The goal of this report is to analyze the demographics of Medicare beneficiaries across different hospital counties in New York State for the year 2022, focusing on age, gender, race, and ethnicity. The report also examines how these demographic factors impact key hospital metrics such as length of stay and types of admissions. We will look at the counties with the most visits and compare charges and costs of visits overall.

**Data sets:**

The Medicare enrollment data set, obtained from the Centers for Medicare & Medicaid Services, includes information on the year, month, geographical level (national, state, county), state abbreviation, state name (including U.S. Territories), and county name. The data, which spans from 2013 to 2023, has already been aggregated at the national, state, and county levels. The most notable observations of this data set when visualized were gradual/consistent increases of enrollments over the years; even during the Covid 19 pandemic. The US shows upward trends of enrollments, the NY state enrollments mirror those of the national enrollment trends, And the monthly enrollments for NY 2022 also shows consistent enrollments throughout the year.

The New York State Hospital Inpatient Discharges data for 2022 obtained from NY Dept. of State Health Data NY includes information on hospital service areas, counties with hospitals, and various patient demographics and medical details. There are 56 counties listed, excluding 6 counties without hospitals. The data set includes fields for Medicare payments, age groups, gender, race, ethnicity, length of stay, type of admission, patient diagnoses, and length of stay. Some challenges with this dataset are that it does not include patient information, this prevents analysis of repeat visits. The other challenge is that there is no date information for each visit so we cannot analyze trends by time of year.

**Summary of findings:**

The data indicates that Manhattan, Nassau, and Suffolk counties have the highest visitation rates, suggesting a significant reliance on Medicare in these areas. The majority of visits are primarily individuals aged 70 and above, highlighting the importance of Medicare for the elderly population. The patient population is predominantly White and Black/African American, particularly among non-Hispanic/Latino individuals.

In terms of admission patterns, emergency admissions are the most common, with diagnoses such as septicemia, heart failure, and COVID-19 being prevalent. Elective admissions also play a significant role, with cardiac dysrhythmia and cerebral infarction being frequent conditions. Urgent admissions tend to have the longest average length of stay (avg 9 days), followed by cases with unspecified admission types (avg 8 days ) and trauma cases. Elective and emergency admissions (both avg 7 days) have shorter average lengths of stay.

The high costs associated with emergency services and conditions like septicemia and COVID-19 show the need for effective cost management strategies.

**Recommendations:**

To improve preventive and chronic disease care, it is important to develop and expand programs that prioritize vaccination campaigns and the management of conditions such as diabetes and heart failure. Additionally, increasing patient education efforts to enhance self-management and adherence to treatment plans is essential. Implementing efficient resource allocation strategies and introducing bundled payment models for high-cost treatments are key steps to reducing unnecessary expenses and improving cost-effectiveness. Also, enhancing access to emergency services and promoting the utilization of telehealth services can provide immediate medical advice and help minimize unnecessary emergency room visits.

**Conclusion:**

Medicare plays a crucial role in managing significant health conditions, particularly for older individuals. The high costs of emergency and elective hospitalizations show the importance of Medicare in covering these expenses. It is essential to ensure that Medicare beneficiaries, especially those with severe and chronic illnesses, receive adequate support and coverage for their overall health and financial stability.

Through this data analysis and visualization using Tableau and SQL, my goal is to offer insights and suggestions that can enhance healthcare delivery and outcomes for Medicare recipients.