**Healthcare: Analysis of Sepsis Patient Demographics and ICU resource Utilization**

[A screenshot of a computer

Description automatically generated](https://public.tableau.com/app/profile/fenny.khosla8067/viz/PatientSepsisDataAnalysisDashboard/Dashboard32)

**Introduction to Dataset and Analysis:**

The dataset, downloadable via a provided link, includes over 1 million records with 40 time-dependent variables. The key demographic variables analyzed are:

* Age
* Gender: 0 (female), 1 (male)
* Unit 1 (MICU): 0 (false), 1 (true)
* Unit 2 (SICU): 0 (false), 1 (true)
* HospAdmTime: Hours since ICU admission
* ICULOS: ICU length of stay
* Sepsis Label: 1 (sepsis), 0 (no sepsis)

**Understanding the patient landscape:**

Total Patients: 40,336 Non-sepsis patients: 37,404 Sepsis Patients: 2,926 Onset Patients: 2,506 patients developed sepsis after ICU admission, providing insights into sepsis development post-admission. These patients had sepsis label as 0 when admitted and then were diagnosed as sepsis lab1 1 over time.

Age and Gender: The butterfly chart shows the age and gender distribution of patients for sepsis and non-sepsis patients. The age groups include, below 18, 18-36, 36-54, 54-72 and over 72. A gender distribution showed that 56% of patients were male and 44% were female. Also, most of the patients were in the age range of 54-72 and over 72.

ICU units: Across MICU and SICU, patients in the age group of 54-72 and over 72 made the largest population signifying the level of care this age group requires.

Hospital Admission Time: This column helped in identifying three categories of patients including:

* Direct to the ICU – indicate critical conditions
* From hospital to the ICU – represent an escalation in the health issues
* From ICU to hospital – signify a transition for recovery The negative values in the dataset indicate that the patients were admitted to the ICU and then transferred to the hospital for recovery. There were over 38,000 patients who were in this category. The patients who were directly admitted to ICU were 1,313 signifying their critical condition and those who were moved from Hospital to ICU were 256 considering their condition must have deteriorated and they were moved to the ICU. This distribution suggests that non-sepsis patients are more evenly spread across different types of ICU units. We see a similar pattern in the case of onset patients and sepsis patients while the lowest in numbers are present across all types of ICU units with a slight concentration in other ICUs and MICU. The numbers emphasize the need for ICU readiness and provide insight into the evolution of medical conditions.

ICU Length of Stay: This tells about the length of stay of patients in the ICU and the graph shows the distinct patient populations within the ICULOS bins. The bins range from 0-14, 14-28, 28-42, 42-56, 56-70, 70-84,..and so on up to 336. The graph shows distribution of patients across ICULOS bins, showing the duration of ICU stays within the patient population. This helps in planning the resource allocation in ICUs. I have also showed the ICULOS for onset patients. Patients will longer stay in the ICU have more complex conditions and this information can help the hospitals plan care for patients when needed the most. The average ICU length of stay is 39.01 for all patients with onset patients having high average ICULOS as some patients have extremely long stays. This compelled me to look at the median values for ICULOS for onset patients. The median value is 48 for onset patients whereas the median value for all patients is 39. The average helps in determining the efficiency and urgency with which care should be provided, the median value helps in making individual care plans.