

# XMR Chart

Presented by  
Continuous  
Improvement Team

# Overview

- Introduction to XmR Chart
- Examples and How to Identify Signals in Your Data
- Exercise

# XmR Chart Introduction



- ▶ An XmR chart is a control chart that is used to determine if a process is stable. It creates a visual of how changes to your business process impact your work.
- ▶ The changes can be caused by system errors, personnel issues, implementing new processes, etc.
- ▶ XmR charts are most useful when there are more than 8 consecutive data points.

# XmR Chart Introduction



- The X indicates observation and the mR indicates moving range.
- Moving range measures **variation changes** over time when data is collected as individual measurements. For example; looking at backlog on a monthly basis rather than annually.
- XmR charts can be used to track and monitor data on a daily, weekly, monthly or annual basis.

# Upper and Lower Control Limits



- With the XmR tool we will calculate the central line, upper control limit and lower control limit of our data.
- The central line is the average value of the list of numbers or data points.
- The upper and lower control limits represent your process variation and 99.7% of all data points in your sample should fall within these lines.

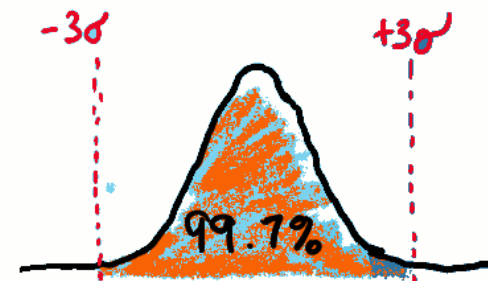
# Upper and Lower Control Limits



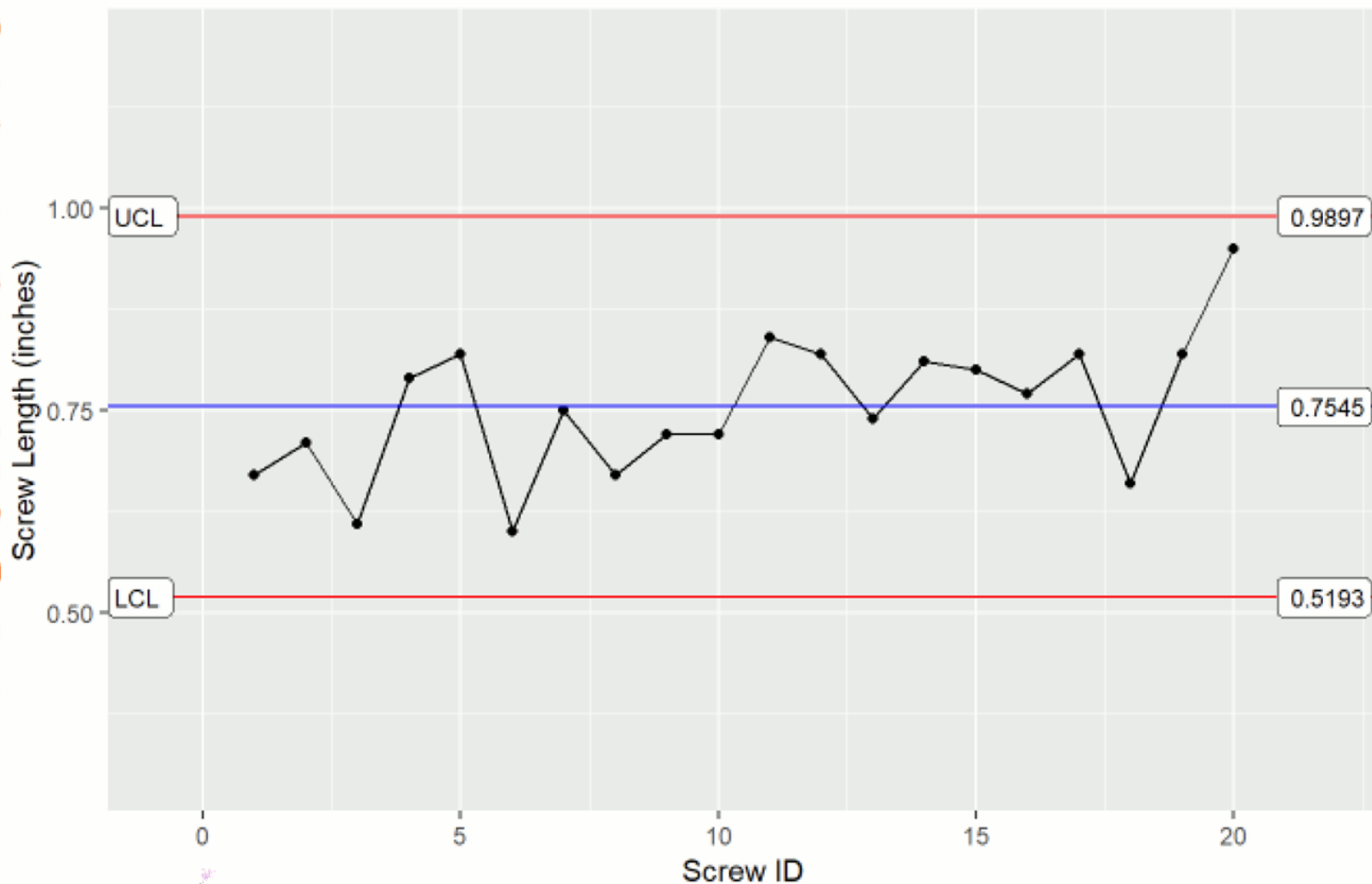
- These help to monitor your process and demonstrate whether your process is stable and consistent over time and help to identify when changes need to be made.
- Although your process may be stable it also needs to be acceptable. Example: Timeliness. Eligibility Sites need to maintain above 95% so if your data is stable but under 95% it's not acceptable.

Process ID: 0.75 inch Nails  
Product Line 1 | 2019-1-1 9:00-9:05am

← Process Information



Process Measure



←  $+3\sigma$  upper Control Limit

← Measured Process Center (mean)

←  $-3\sigma$  Lower Control Limit

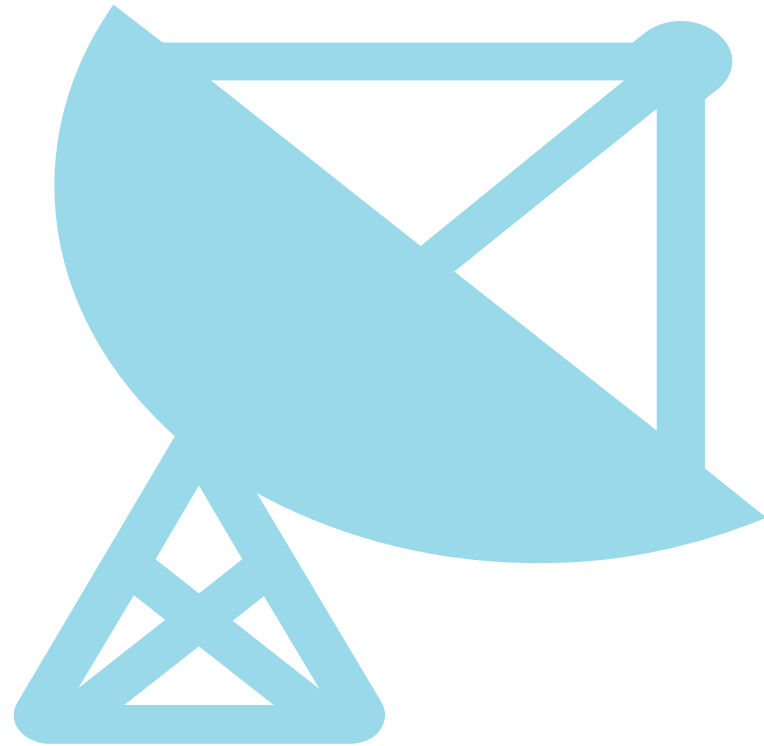
Sequential Process Outputs



Questions

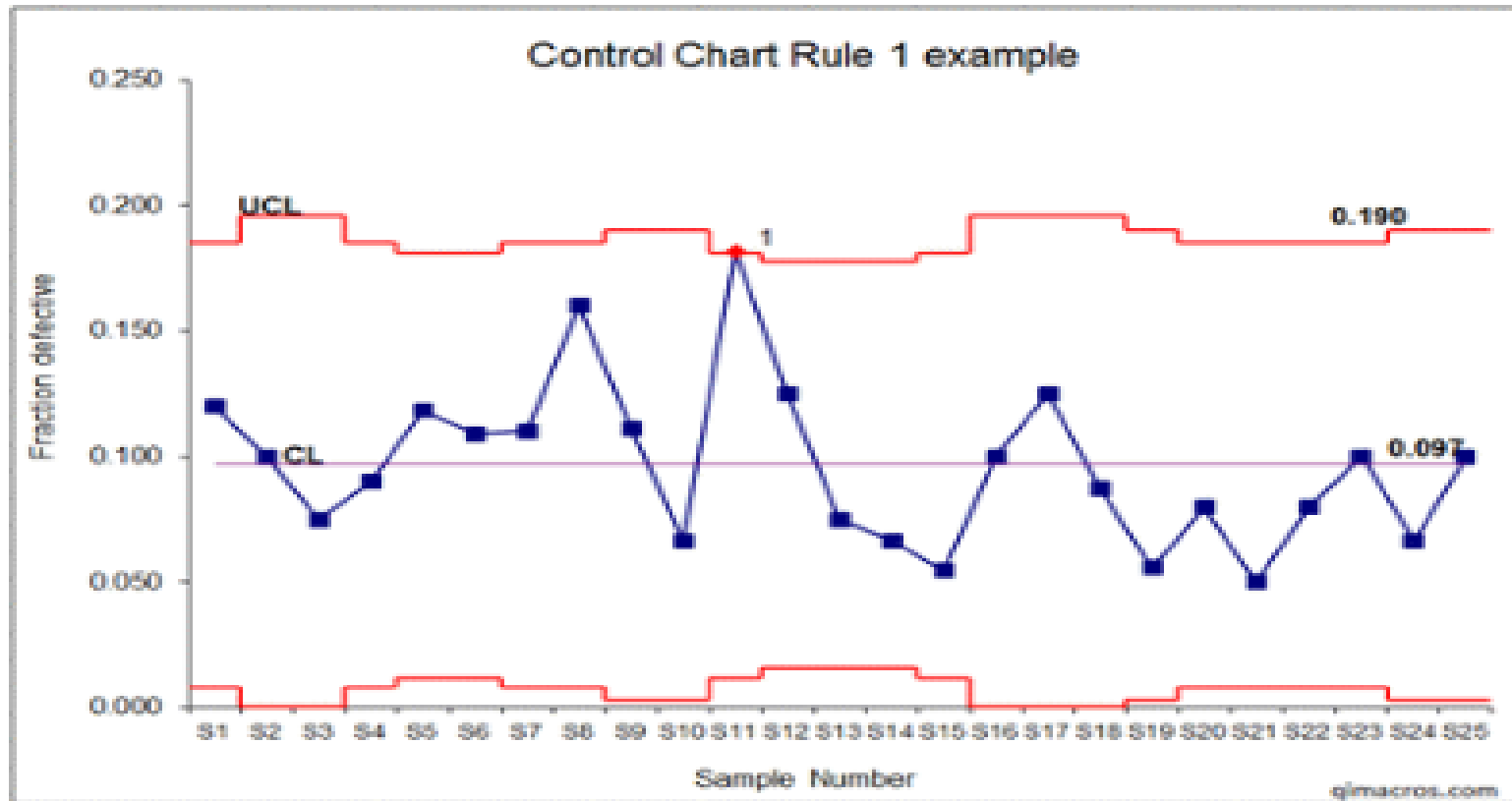


# Looking for signals in the data



# Western Electric Rules

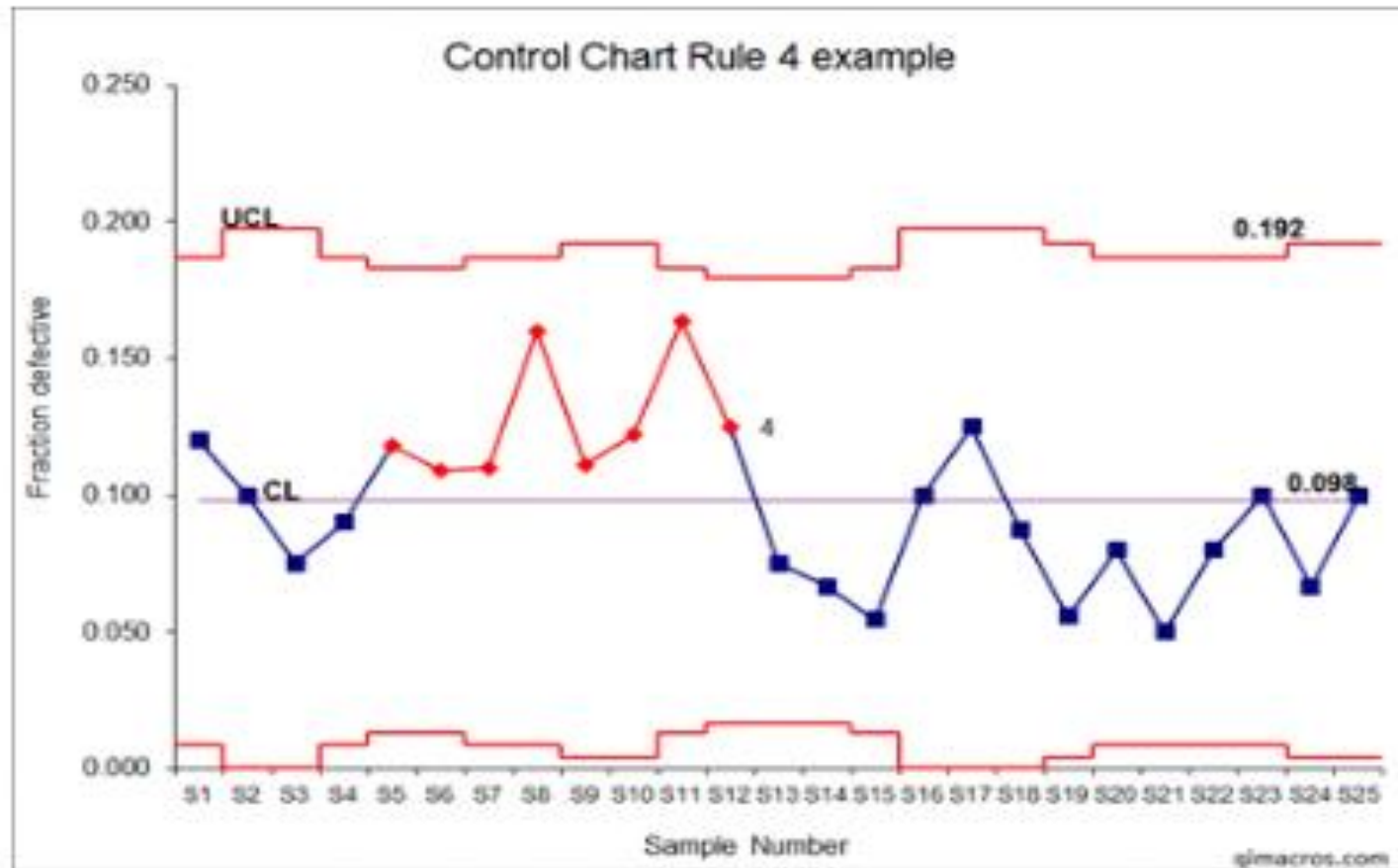
## Western Electric Rule 1: One point above UCL or below LCL



# Western Electric Rules

## Western Electric Rule 4

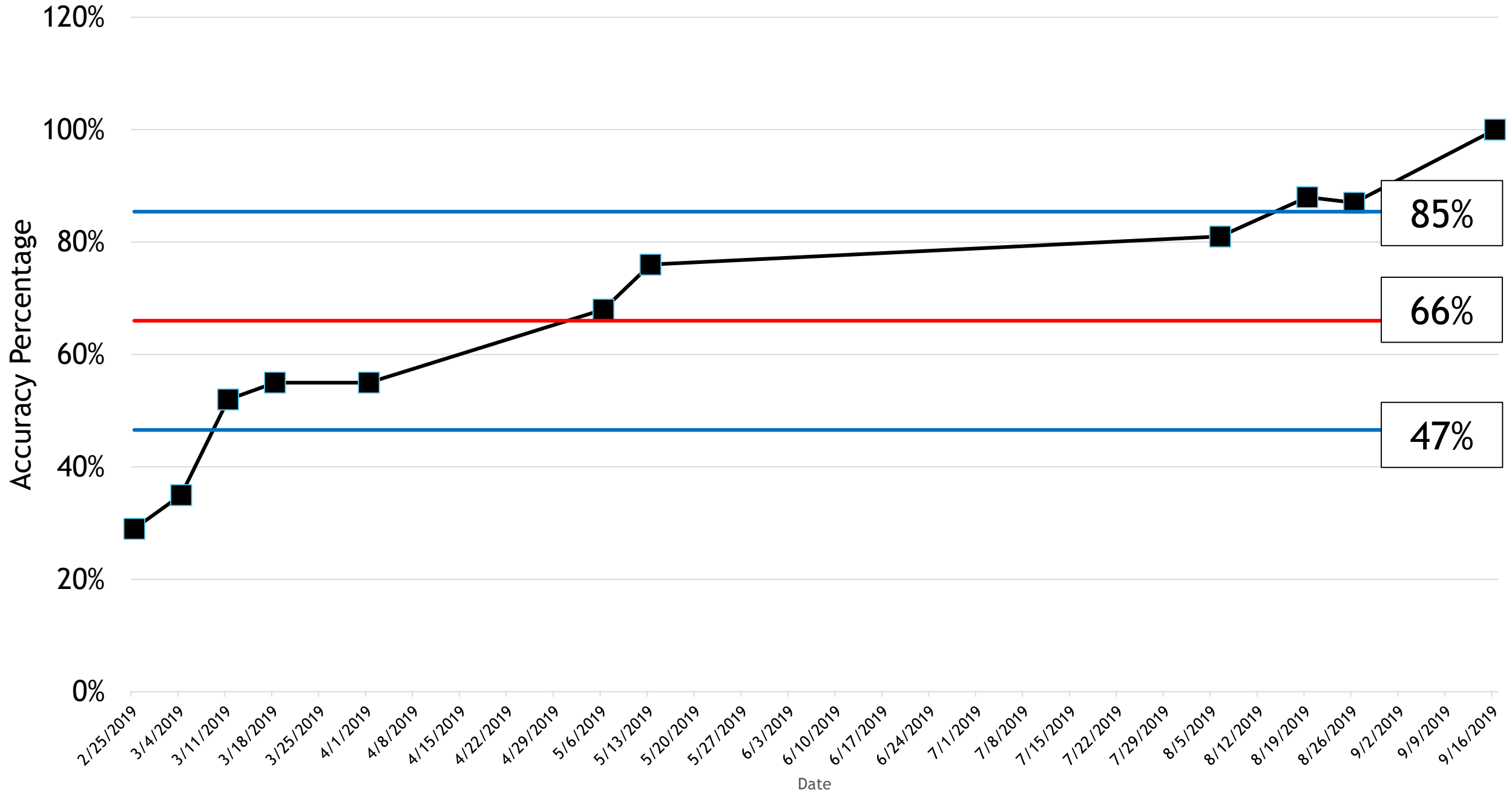
Eight points in a row above/below the center line





# XmR Exercise

# Eligibility Quality Assurance





Questions



## Continuous Improvement Team

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