Hospital Bed utilization is a key component for measuring the throughput in many hospitals. And the goal is to have enough hospital beds available to meet the needs of newly admitted patients.

One of the major problems many hospitals face today is the inefficient management of beds, or the inefficient bed tracking systems that are available. Beds left unoccupied as a result of waiting for the staff members to service the beds, and to get it ready for the next patient is a significant cost to the Health Industry. The Bed Turnaround Time in question extended from the time discharge instructions were given to the patient to the time a new patient arrives, and the whole process is estimated to be around two to three hours.

Though cleaning the bed and making it disinfected takes around forty minutes, much of the time is elapsed by physically checking the rooms to check the availability and communicating statuses between unit managers, bed coordinators and cleaning staff.

Our dashboard, Hospital Bed Management will improve this bed turnaround process and provide bed statuses and alerts through visuals and charts. It will simplify and will save time on patient admissions, discharges and transfers. It will cater to the needs of unit clerks and bed managers as well as House-keeping Supervisors and Hospital managers.

Here is a quick demo of the Hospital Bed Management dashboard.

The Hospital Bed Management dashboard is divided into 3 sections, and the proposed hospital model has 5 Units namely, General 1N with 15 beds, Surgical 1 S with 10 beds, Intensive Care Unit 1W with 10 beds, Special Care Unit SCU with 4 beds and Maternity BP with 5 beds.

The Left Section gives an overview of Bed occupancy rates and the bed status across Units. The Right Section provides the Admissions, Discharges and Transfers details across Units, and the Middle Section displays the the Bed Turnaround Time statistics by Unit

The layout at start gives the overview of all units first, which will be helpful for Hospital Managers and Central Bed Coordinator to see statuses across the entire hospital units. To see each individual units or compare between units, we have added Unit filters which will allow individual Unit Managers to concentrate on their own Unit and see statuses.

We will see each of the charts in detail.

**The Left Section:** The Stacked bar chart gives the number of occupied beds vs unoccupied beds by Unit. It will give a quick indication of where beds are ready to be occupied etc. Unit filter can be applied to see the numbers to specific Unit.

Bed status map layout will then pinpoint bed statuses to specific bed number. Units are aligned to represent the original hospital layout, for example 1N is placed in the top North corner. The color coding of each bed indicates the occupancy status and Red means dirty beds, Amber indicate the bed is in cleaning stage and clean beds are indicated by green coding. Tooltips allow to browse through the status of individual beds.

This layout will be useful to Unit clerks, Bed Coordinators to communicate with House-keeping staffs to quickly attend to services where needed. It can also be used by House-keeping supervisors to direct its staff members to specific beds depending on the need.

**Middle Section**: Lists out the bed turnaround time statistics. The top chart displays the average Bed Turnaround Time across each hour. Hour Slider is provided to slide through a particular hour of interest. Its designed to display the bed turnaround time for all units. The stacked bar chart in the center displays the composite view of bed turnaround time over the past months. Brush filter is designed to focus on specific range of dates to compare the statistics across the units. Bottom chart displays the average bed turnaround time over the current week by Unit. Bar chart is used to see the quantity clearly. Colors indicate different units.

All the Information is easy to access and is provided with simple charts and filters that will allow users to navigate to information quickly. It will also allow Users to explore the causes and effects of Bed Turnaround Time on management of capacity, admissions and discharges across the hospital units.

**Right Section**: The top chart provides the current Admissions, Discharges and Transfer numbers by Unit. The bottom chart displays the trends seen over the past 2 months. This chart could be compared with the Occupancy chart on the right side to answer the question related to occupancy rate and the impact on Admissions.

Stacked Area chart is designed using D3 tool and allows selection of Admissions, Discharges and Transfers individually. Also, the dates could be zoomed in by rectangular selection to see patterns over a specific time period. Double clicking on the chart will revert back to its original position.