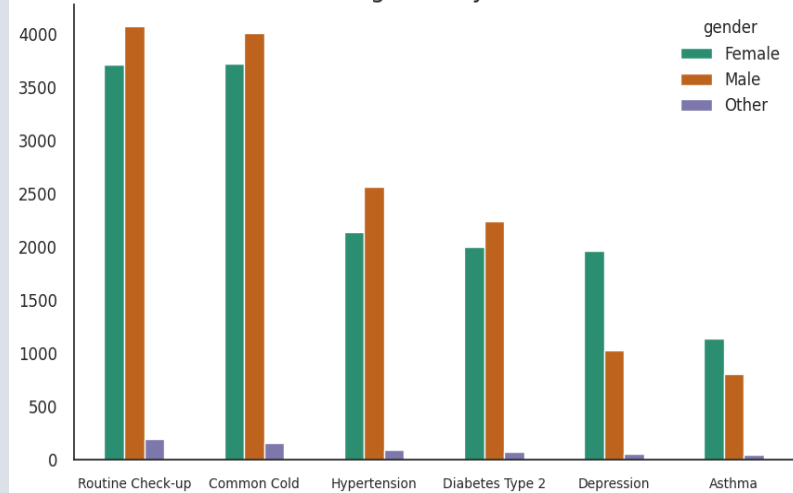
Most Common Diagnoses

- Routine check-ups and common colds are the top reasons patients visit.
- High blood pressure and diabetes are also common.

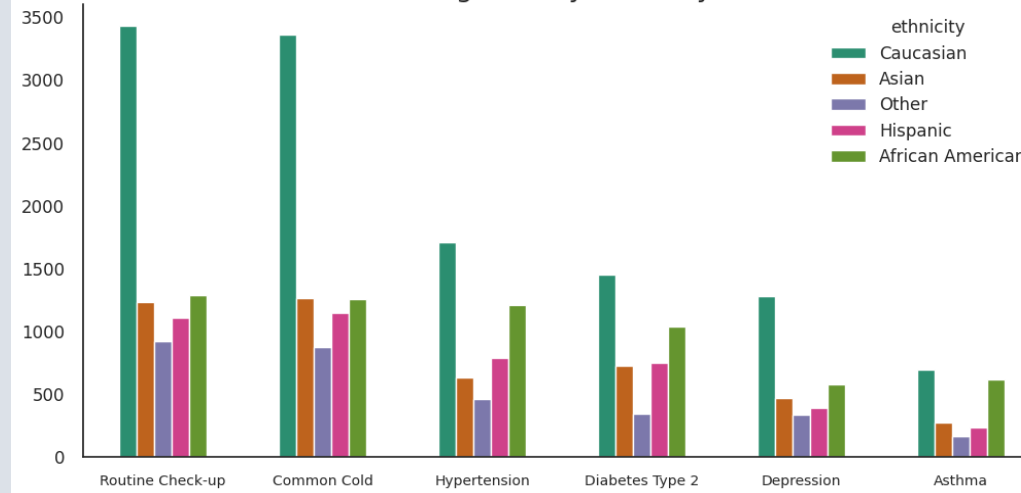
Diagnosis by Gender

- Men have a bit more cases than women for most diseases.
- Asthma is more common in women.
- Depression shows a notably higher number of cases in females compared to males.

Diagnosis by Sex



Diagnosis by Ethnicity

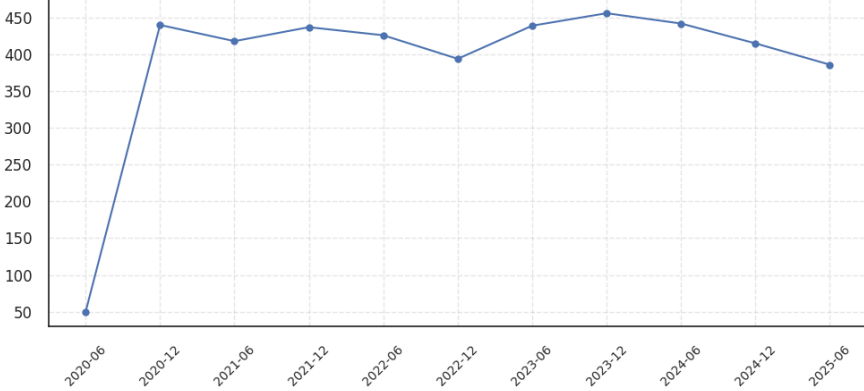


Diagnosis by Age Group

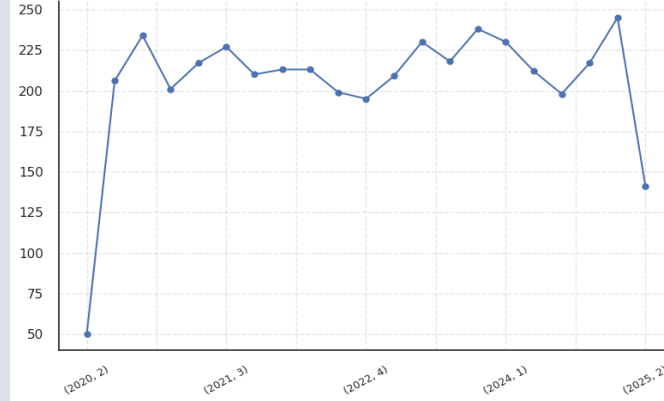
- Most cases are in people aged 35 to 64.
- High blood pressure is most common in people aged 50 to 64.
- Young people get colds more often than other diseases.

Trend of Diabetes Cases Over Time

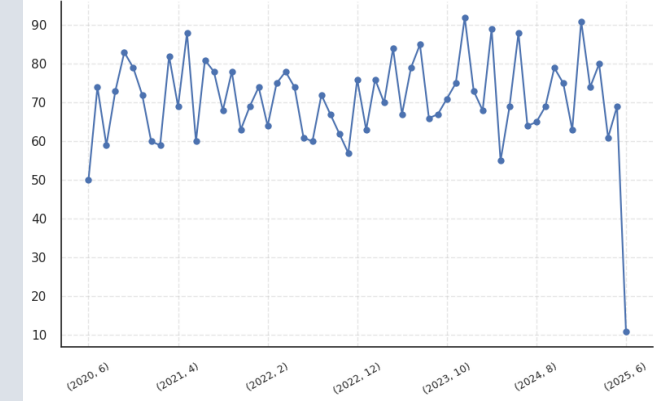
Diabetes Cases Over Time (6-Month Period)



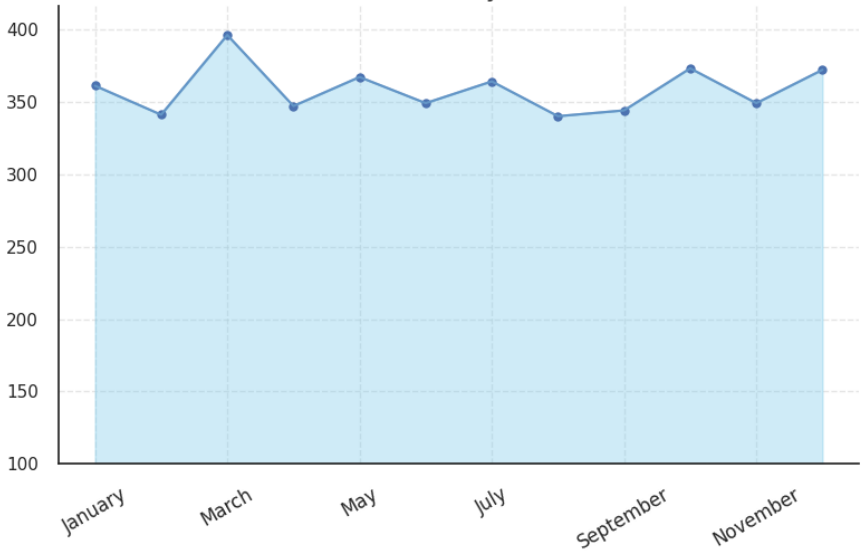
Diabetes Over Time (Quarter interval)



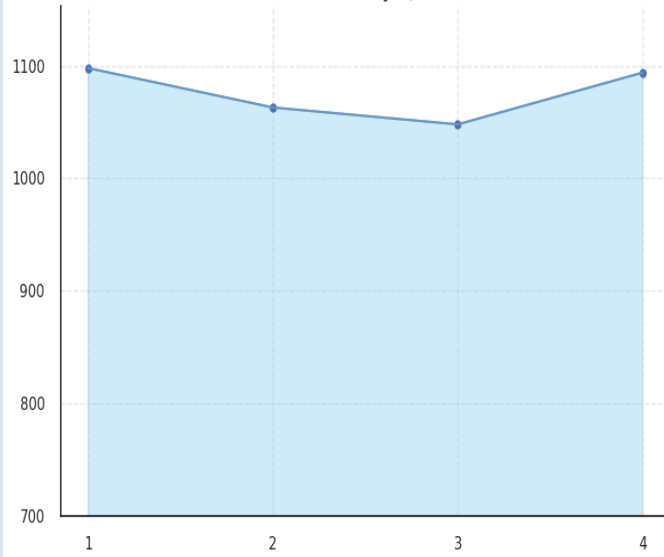
Diabetes Over Time (Monthly period)



Diabetes by Month



Diabetes by Quarter



Time Trend (Yearly & 6-Month)

- Diabetes cases have slightly dropped in recent years.
- The drop is not sharp but shows a gradual downward trend.

Seasonality – Quarterly

- Q3 (July–Sep) shows slightly more cases than other quarters.
- No major seasonal spikes across other quarters.

Seasonality – Monthly

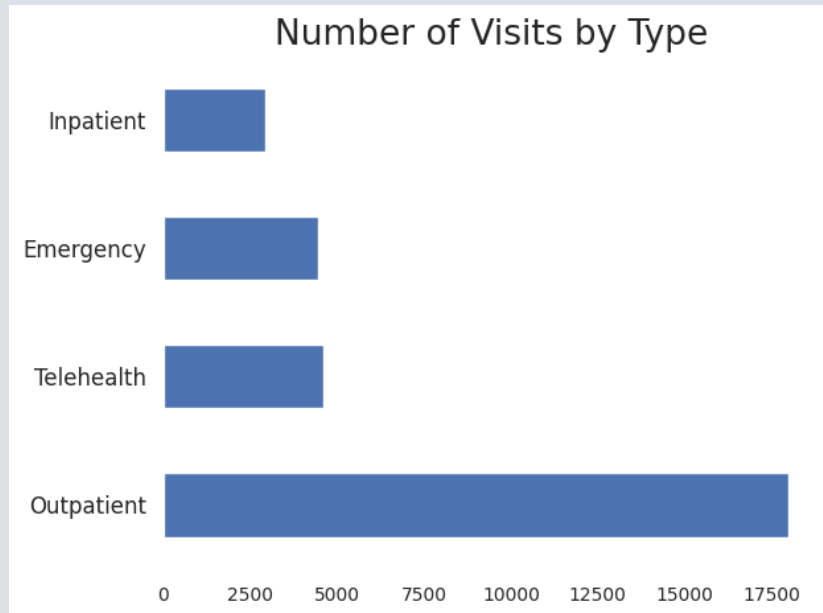
- Some ups and downs across months, but no strong pattern.
- No month stands out with a sharp rise or drop.

Summary

The prevalence of diabetes has slightly decreased over the past few years, with no strong seasonal patterns, except for a small rise in Q3.

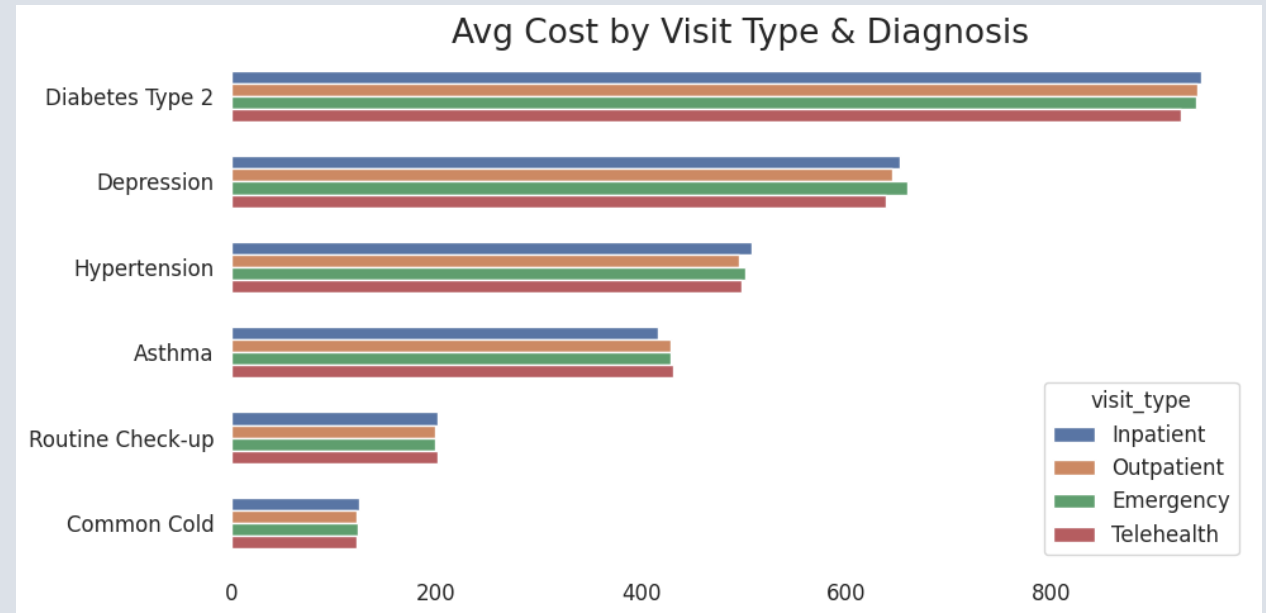
What visit types are most common?

How much do they typically cost by condition?



Visit Type Distribution

- Outpatient visits are most common.
- Telehealth, Emergency, and Inpatient visits are less frequent.

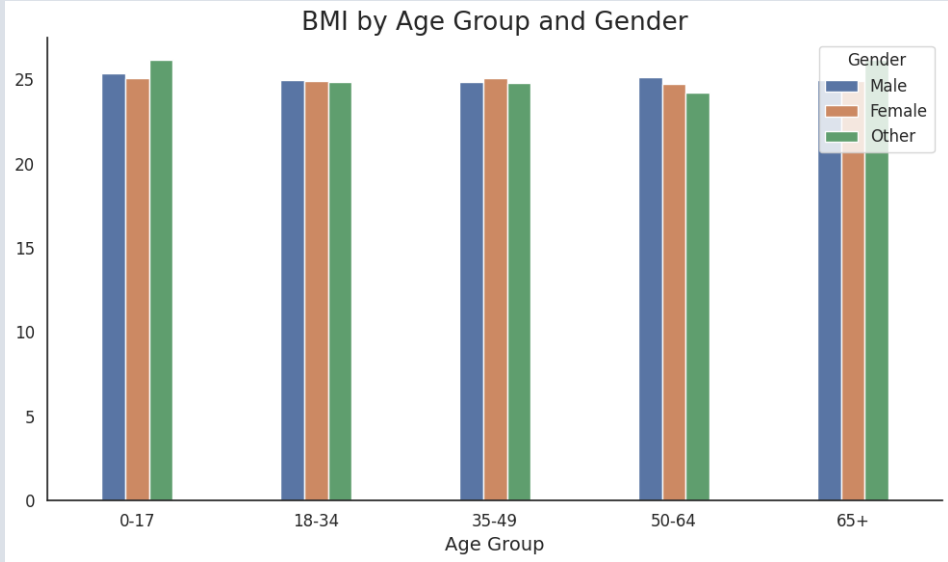
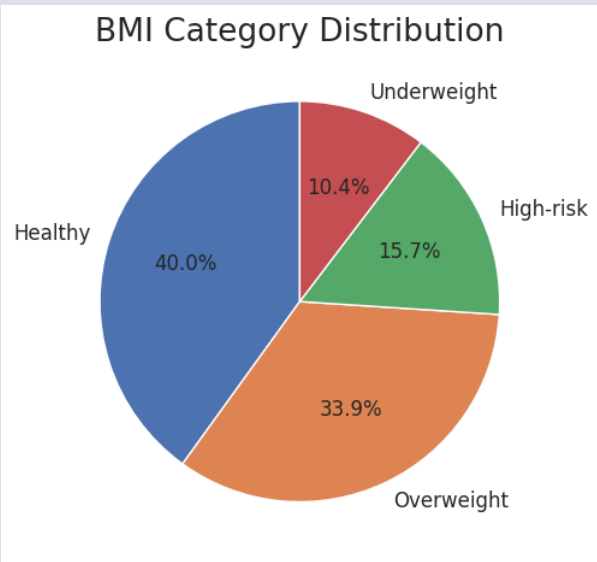
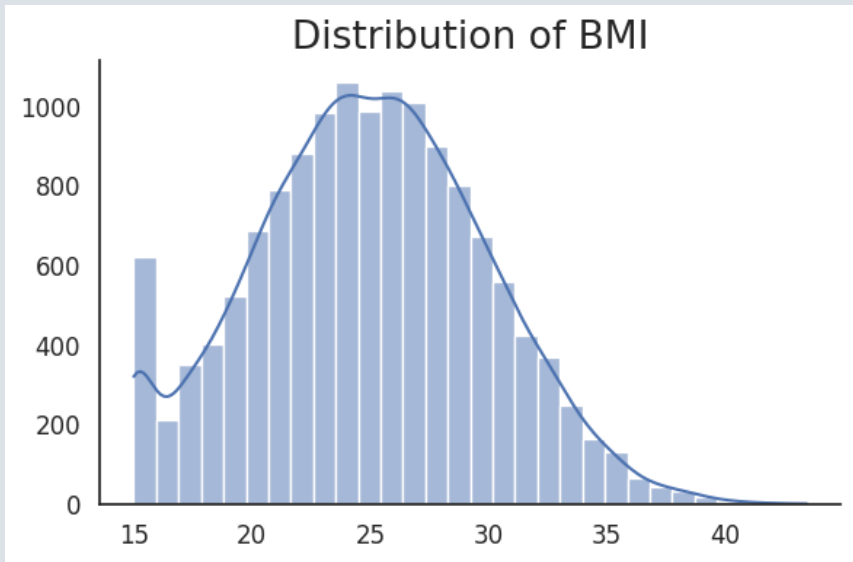


Cost Analysis

- Diabetes and Depression visits cost the most on average.
- Cost is fairly similar across visit types — no big price gap.

BMI: What percent of patients fall into healthy, overweight, or high-risk categories?

How does BMI vary by age or gender?



BMI

- Most patients have BMI between 22 and 30, which is in the normal to overweight range.
- There's a small spike around 16–17, suggesting a group of underweight patients.
- The distribution is slightly right-skewed — a few patients have very high BMI.

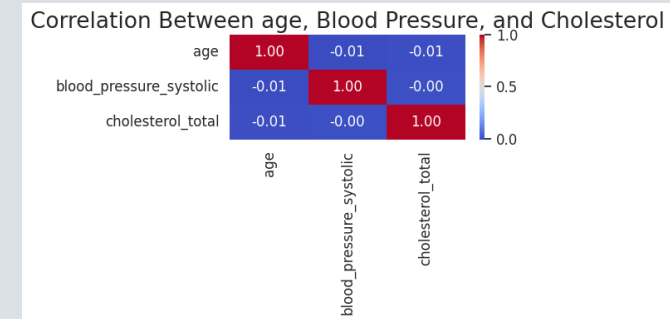
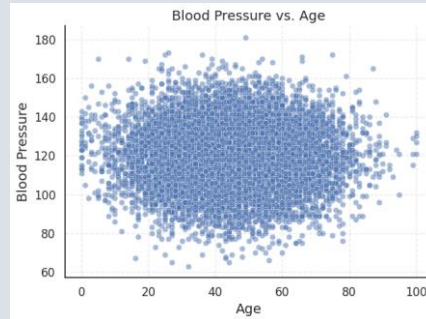
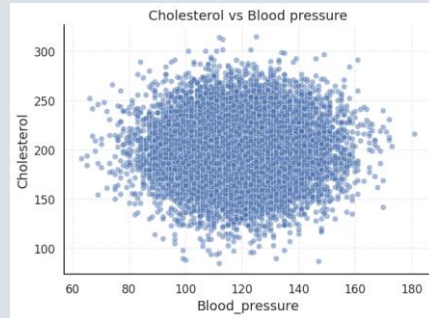
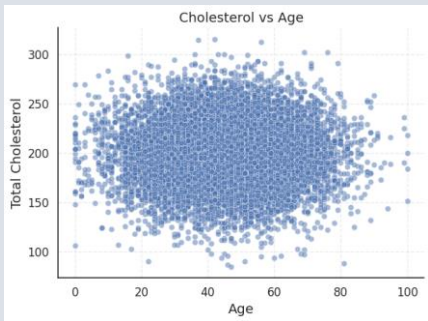
BMI Category Distribution

- Most patients fall in the Healthy or Overweight range.
- About significant 16% patients are in the High-risk (Obese) category.
- About 10% are Underweight.

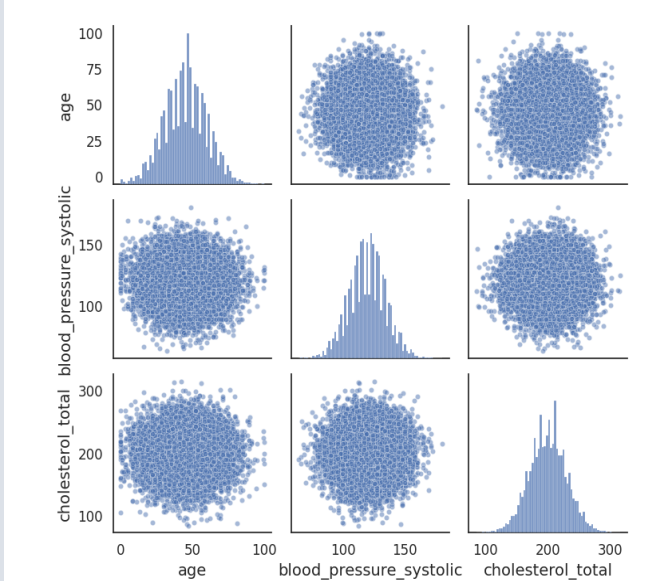
BMI Category Distribution

- BMI values are very similar across all age groups and genders.
- There's no significant variation between males, females, or others.
- Age does not appear to influence average BMI in this population.

Are there any strong correlations between patients' age, blood pressure, and cholesterol?



Scatter Plots Between Age, Blood Pressure, and Cholesterol



- No strong link between Age, blood pressure, or cholesterol.
- Scatterplots show random spread, no clear trends.
- Correlation heatmap confirms very weak or no correlation.

Recommendations

I. Expand mental health and asthma programs, especially for women

Our analysis showed these issues are more frequent among female patients. Targeted programs can improve outcomes and reduce repeat visits.

II. Make check-ups easier to access

Outpatient visits are by far the most common. Keeping routine care accessible helps with early diagnosis and long-term cost reduction.

III. Promote cold prevention in younger patients

Common colds are frequent among younger age groups. Encourage simple prevention methods like hand hygiene and seasonal care tips.

IV. Watch Q3 (Summer) for seasonal diabetes spikes

There's a slight increase in diabetes cases during Q3. It may relate to summer lifestyle changes (vacations, inactivity, diet). Monitoring this can guide preventive campaigns or seasonal health messaging.

V. Support healthy BMI through weight and nutrition care

BMI is fairly uniform across age and gender, but a notable portion are overweight or underweight. Offer weight management support and nutrition guidance for both high-risk and underweight groups.