

# Visual Gallery of MIMIC III Data Analysis

## Exploring EHR Data Through Five Visualizations

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- Course/Project Title - AI in Healthcare (MIMIC Visualization Assignments)
- Date - Feb 02, 2025
- Brief Introduction- This presentation showcases five distinct visualizations derived from the MIMIC demo dataset. The aim is to understand patient demographics, admission trends, diagnoses frequencies, and outcomes, laying the groundwork for further analytics and predictive modeling in healthcare.
- Github:- <https://github.com/HimJoe/MIMIC-Visualizations>



# TEXAS

The University of Texas at Austin

## Description:-

- This histogram (with KDE overlay) displays the distribution of patient ages at the time of admission.
- The age is computed by subtracting the birth year (from the PATIENTS table) from the admission year (from the ADMISSIONS table).

## Key Code/Methods:-

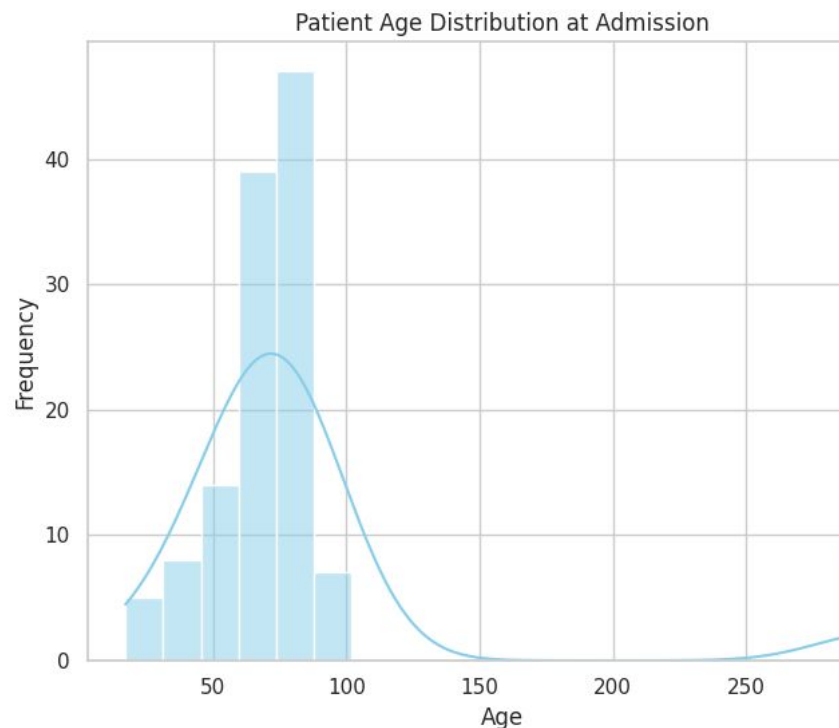
- Data merging of PATIENTS and ADMISSIONS on `SUBJECT_ID`.
- Conversion of `ADMITTIME` and `DOB` to datetime objects.
- Use of Seaborn's `histplot` function to plot the distribution.

## Insights:-

- Identifies the most common age ranges for patients.
- Provides an overview of the demographic profile of the hospital's patient population.

**GitHub:-** <https://github.com/HimJoe/MIMIC-Visualizations>

# Patient Age Distribution at Admission



**Description:-**

- A pie chart representing the distribution of genders in the dataset.
- The visualization is created by counting occurrences of each gender in the PATIENTS table.

**Key Code/Methods:-**

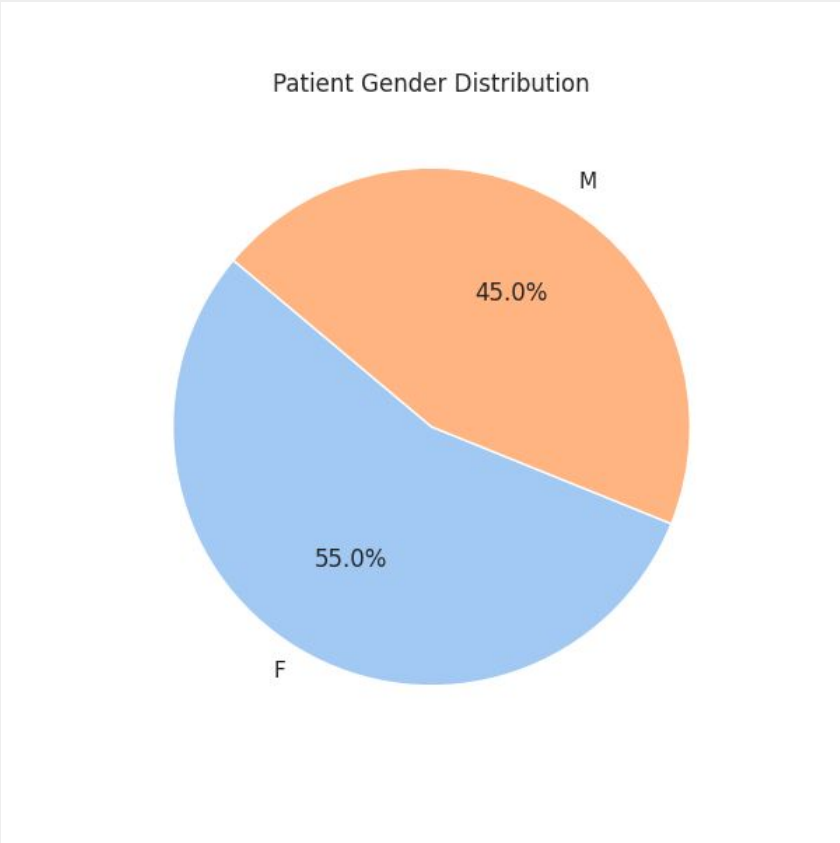
- Use of pandas' `value_counts` to count gender occurrences.
- Plotting with Matplotlib's `pie` function and custom color palettes from Seaborn.

**Insights:-**

- Provides a quick view of gender balance within the dataset.
- May help highlight differences or trends in gender-related admissions.

**GitHub:-** <https://github.com/HimJoe/MIMIC-Visualizations>

# Patient Gender Distribution



## Description:-

- This line plot shows the total number of admissions each year.
- The year is extracted from the **ADMITTIME** field of the **ADMISSIONS** dataset.

## Key Code/Methods:-

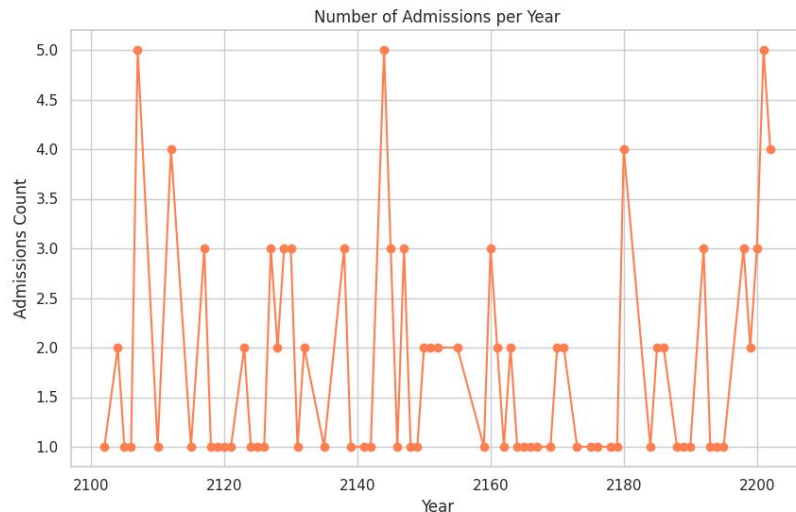
- Extraction of the year using pandas' datetime properties.
- Grouping admissions by year and counting the records.
- Plotting with pandas' built-in plotting functions.

## Insights:-

- Reveals trends in admission volume over time.
- Useful for identifying periods of increased hospital activity or potential seasonal effects.

**GitHub:-** <https://github.com/HimJoe/MIMIC-Visualizations>

# Admissions per Year



## Description:-

- A bar chart displaying the frequency of the top 10 ICD-9 diagnosis codes from the DIAGNOSES\_ICD dataset.
- This visualization helps identify the most common diagnoses.

## Key Code/Methods:-

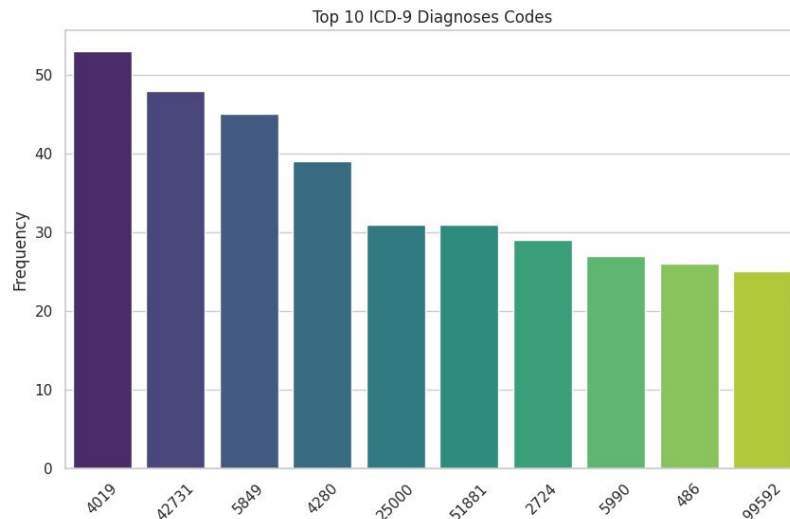
- Use of pandas' `value_counts` to rank ICD-9 codes.
- Selection of the top 10 codes.
- Bar plot generated using Seaborn's `barplot`.

## Insights:-

- Highlights prevalent diagnoses within the hospital.
- May inform resource allocation and focus areas for quality improvement initiatives.

GitHub:- <https://github.com/HimJoe/MIMIC-Visualizations>

# Top 10 ICD-9 Diagnosis Codes



## Description:-

- A box plot comparing the length of hospital stay (in hours) between patients who survived and those who did not (using the HOSPITAL\_EXPIRE\_FLAG).
- LOS is calculated as the difference between **DISCHTIME** and **ADMITTIME**.

## Key Code/Methods:-

- Calculation of LOS using pandas datetime arithmetic.
- Use of Seaborn's **boxplot** function to visualize differences based on outcome.

## Insights:-

- Identifies potential differences in LOS based on patient outcomes.
- Could suggest areas for further investigation regarding treatment efficiency and patient management.

**GitHub:-** <https://github.com/HimJoe/MIMIC-Visualizations>

## Length of Stay (LOS) by Outcome

