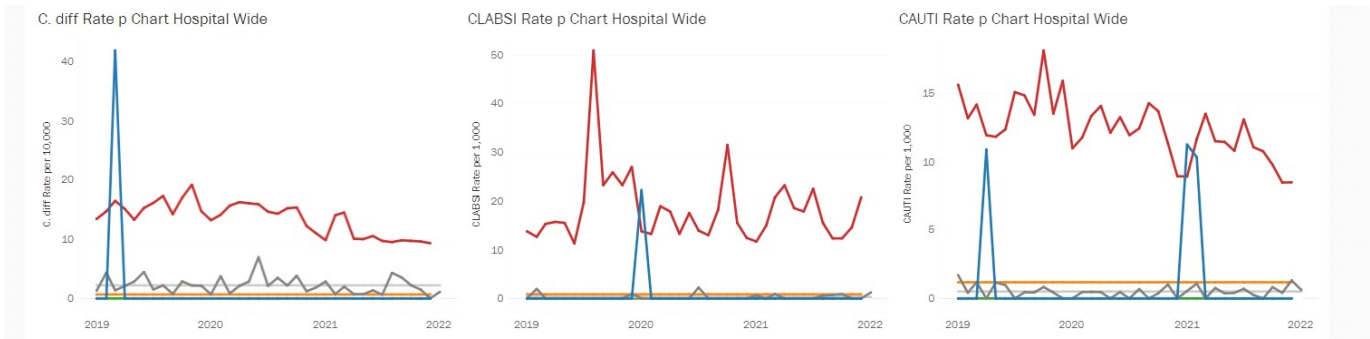Illinois Health and Hospital Association

IHA HQIC Hospital Summary Report Analysis Guide

Control Charts

- The control chart is a graph used to study how a process changes over time. Data are plotted in time order. A control chart always has a central line for average, an upper line for the upper control limit, and a lower line for the lower control limit. These lines are determined from historical data. By comparing current data to these lines, you can draw conclusions about whether the process variation is consistent (in control) or is unpredictable (out of control, affected by special causes of variation).
- The blue line on the hospital specific graphs represents the hospital's data. The orange average line would be the average of that hospital. The dark grey line is the rate for other hospitals of the same size that are participating in the HQIC program. The light grey line would be the average of those hospitals.
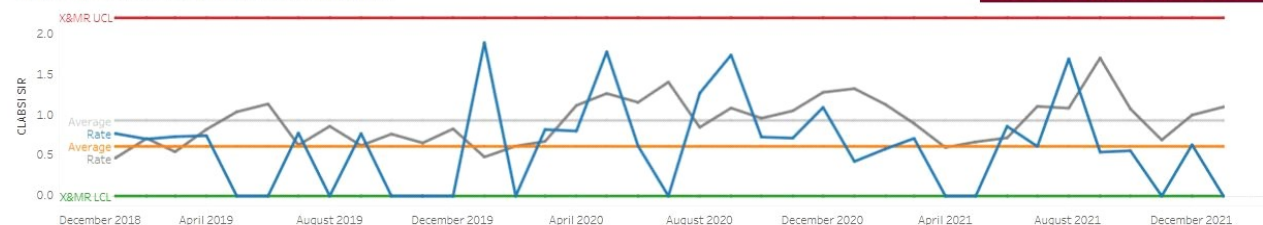

When to use a control chart:
- When controlling ongoing processes by finding and correcting problems as they occur.
- When predicting the expected range of outcomes from a process.
- When determining whether a process is stable (in statistical control).
- When analyzing patterns of process variation from special causes (non-routine events) or common causes (built into the process).
- When determining whether your quality improvement project should aim to prevent specific problems or to make fundamental changes to the process.

Funnel Plots

CAUTI Funnel Plot Hospital Wide
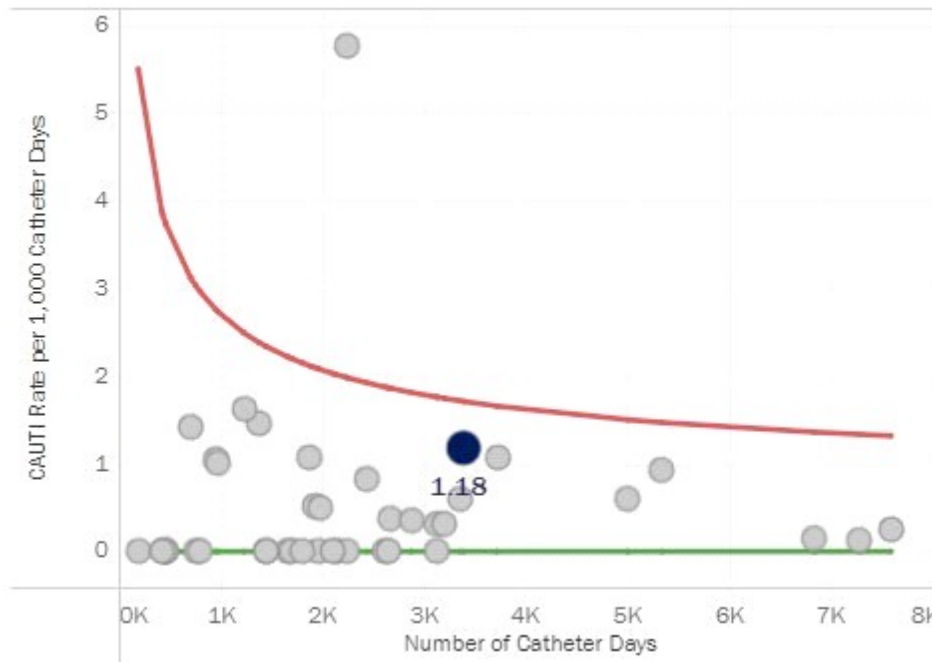
- The funnel plot is a modified version of a control chart in that it has an upper and a lower control limit.
- The specific hospital is the dark blue dot. The grey dots are other hospitals participating in the HQIC of the same size.
- The funnel plots differ from control charts in that this method accounts for sample size of individual hospitals. The data are displayed in an increasing order of sample size: the hospitals with fewer patients are on the left side of the plot.
    - Because small sample sizes have the largest variability, the control limits are wide on the left side and get narrower toward the right, as sample size increases.
- Funnel plots are developed to show the variation in outcomes and to identify if hospitals deviate from the **collective average**. For hospitals that are substantially different from the average (at or outside the control limits), we would want to take action: we would want to learn the unique best practices of hospitals with measures substantially better than the average and identify opportunities for improvement for the hospitals with measures substantially worse than the average. Hospitals with worse outcomes may want to learn from hospitals with better outcomes.
- All data points that are within the funnel (between the control limits) are considered the product of common cause variation, which means that none of them are doing statistically better or worse than the collective average.
- It is important to note that funnel plots **show a snapshot of the cumulative performance during a given time period,** and not how data is changing over time. The time period in the view can be adjusted as needed, but for the purposes of these reports we have included a snapshot of available data from January 2019 – March 2022.