

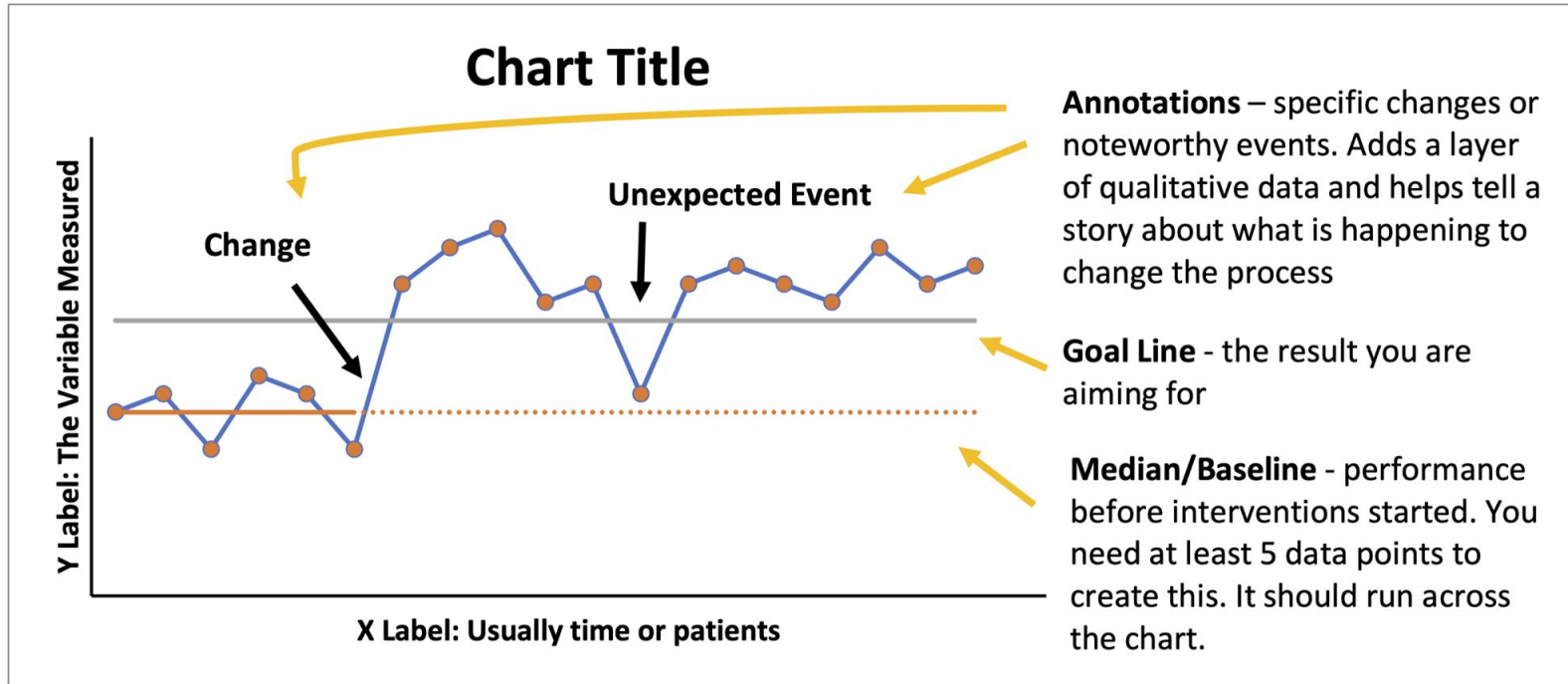
What is a Run Chart?

RUN Chart

- Visual Representation of Data over time.
- X Axis is Time the Y Axis is what you are measuring.
- Typically it also has a Median or sometimes mean.
- And, it's best to get at least **12 points of data** before you can know changes in your process.



Run Chart



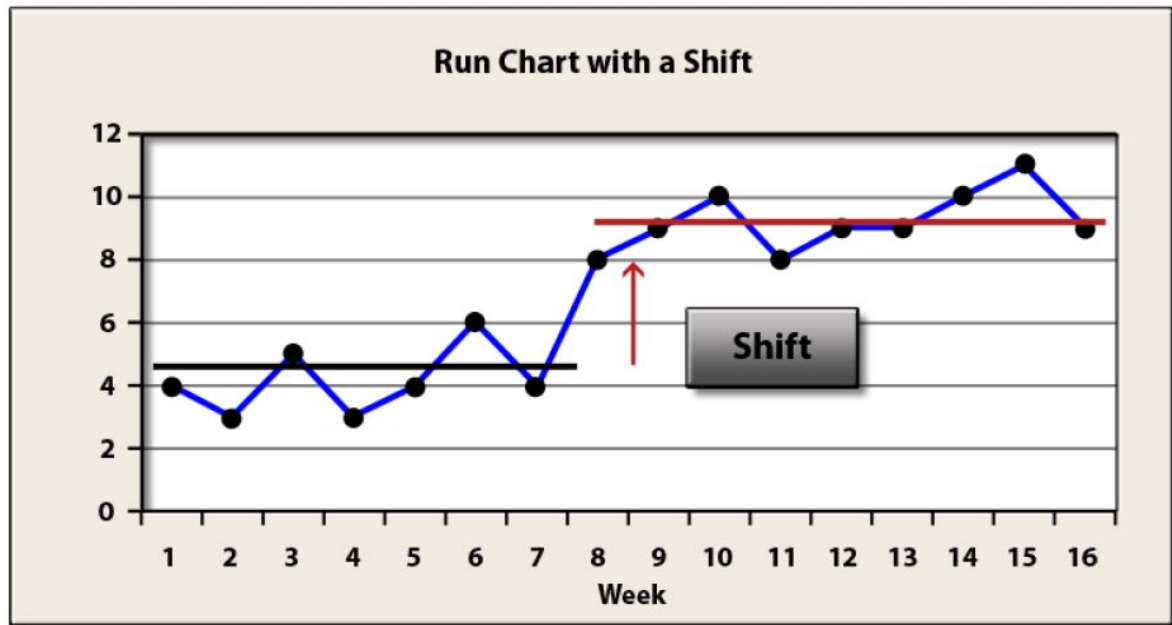
Source: <https://thecompletemedic.com/improvement/run-charts>

Analyzing Run Charts

Data Analysis

SHIFT

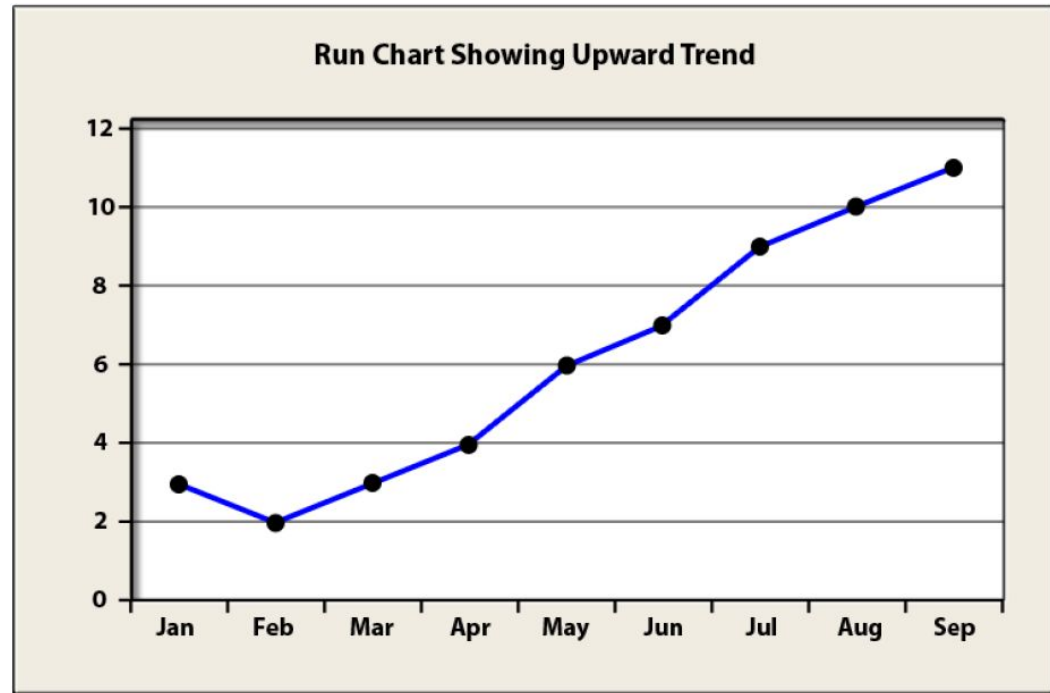
6 or more points above or below the median.



Data Analysis

TREND

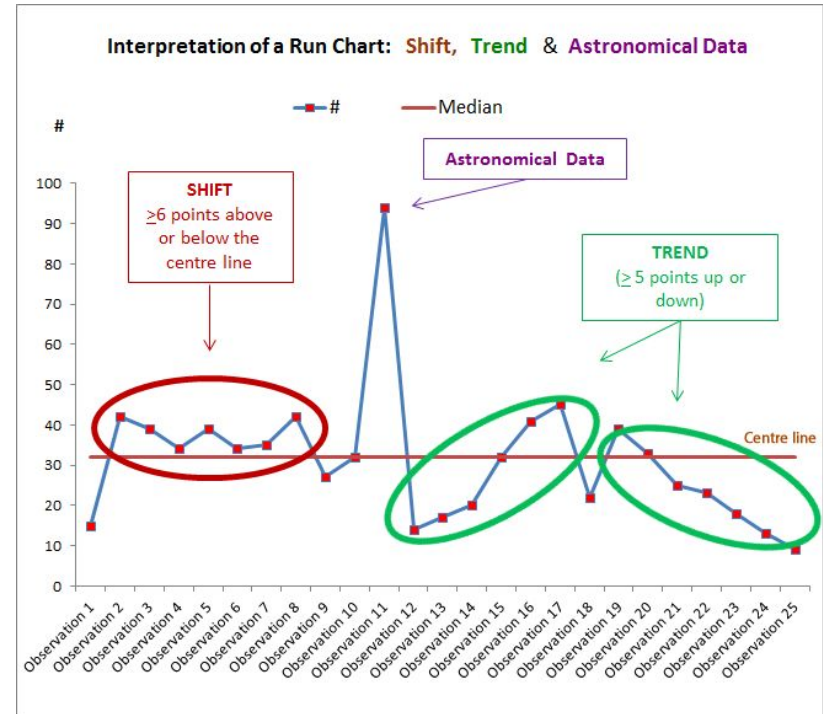
7 or more points successively above or below the median in one direction



Data Analysis

Astronomical Value

Data point that is different from the rest and all agree is unusual.

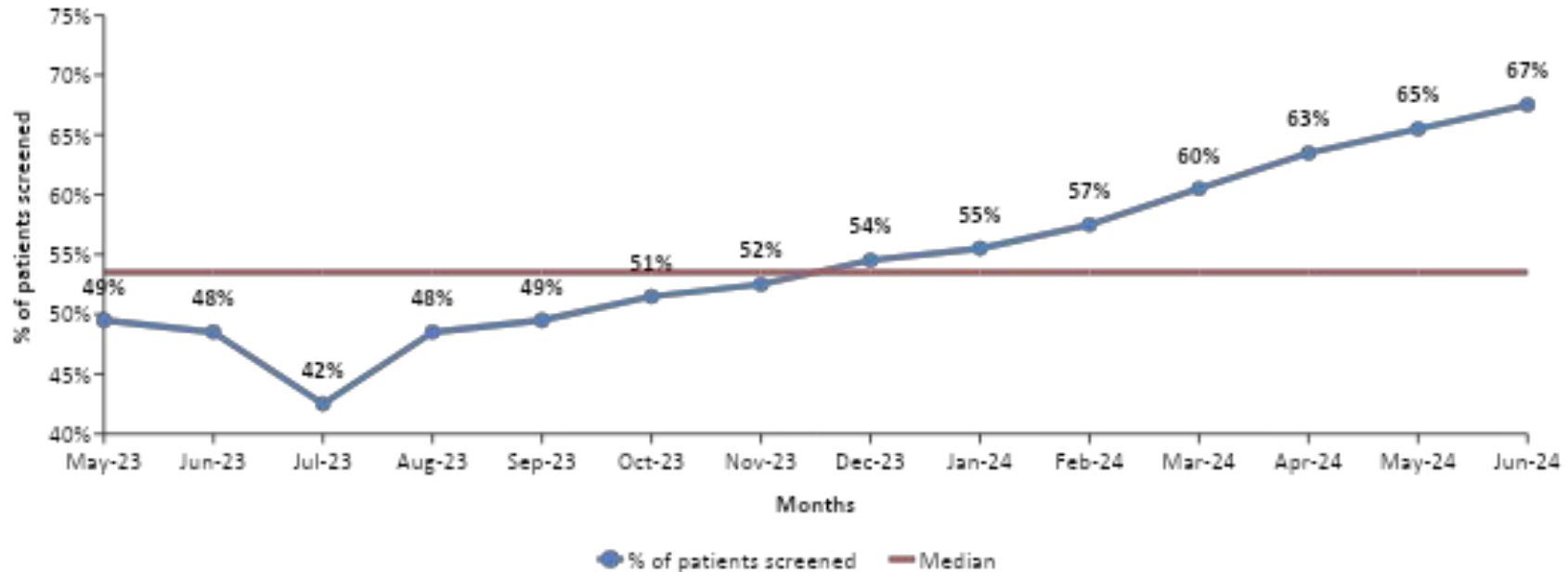


What is happening?

- The following slides show different run charts.
- The facilitator will show the run chart.
- Determine whether the run chart is showing a shift, trend, astronomical value, or none of these.
- The facilitator will then ask for responses from the group.

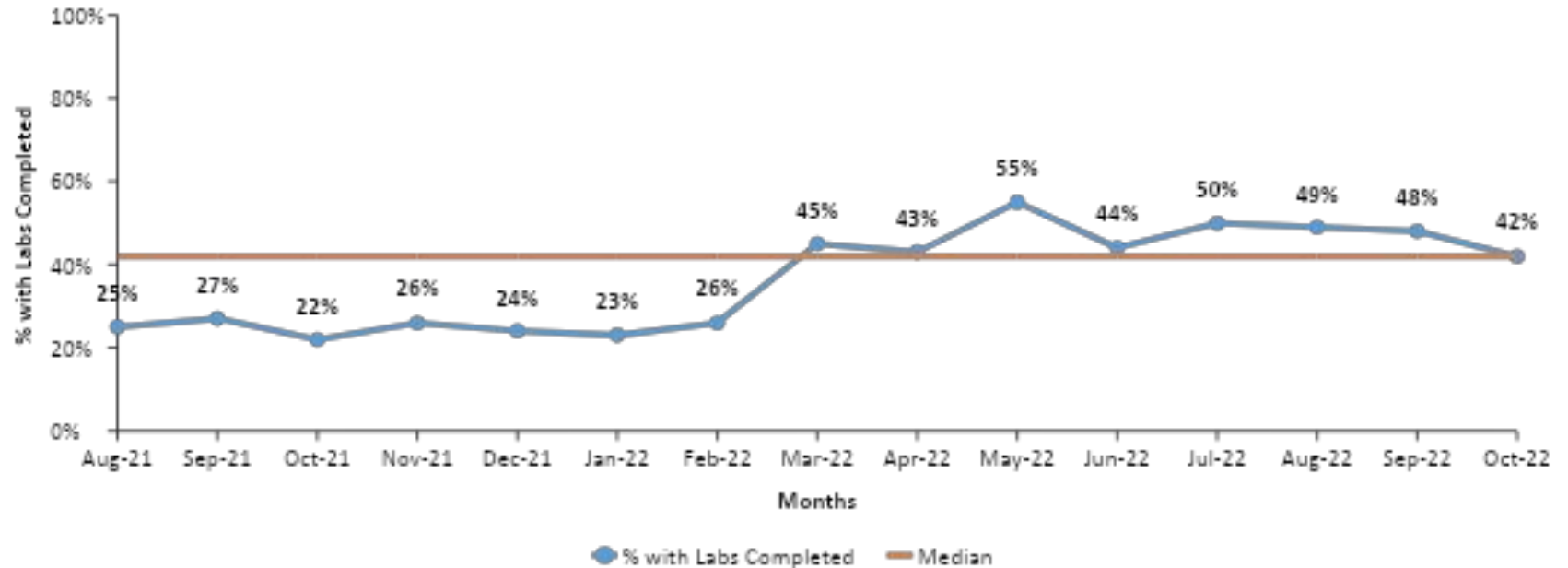
What is happening?

The percent of patients screened for Depression at JLS



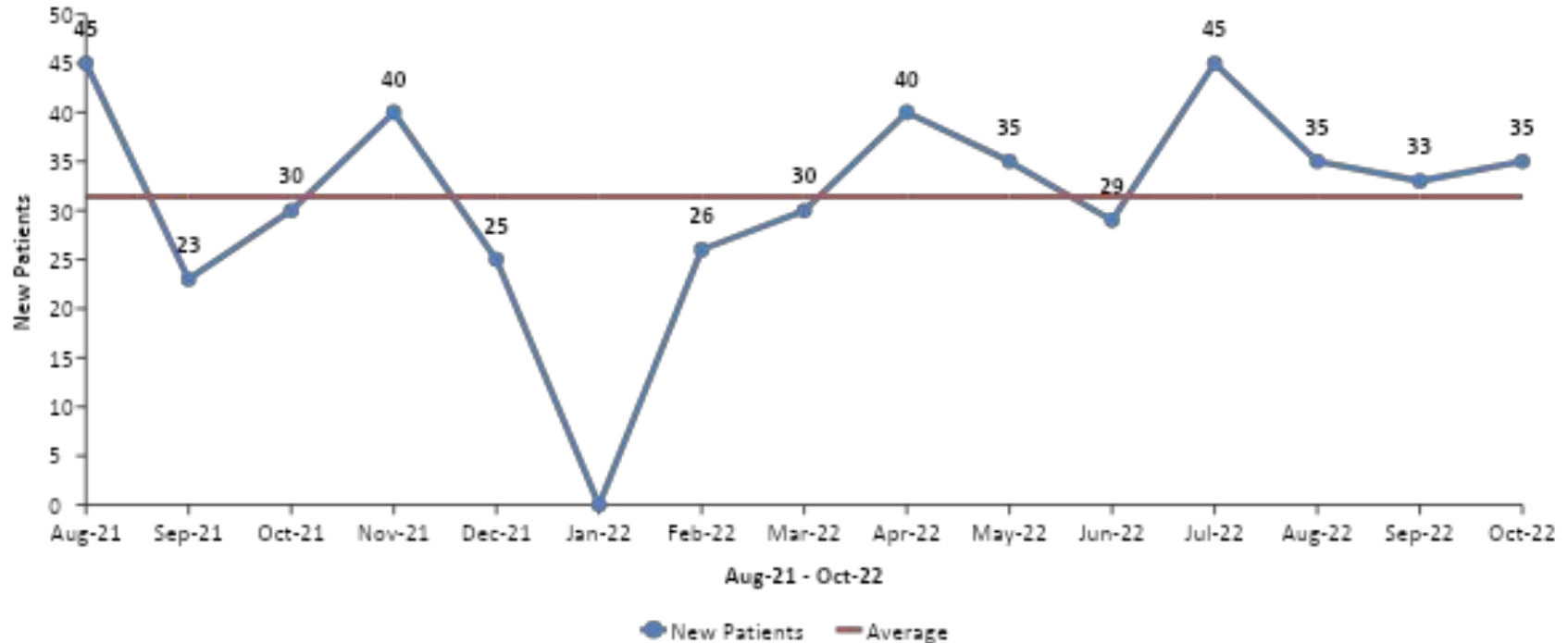
What is happening?

% with Labs Completed at ABC Hospital



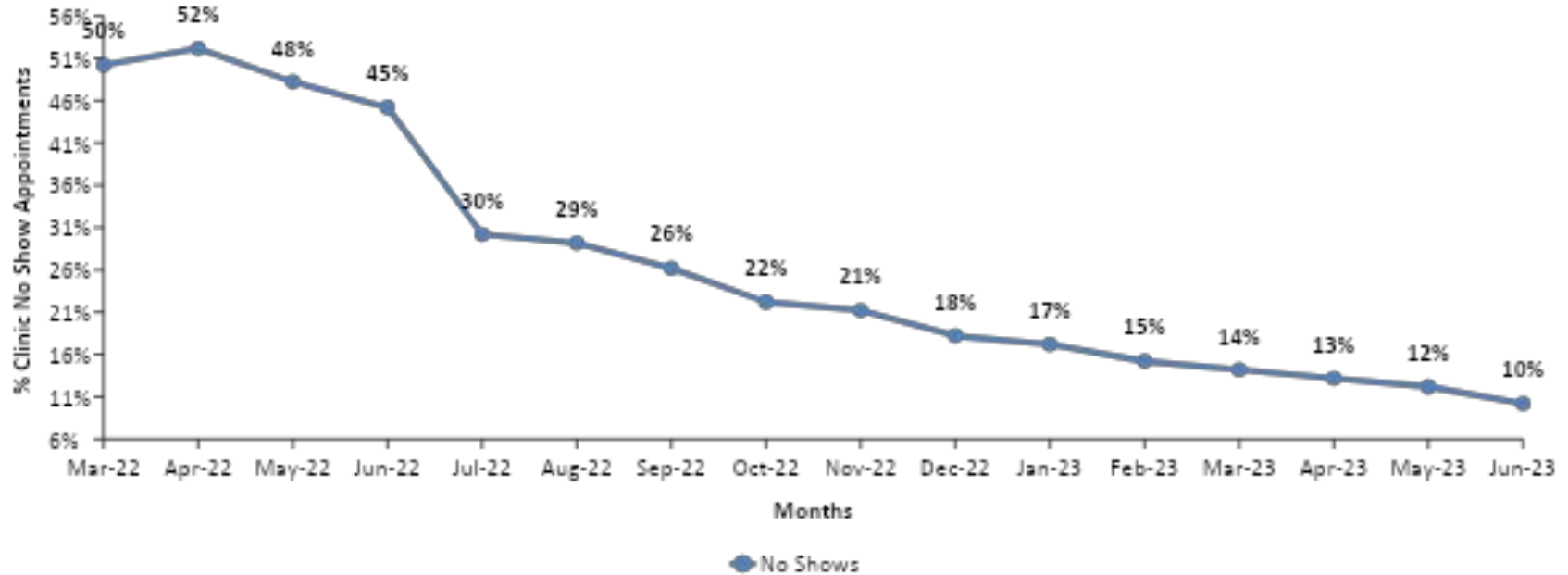
What is happening?

New Patients at Adam's Clinic FY 2022+



What is happening?

The Percent of No Shows at Clinic 123 (March 2022 - June 2023)



Questions



Common & Special Cause Variation

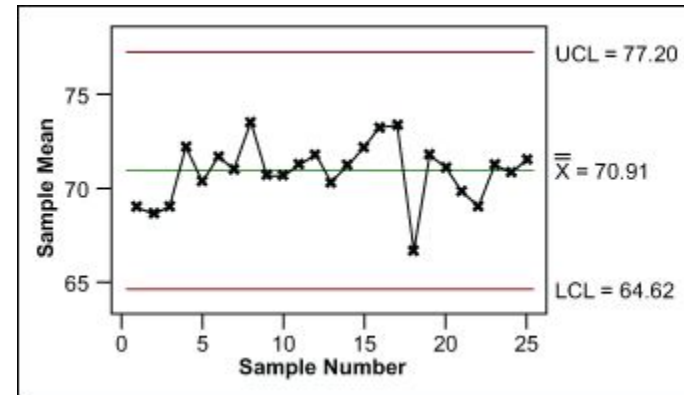
Common Cause Variation

Common Cause

Allows determination of system's "control":

- Wide fluctuations = out-of-control systems
- Out-of-control indicates opportunity to improve reliability

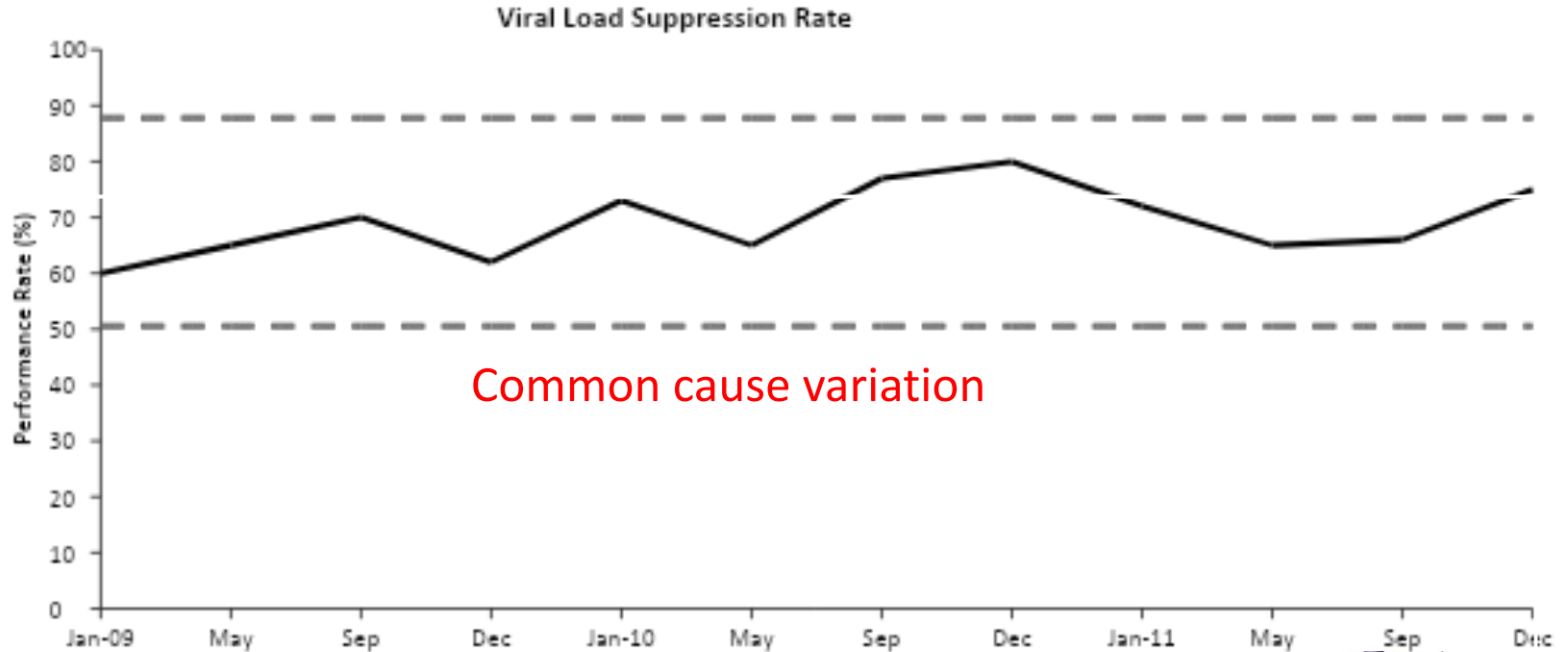
Common-Cause Variation



UCL – Upper Control Limit

LCL – Lower Control Limit

Example



Source: HEALTHQUAL Quality Champion Training November 2023

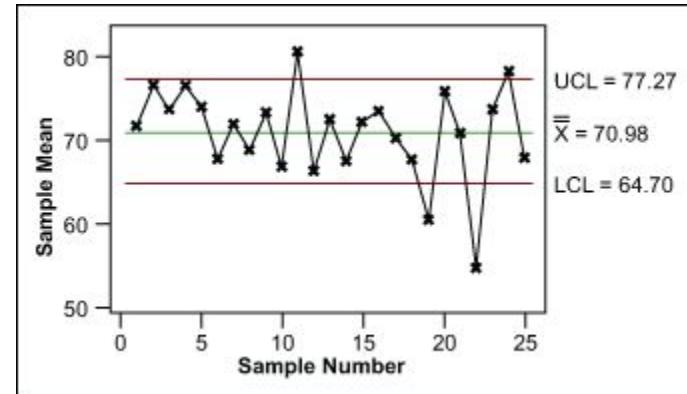
Special Cause Variation

Special Cause

Changes in the pattern of data that can be assigned to a specific cause

- Cause may or may not be beneficial, intentional

Special-Cause Variation

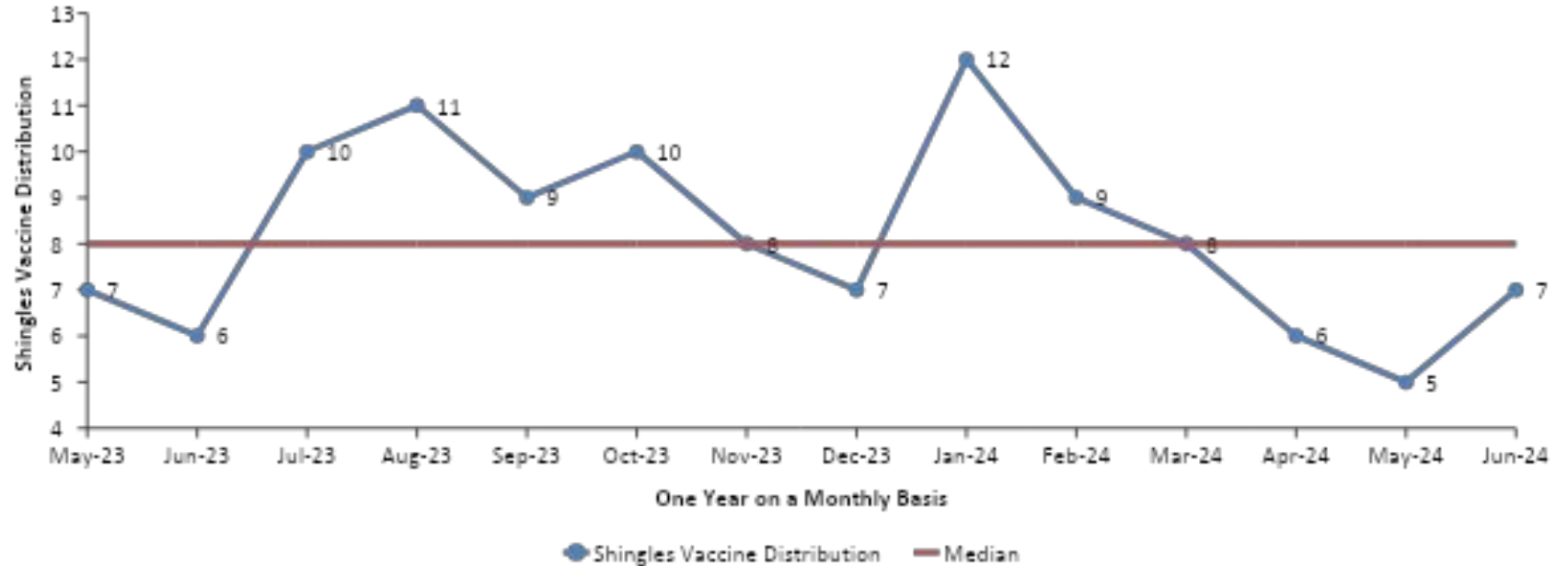


UCL – Upper Control Limit

LCL – Lower Control Limit

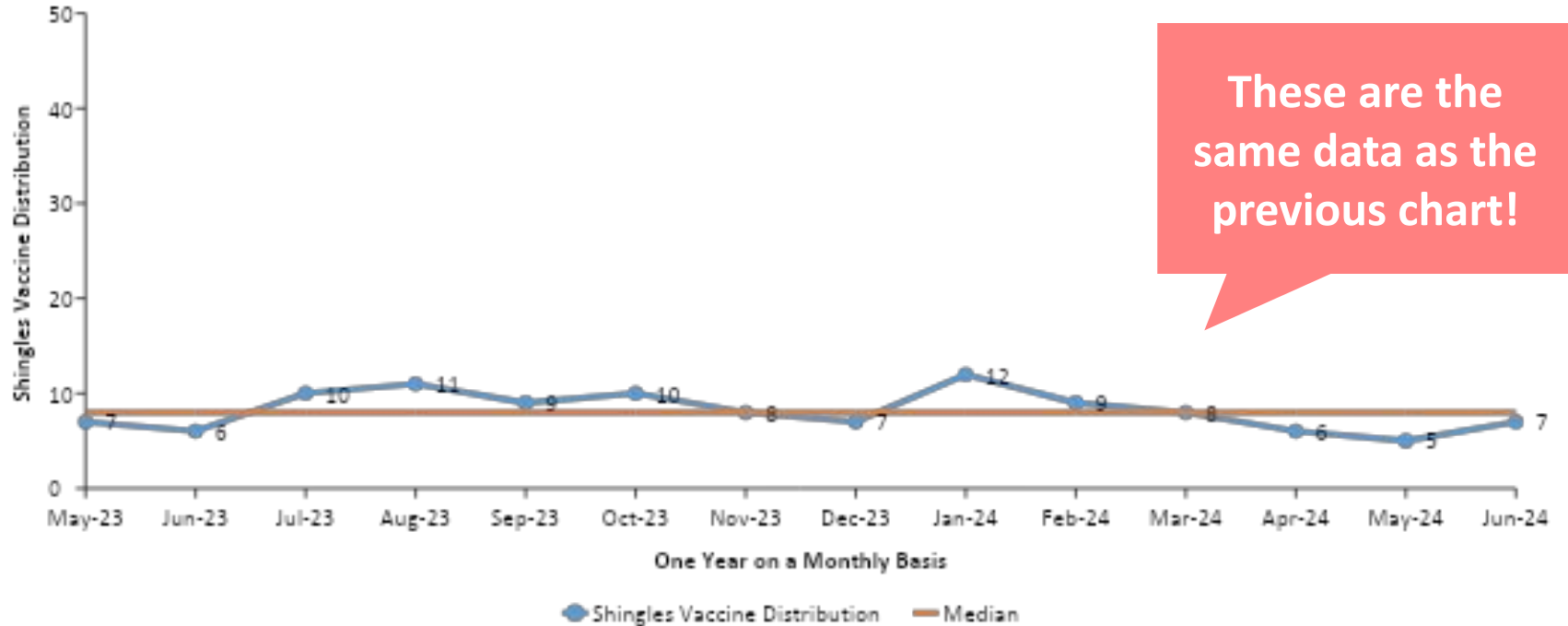
Discussion

Volume of Shingles Vaccine Distribution at Fun Clinic FY 2024



Scale Matters

Shingles Vaccine Distribution

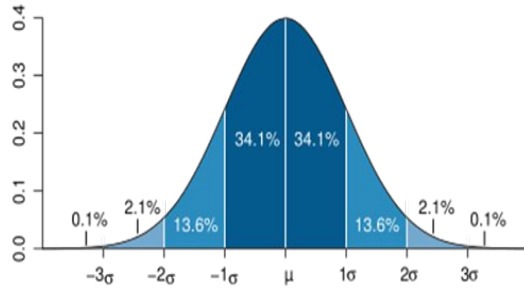


Questions

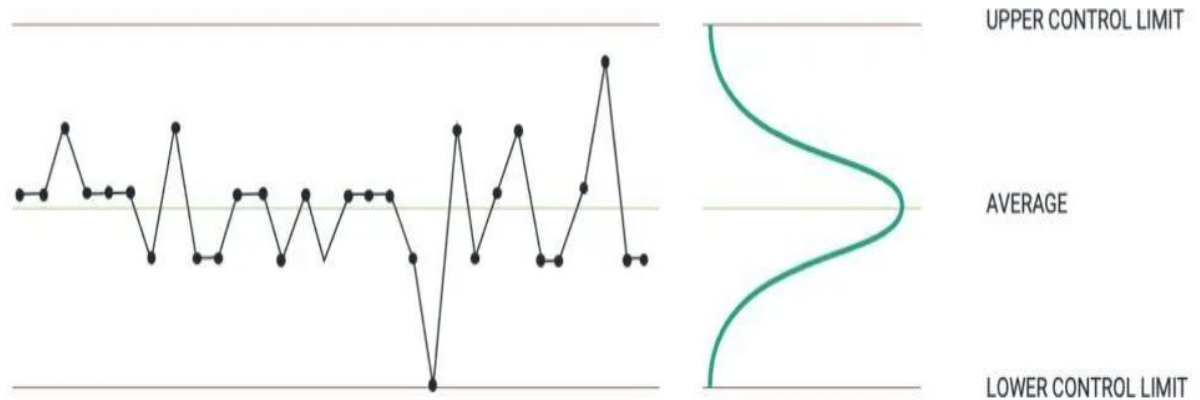


Control Charts

Averages and Control Limits

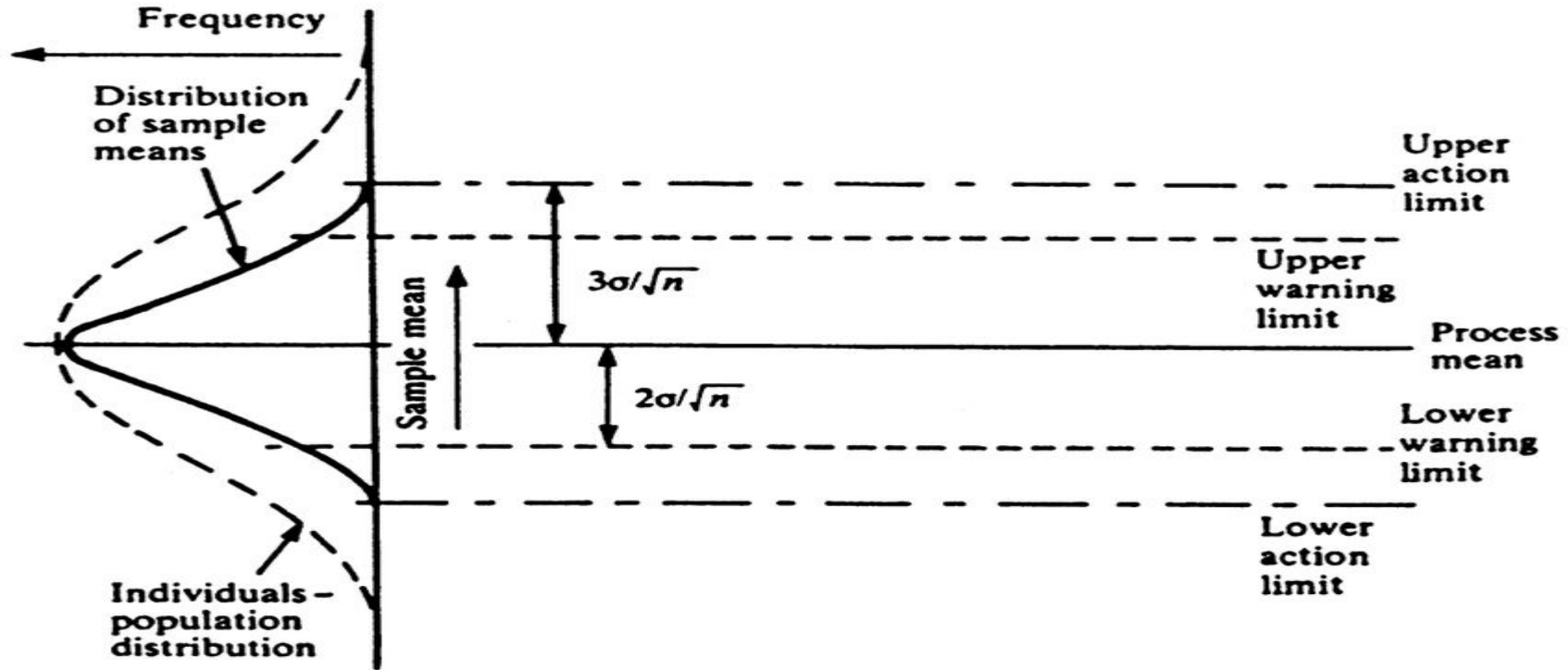


Source: http://en.wikipedia.org/wiki/Standard_deviation



Source: <https://cdn-compl.nitrocdn.com/jHZYXVQcGrlgKuxnSthsdCgKBQAsIMJC/assets/images/optimized/rev-a58fd5c5/leanscape.io/wp-content/uploads/2022/11/Control-Chart-Understanding-Control-Limits-1024x576.jpg>

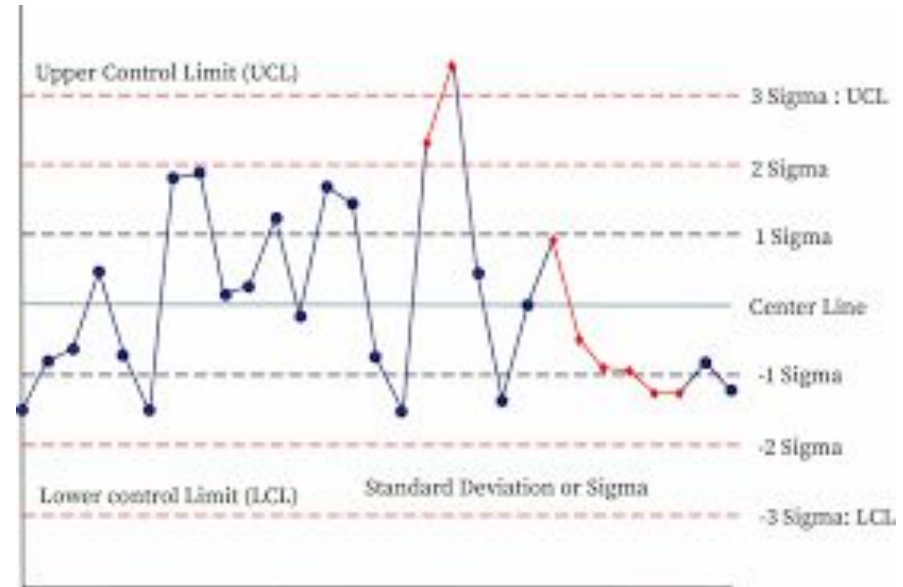
Standard Deviation & Control Charts



Source: Hussein, Maher & Almorshedi, Abbas & Shomran, Haideer. (2013). The Comparison between Shewhart Control Chart, Cusum and EWMA. 10.13140/RG.2.2.34006.34880.

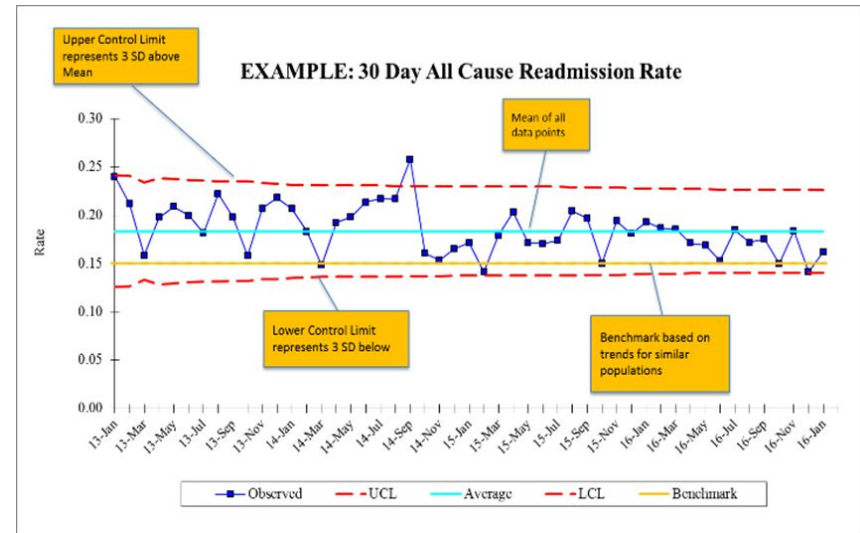
Control Chart

- A Control Chart is a run chart with control limits above and below the median/mean.
- Control limits are computed from the data to distinguish between variation in a process resulting from common causes and variation resulting from special causes.



Control Chart Elements

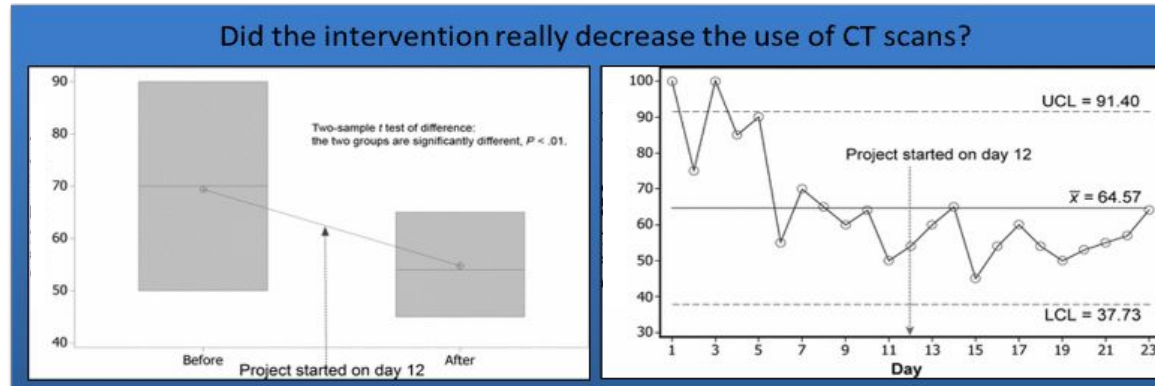
1. A centerline that represents the mean or average value of the process output
2. Upper Control Limit and lower control limits (UCL and LCL) that show the acceptable range of variation for the process
3. Data points that represent the actual output of the process over time



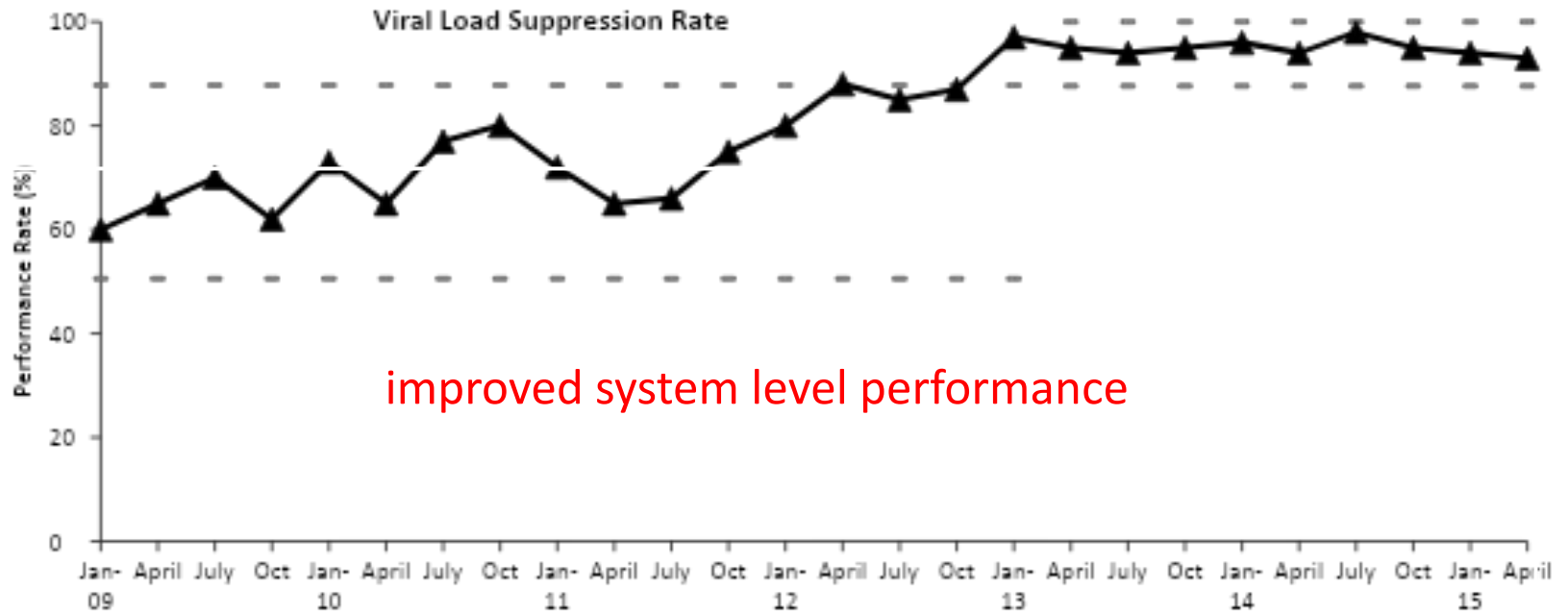
Why Should We Consider Using a Control Chart?

- Differentiates true change from random variation
- Emphasizes early detection of *meaningful* change
- Visualization can engage additional stakeholders
- Allows timing and degree of intervention impact to be detected

Viral Suppression (decreasing the # of unsuppressed pts)



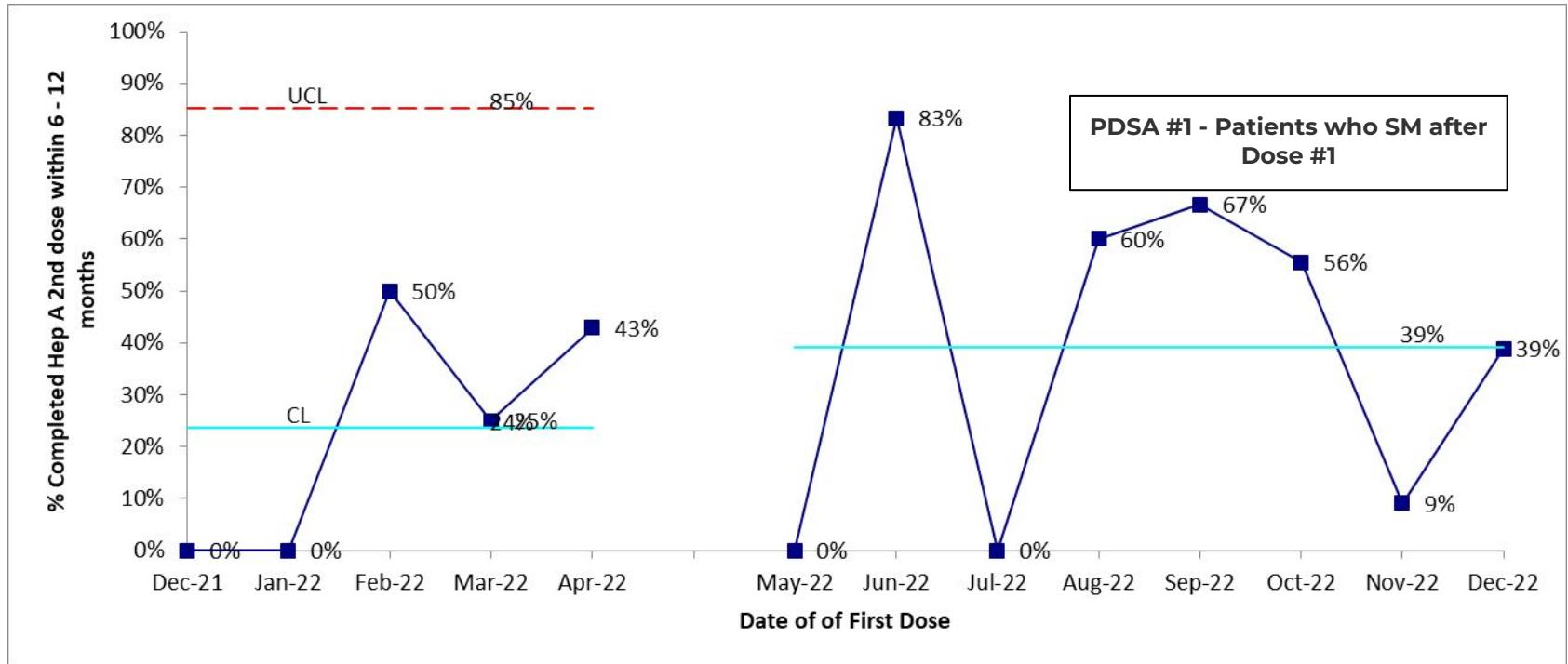
Improvement



Source: HEALTHQUAL Quality Champion Training November 2023

Example

Percentage of Completed Hep B 2nd Dose within 6-12 months* (December '21 to December '22)



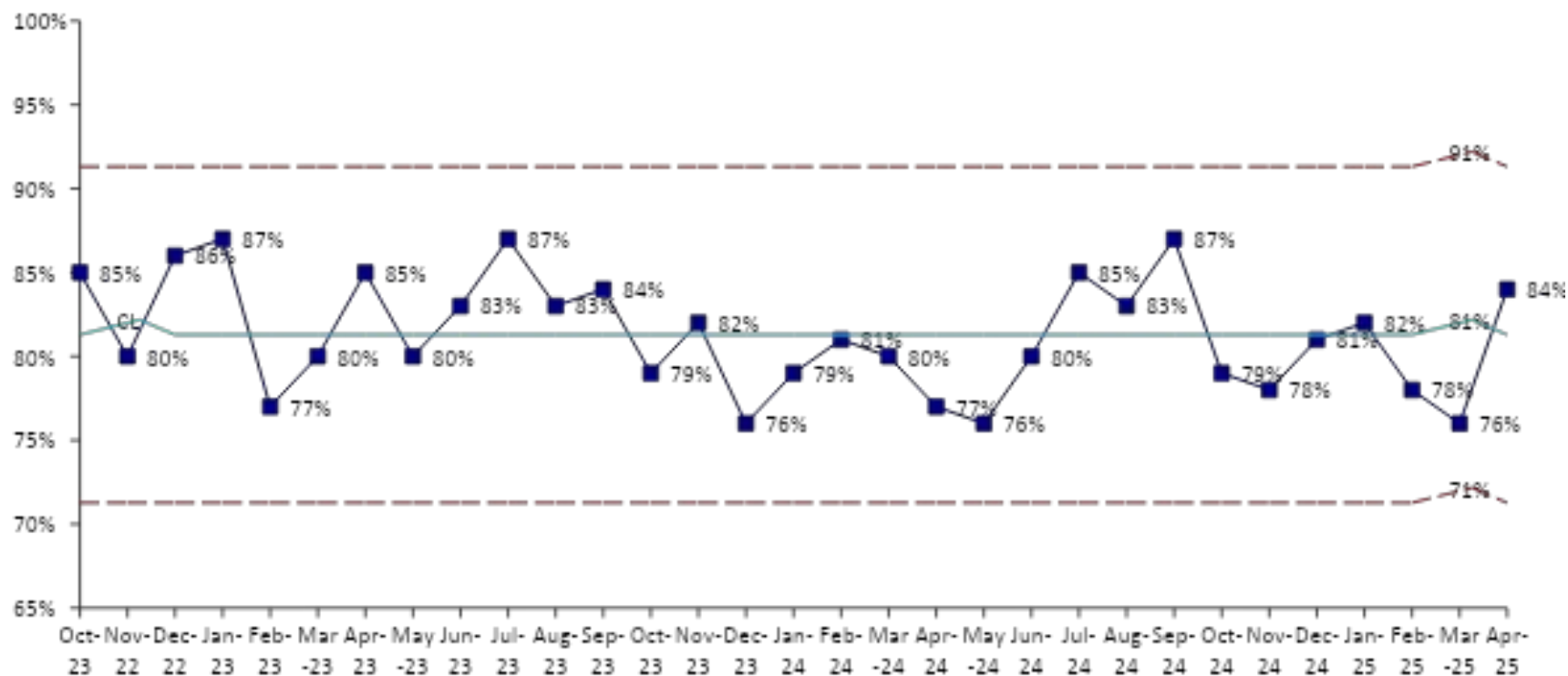
Questions



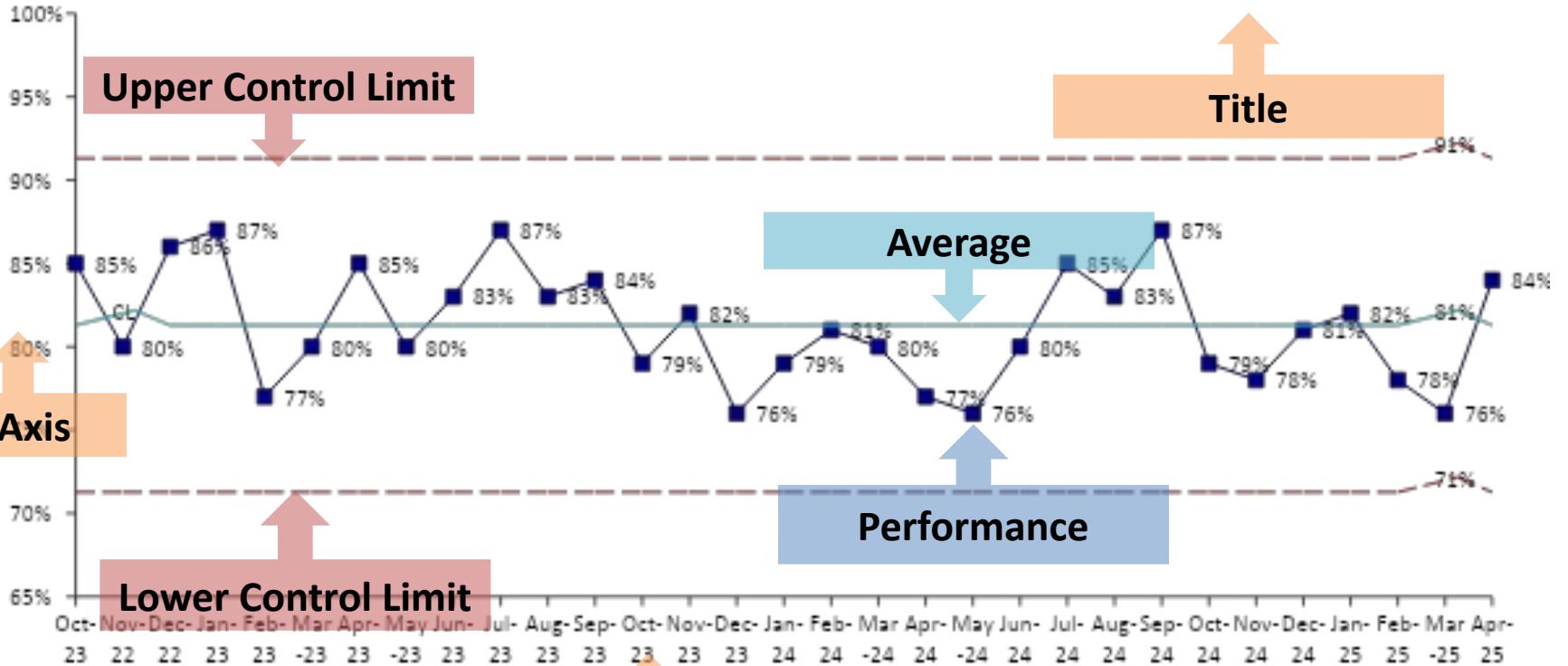
Interpreting Control Charts

- Using the Control Chart Worksheet, label the following elements on the chart:
 - Title
 - X Axis
 - Y Axis
 - Upper Control Limit
 - Lower Control Limit
 - Average

The Percent of Viral Load Suppressed Patients at ABC Hospital from (October 23- December 2025)

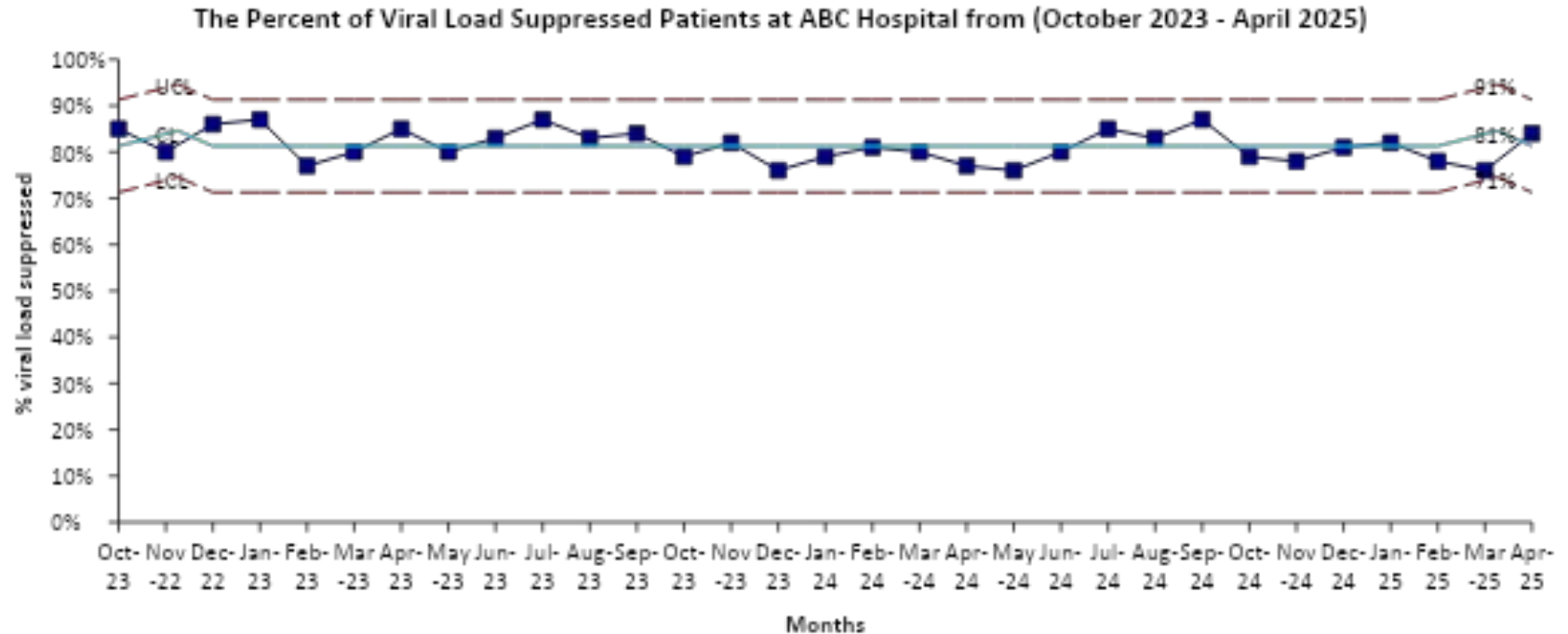


The Percent of Viral Load Suppressed Patients at ABC Hospital from (October 23- December 2025)



X Axis

Scale Matters



Questions



Control Chart Methodology Key Steps

1. Collect measurable data (**at least 28 data points**)
2. Calculate the mean
3. Calculate the upper and lower control limits
4. Plot the data
5. Analyze the chart

Control Chart Template

- Excel Document
- Formulas Embedded (up to 28 data points)
 - Mean
 - Upper Control Limit
 - Lower Control Limit
- Generates the Control Chart

Generating a Control Chart

The image shows a screenshot of an Excel spreadsheet template for generating a control chart. The spreadsheet has columns labeled A through U and rows 1 through 33. Column A is labeled 'Data', B is 'Mean', C is 'Upper Limit', and D is 'Lower Limit'. A green button labeled 'EXCEL' is in the top right corner. The bottom status bar shows 'PPTX Examples', 'Template', 'Example', and a plus sign.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Data	Mean	Upper Limit	Lower Limit																	
2																					
3																					
4																					
5																					
6																					
7																					
8																					
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Template Formulas

Mean (Average) Excel Formula

=AVERAGE(\$A\$2:\$A\$29)

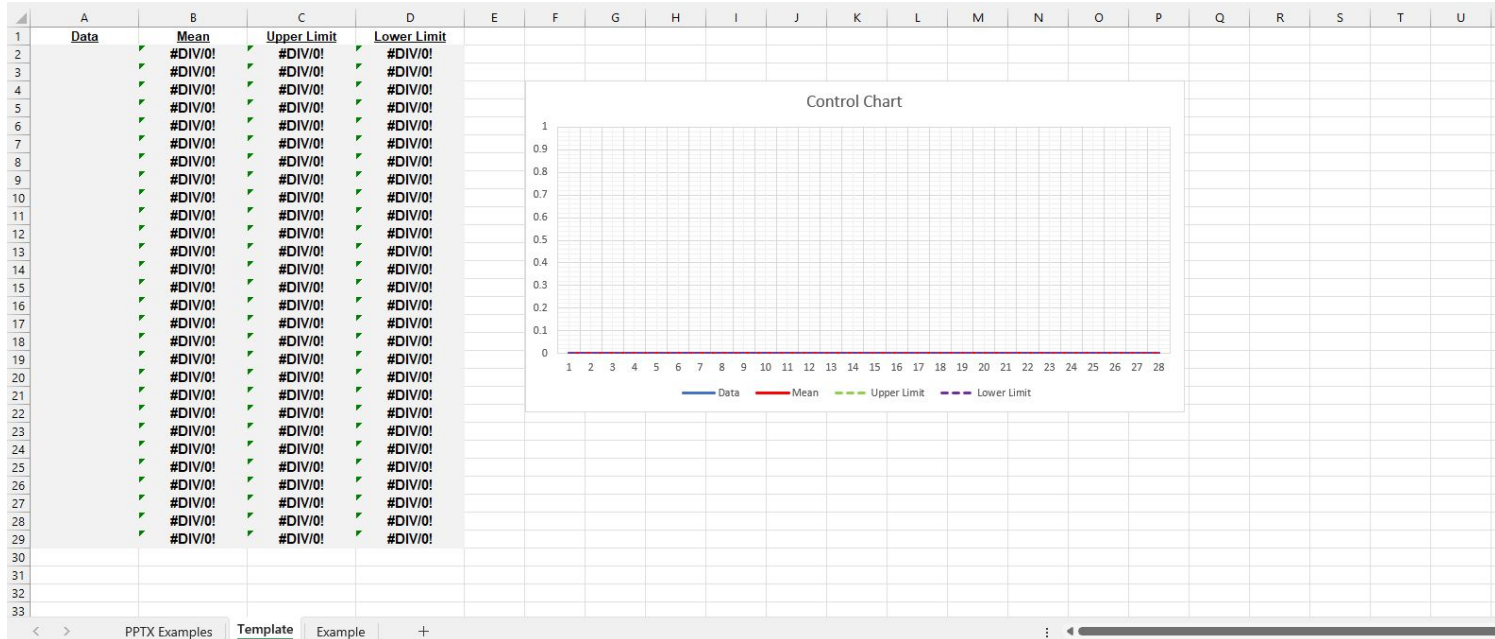
Upper Limit Excel Formula

=\$B\$2+3*STDEV.S(\$A\$2:\$A\$29)

Lower Limit Excel Formula

=\$B\$2-3*STDEV.S(\$A\$2:\$A\$29)

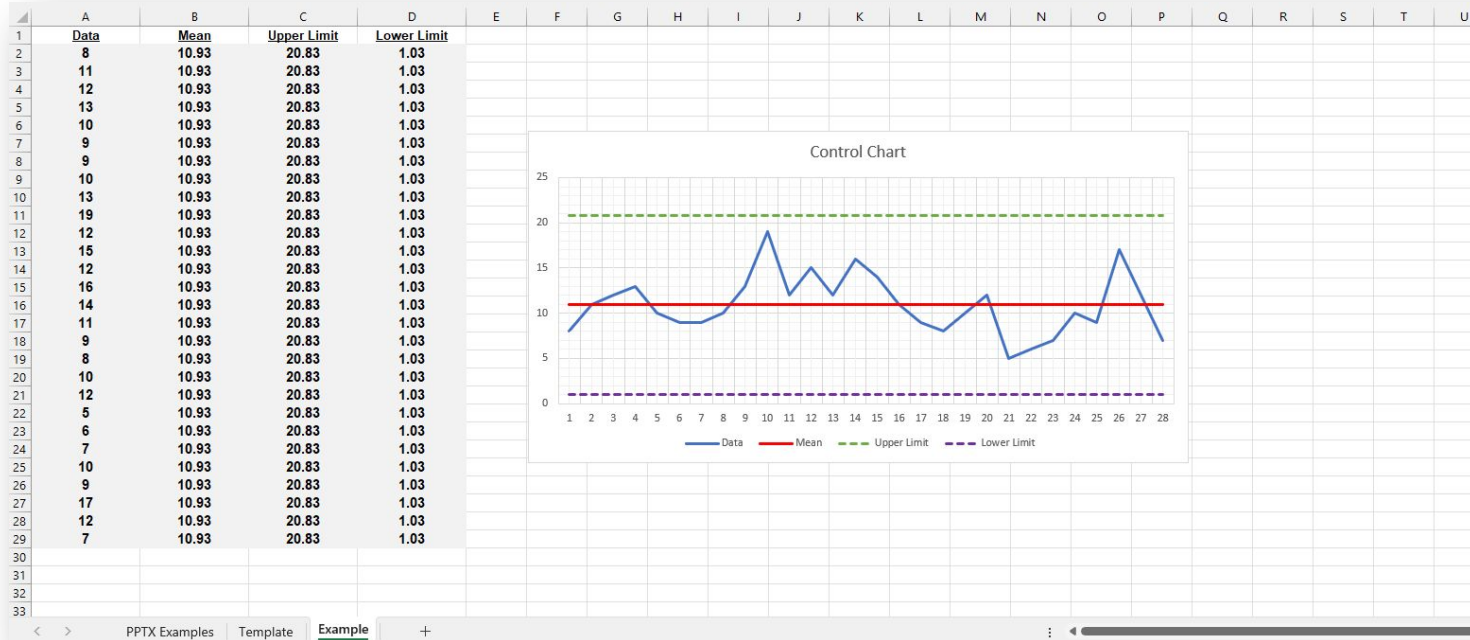
Generating a Control Chart



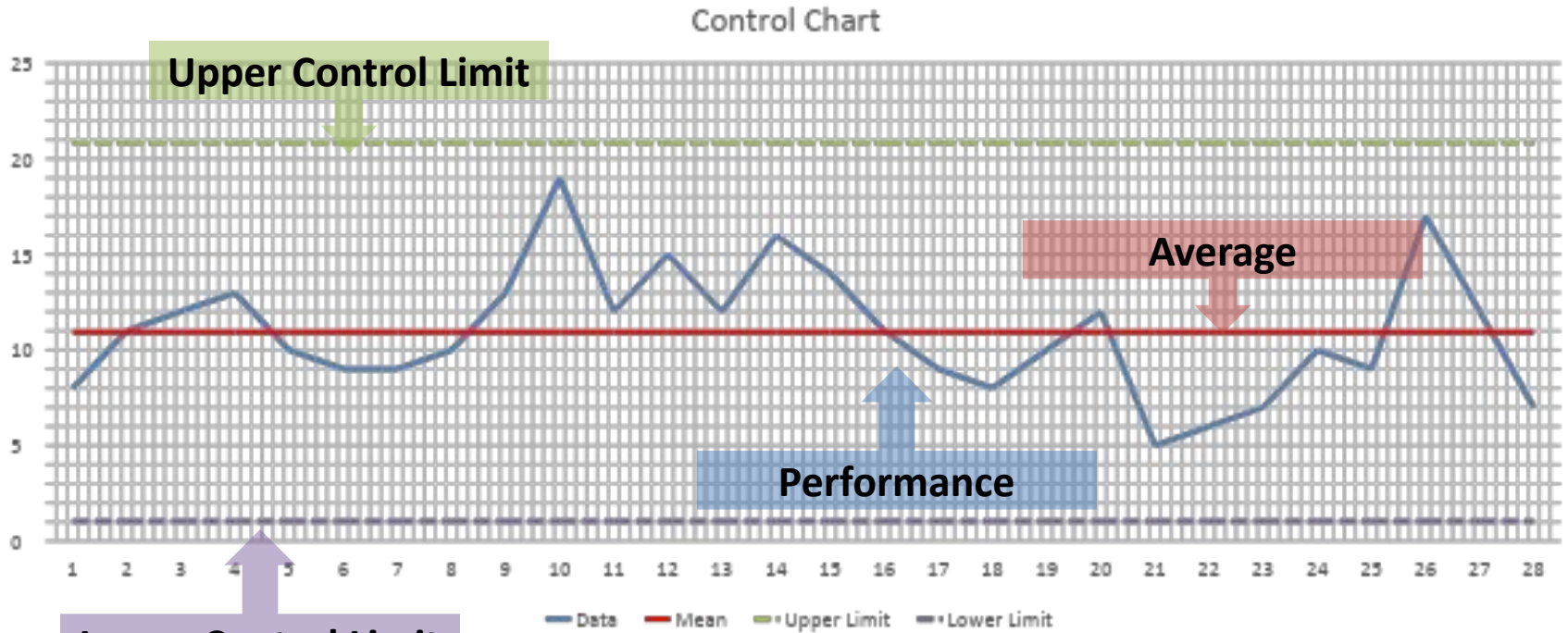
EXCEL

Generating a Control Chart

EXCEL



Control Chart



Questions

