

Emergency Department Diversion Program: Data Insights and Recommendations

1. Overview & Purpose

The purpose of this report is to address the ED Diversion Program in relation to a Medicare Advantage plan. Utilization of the program will reduce non-emergent visits to the ED that can be treated outside the emergency room.

It is focused on stratifying members into a two-tier system:

- Tier 1: Super Utilizers – those members with more than 5 ED visits.
- Tier 2: High Utilizers – Members with 3 to 5 ED visits.

It also gives actionable recommendations for managing these members, based on the data analysis. First, there is the exclusion criterion: members who had an inpatient admission in the last 12 months are excluded from this program because they are already handled in Care Management.

2. Problem Statement and Key Questions

Problem:

The VP of Clinical Services at the Medicare Advantage plan requested Decision Point to:

- Identify members eligible for Tier 1 (Super Utilizers) and Tier 2 (High Utilizers).
- Provide additional recommendations to enhance the program's success.

Key Questions to Address:

- Which members should be recommended for Tier 1 (Super Utilizers)
- Which members should be recommended for Tier 2 (High Utilizers)?
- Are there any diseases associated with particularly high levels of ED utilization?
- What additional data could help strengthen the recommendations?
- Are there any surprises or aspects of the data that warrant closer attention?

3. Data Exploration & Analysis

Datasets Evaluated:

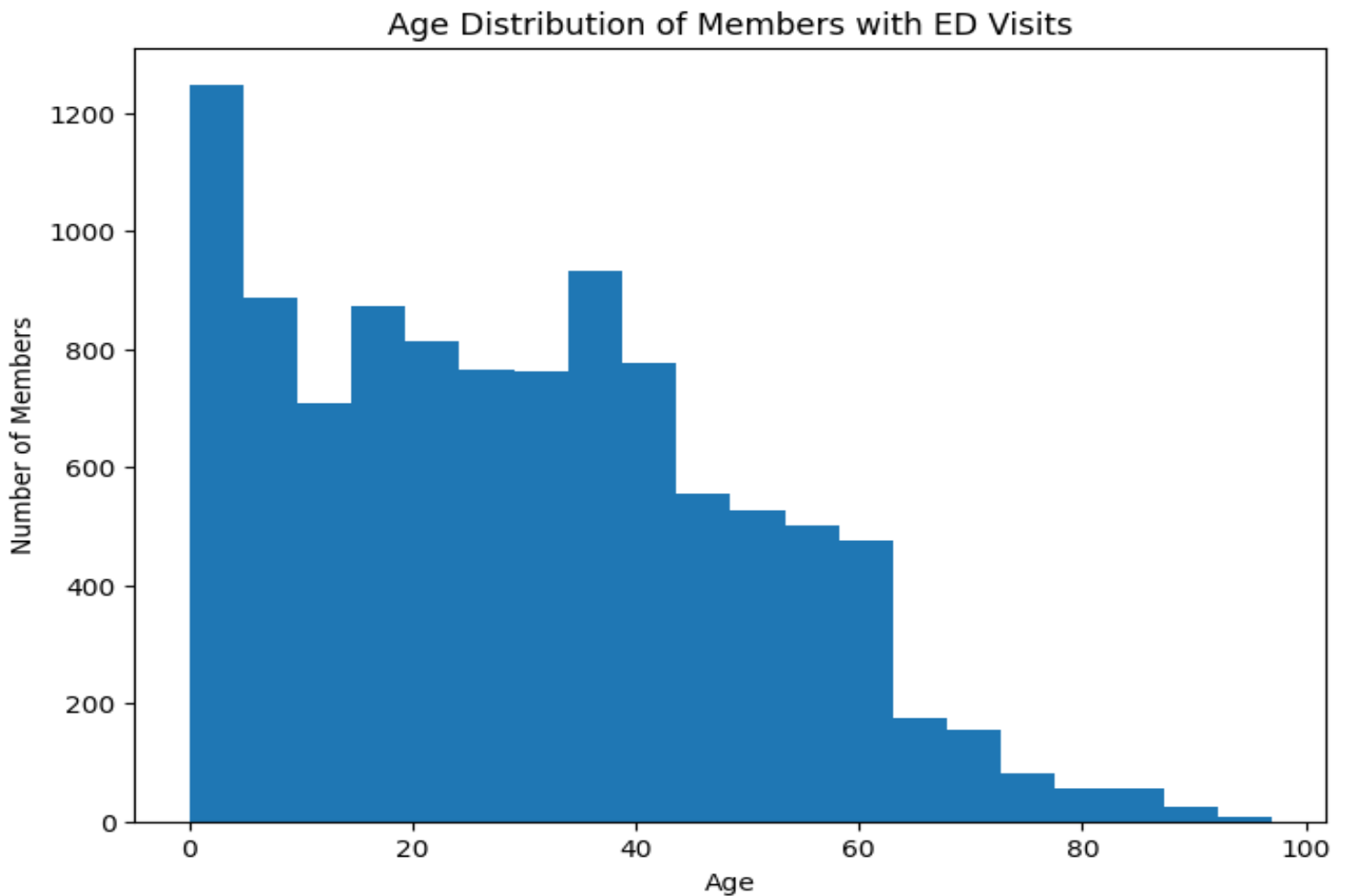
- **dp_table_members.csv** – Member demographic data (age, gender, race).
- **dp_table_medical_events.csv** – Medical events data, specifically ED visit frequency.
- **dp_table_chronic_and_bh.csv** – Chronic conditions and behavioral health conditions driving ED visits.

I have evaluated the datasets using python and I have attached my understandings below:

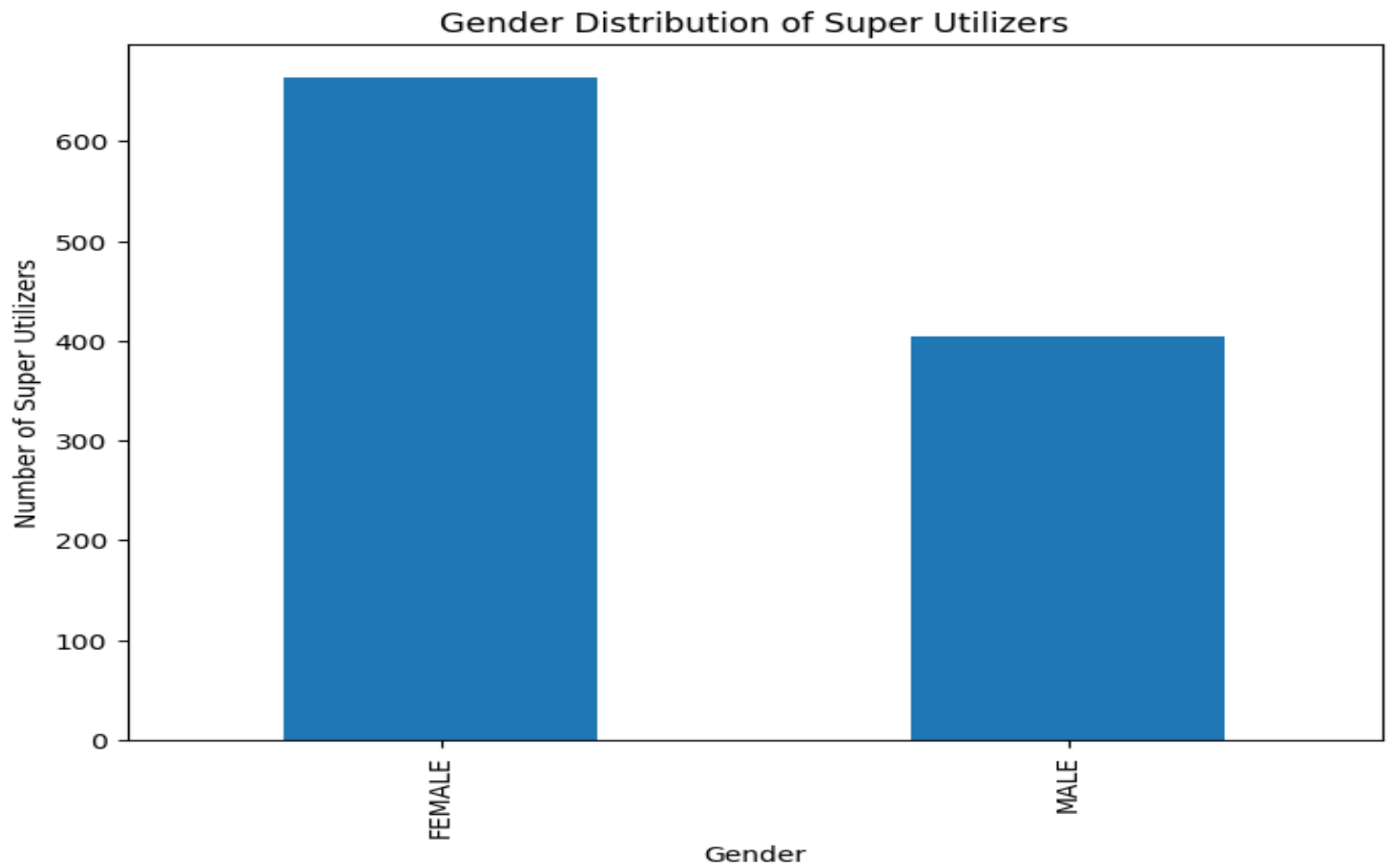
3.1. Member Demographics Dataset

Objective: Understanding the factors influencing ED visits.

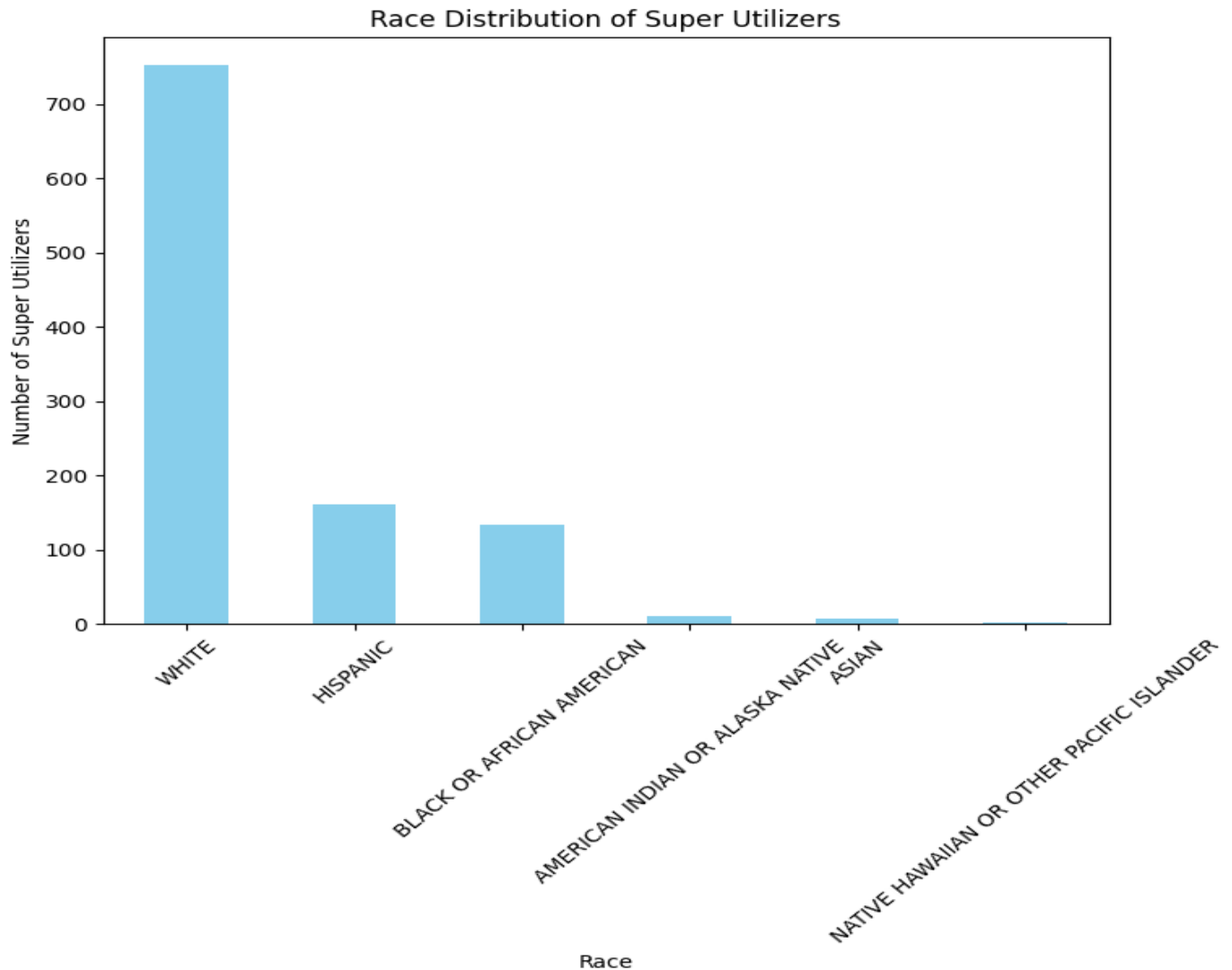
Age: The median age of Super Utilizers is 37 years, with the majority of ED visits concentrated in members aged 20-50 years which is visualized and attached below



Gender: 62% of Super Utilizers are female, highlighting the need for gender-specific health programs which is visualized and attached below



Race:70% of Super Utilizers are White, 15% are Hispanic and 12.5% are Black or African American which is visualized and attached below



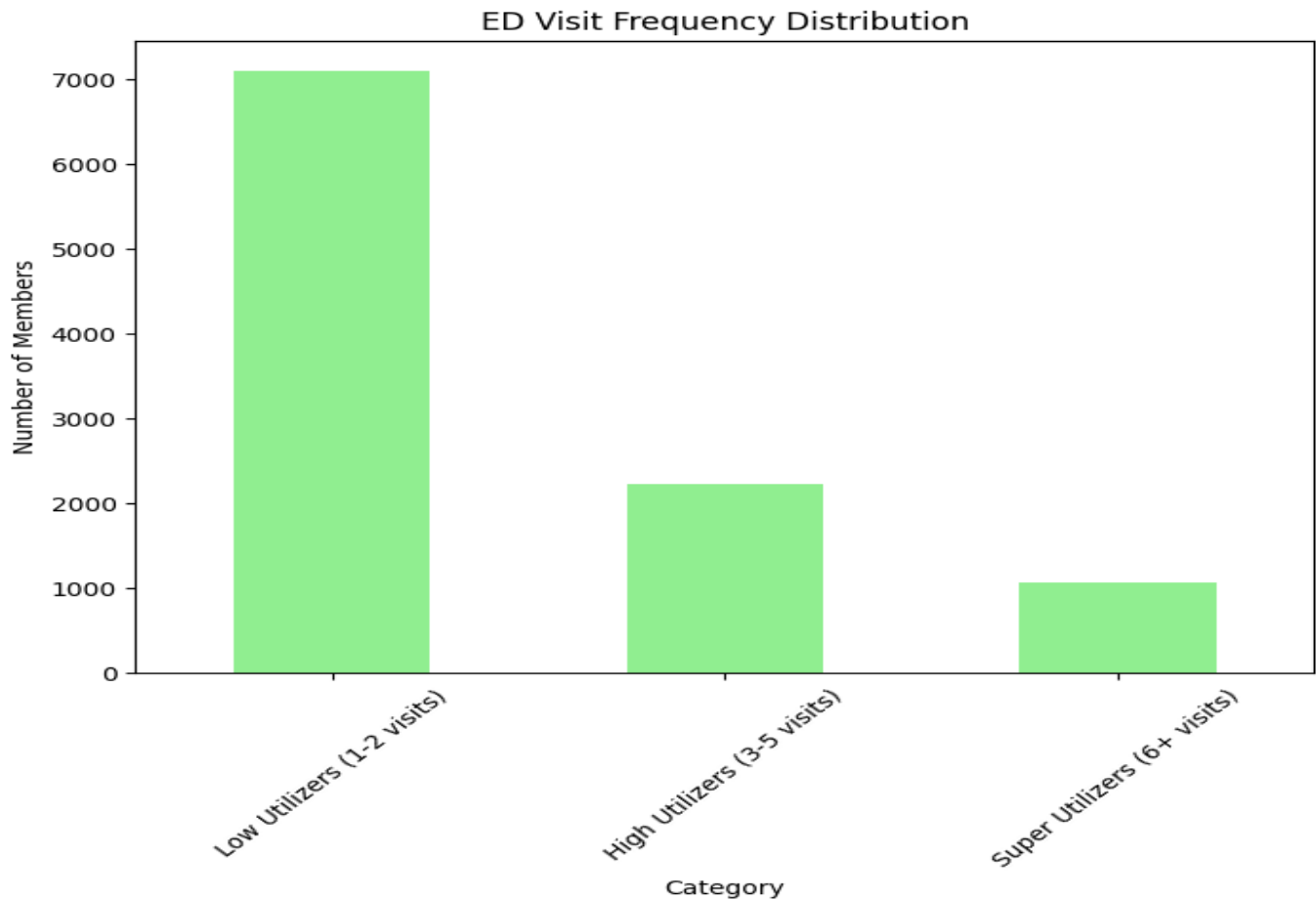
3.2. ED Visit Frequency Dataset

Objective: Identify members with frequent ED utilization and stratify them into the appropriate tiers.

After carefully performing and evaluating the datasets I have categorized members into 2 datasets.

- **Super Utilizers (Tier 1):** Members with more than 5 ED visits in the last 12 months.
- **High Utilizers (Tier 2):** Members with 3 to 5 ED visits in the last 12 months

The **Medical Events Dataset** revealed that a small percentage of members (Super Utilizers) account for a significant portion of the total ED visits. The analysis is shown below.



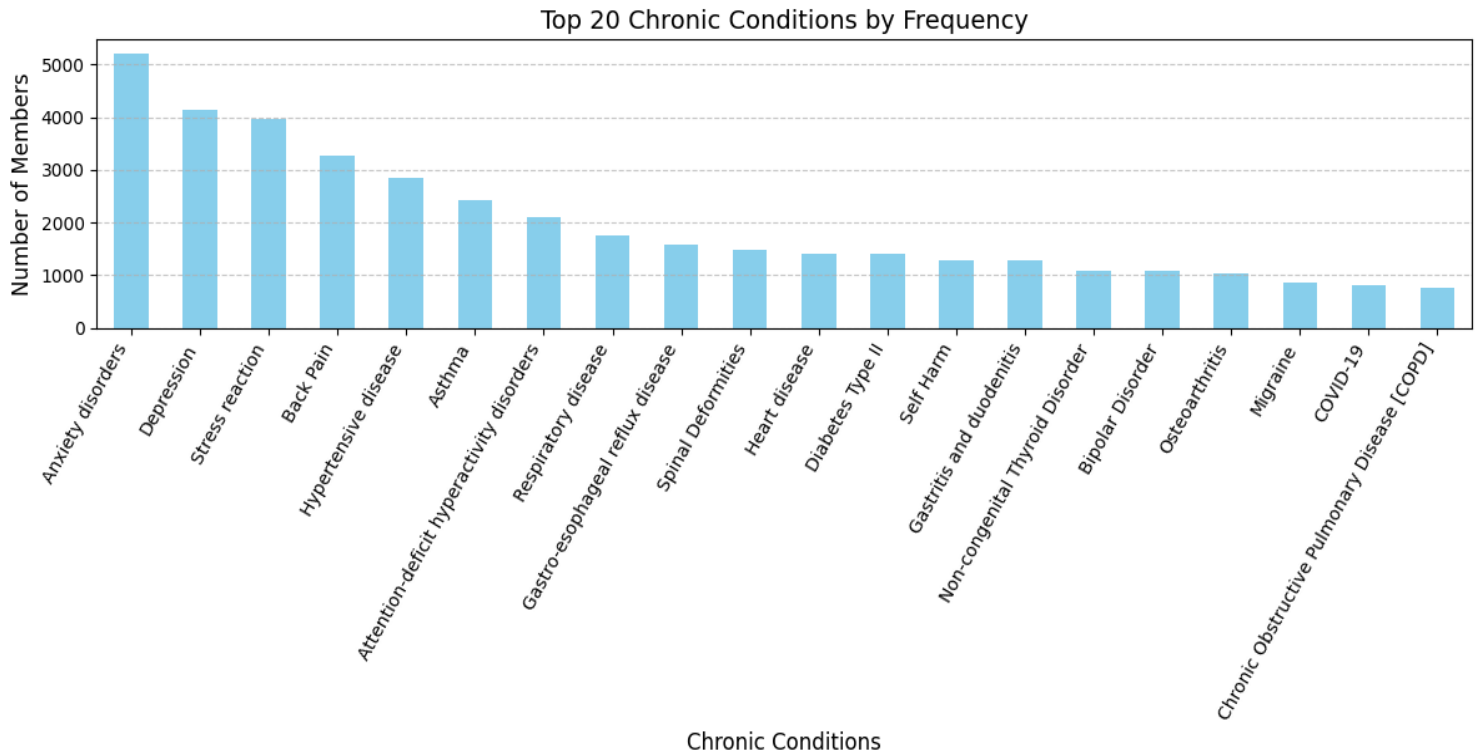
3.3. Chronic Conditions Linked to ED Visits Dataset

Objective: Identify the chronic conditions most associated with high ED utilization.

From the analysis, I identified below as the top chronic conditions:

- **Anxiety disorders:** 13,181 members.
- **Depression:** 11,995 members.
- **Stress reaction:** 10,229 members.
- **Back pain:** 9,672 members.
- **Hypertensive disease:** 7,583 members.

Chronic conditions such as anxiety disorders, depression, and back pain are key drivers of frequent ED visits. Top 20 chronic conditions are shown in below graph.

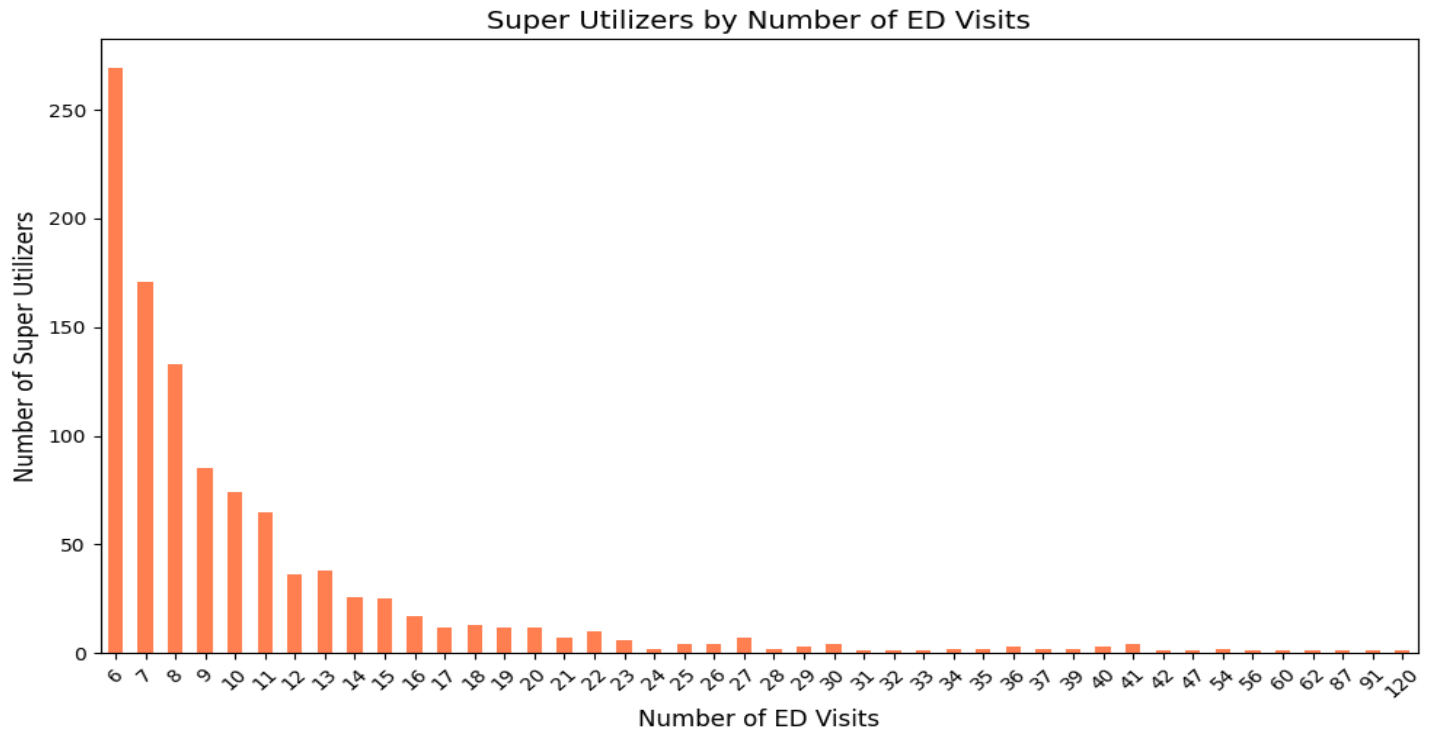


4. Answering the Key Questions

4.1. Tier 1 (Super Utilizers)

- **Criteria:** Members with more than 5 ED Visits in the last 12 months.
- **Findings:** Based on the analysis, members who have visited the ED more than 5 times in the last year come under Super Utilizers. The super utilizer members comprise only a small percentage of the overall population, but they consume the high portion of ED utilization.
- **Recommendation:** These members should be treated with intensive care with frequent follow-ups, personalized care plans, and tight coordination with primary care providers. This would help in reducing their dependence on emergency services.

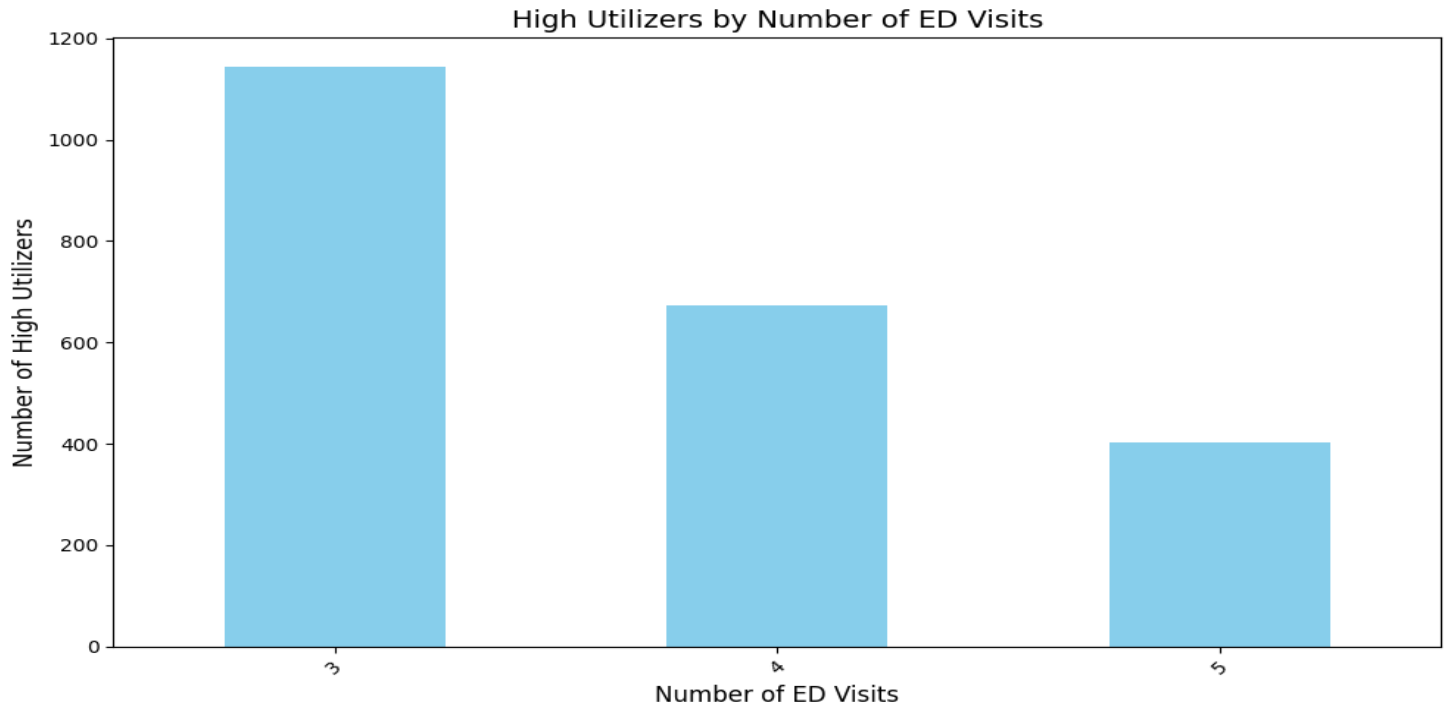
Below graph will depict the super utilizers by the number of ED visits.



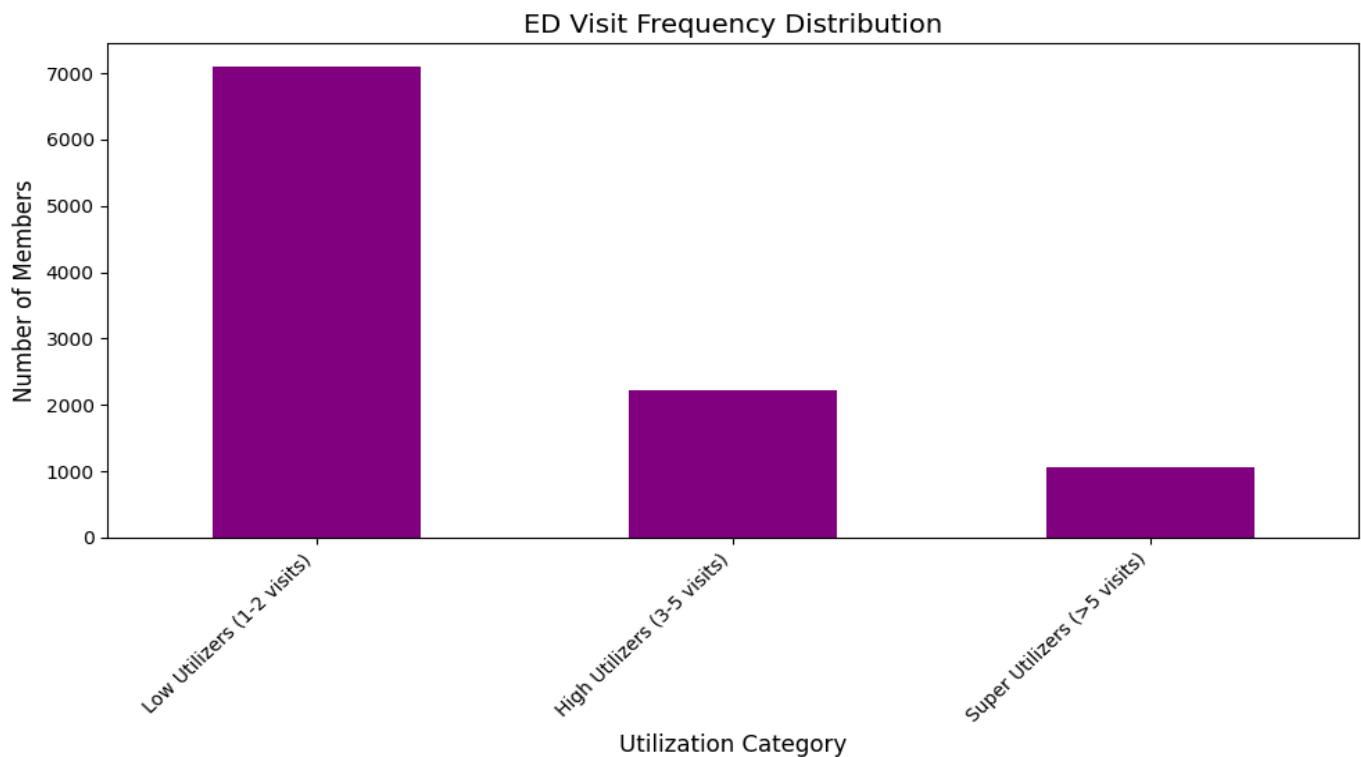
4.2. Tier 2 (High Utilizers)

- **Criteria:** Members with 3 to 5 ED visits in the last 12 months.
- **Findings:** Members who visited the ED between 3 and 5 times within the last year come under High Utilizers category. There is a higher chance of these members becoming super utilizers Unless care is taken.
- **Recommendation:** Members in this tier should be subjected to outreach for preventive care and frequent health screening, in order to better manage their conditions. The goal is to prevent them turning into super utilizers by proper treatment at this level.

Below graph shows high utilizers by number of ED visits



The following graph shows ED visit frequency distribution. It visualizes the low, high and super utilizers.

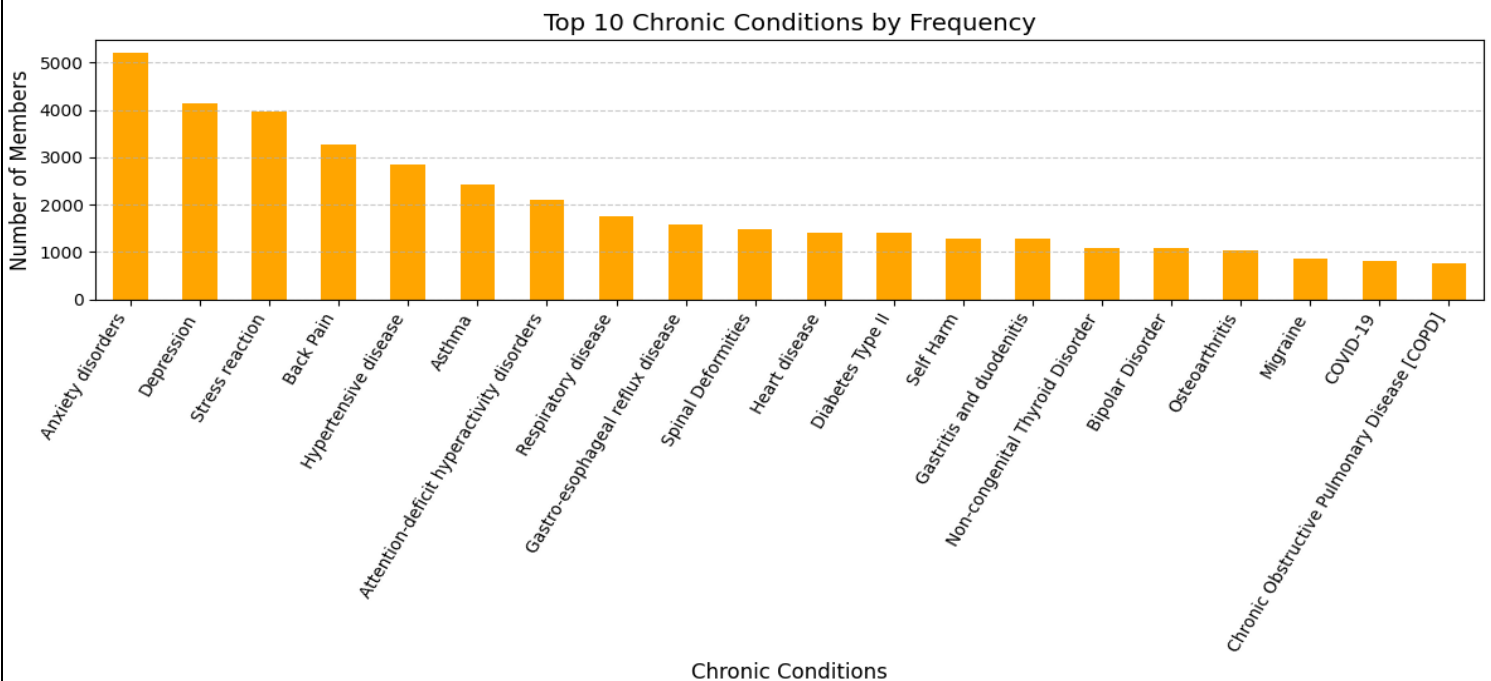


4.3. Diseases Associated with High ED Utilization

From my analysis, the most common chronic conditions linked to frequent ED visits include Anxiety disorders, depression, stress reactions, back pain and hypertension.

- **Findings:** Mental health conditions (e.g., anxiety and depression) are the main reasons for ED visits, which in fact suggest the need for mental health services. Chronic physical conditions like hypertension and back pain are also the reasons for frequent ED visits.
- **Recommendation:** The plan should, therefore, focus on the management of such conditions through suitable mental health services and management programs for chronic conditions. Improved access to support for mental health will be provided through tele-therapy, counseling, etc., coupled with compliance by the members with their care plans for chronic diseases, thus preventing unnecessary ED visits.

The figure showing top 10 chronic conditions is visualized and is attached below for reference



4.4. Additional Data for Strengthening Recommendations

Information that would be useful to support the recommendations further includes:

- The social determinants of health include housing, access to food, and transportation. If their data can be utilized further to extract information on environmental and socioeconomic factors related to ED visits.

- Behavioral data on smoking, alcohol consumption, and exercise may prove useful in certain specific interventions.
- **Primary Care Utilization:** The frequency of the members accessing primary care services and telehealth options determines whether the members have adequate access to non-emergency care. Assuring adequate primary care access is one of the major strategies toward decreasing ED service utilization.

4.5. Surprising Findings

- **Mental Health Conditions:** Anxiety, depression, and stress reactions were in the top diagnoses of ED visits more often than anticipated. It suggests that many members use the ED as a substitute for mental health services due to a likely lack of access to proper care.
- **Recommendation:** A good look at mental health service availability is necessary. A lot of the members might be using the ED services due to a lack of access to counseling, crisis intervention, or mental health resources. Expansion of mental health services and early crisis intervention could take some of the pressure off ED services.

5. Recommendations

5.1. Mental Health Services

- **Insight:** Anxiety, depression, and stress remain some of the major comorbid neuropsychiatric disorders driving a huge share of ED visits.
- **Recommendation:** Increasing access to mental health services by expanding teletherapy, counseling services, and establishing crisis intervention units will ensure immediate care for people in mental health crises and reduce the numbers of ED visits.

5.2. Chronic Condition Management

- **Insight:** Chronic physical conditions contributing to high utilizers of ED include, among others, back pain, hypertension, heart disease, and asthma.
- **Recommendation:** Creating a personal care management plan for the members will be helpful. It can also be done through remote monitoring of the conditions (hypertension, asthma, etc.) along with regular follow-up on medication adherence programs.

5.3. Crisis Intervention

- **Insight:** Members exhibiting self-harm behaviors and behavioral health crises are most frequently using ED services.
- **Recommendation:** Establish mobile crisis teams to help with behavioral health support. Provide high-risk members with behavioral health coaching to try to prevent emergencies.

5.4. Preventive Care Access

- **Insight:** Conditions like gastritis, GERD, and asthma are causing frequent ED visits, many of which can be avoided with early intervention.
- **Recommendation:** Set up walk-in preventive care clinics to treat the conditions before their advancement. These clinics must be established in the community centers for easy accessibility

5.5. ED Diversion Tiers

- **Insight:** Members come under two distinct categories—Super Utilizers and High Utilizers based on their frequency of ED visit
- **Recommendation:**

Tier 1 (Super Utilizers): Providing intensive care management for members with over 5 ED visits. Regular follow-ups are a must, along with an individualized care plan.

Tier 2 (High Utilizers): Provide preventive care measures for these members who have a total of 3-5 ED visits. Proper screenings and check-ups can prevent the need for further ED utilization.

5.6. Gender-Focused Health Support

- **Insight:** Most of the frequent users of EDs are Female Super Users.
- **Recommendation:** health programs for females, targeting both mental and physical challenges. All female members need to be assigned a health navigator to manage chronic conditions, ensuring consistent follow-ups.

6. Expected Outcomes

By implementing the above recommendations, the program is expected to:

- Reduce avoidable ED utilization by targeting Super and High Utilizers.
- Improve chronic condition management through remote monitoring and preventive care.
- Improved mental health service can lessen the dependence on ED for acute mental health emergencies
- Reduce expenses by relieving the burden on emergency services.

7. Next Steps

- **Experimental Trial:** Launch trials focused on Super Utilizers to test the effectiveness of the proposed strategies
- **Expand Program:** Once the trial is successful, expand the program to include High Utilizers and establish preventive care clinics in selected areas.
- **Monitor Results:** Continuously monitor the effectiveness of the interventions and make the adjustments as necessary

Conclusion:

The ED Diversion Program is designed to improve member health outcomes while decreasing ED utilization through targeted interventions for Super Utilizers and High Utilizers. By addressing key drivers of ED use, such as mental health disorders and chronic conditions, the Medicare Advantage plan can improve overall member health and reduce healthcare costs.