

Minitab 16 Assistant Demo Control Charts

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Source for all materials presented: Minitab

Scenario

- Security at an airport wants to know if the time required for passengers is consistent over time.
- Factors:
 - 5 security lanes
 - 1 passenger per lane per hour is measured for the total time to pass through

The screenshot displays the Minitab software interface. The main window is titled 'Minitab - AssistantDatasets.MPJ'. The 'Assistant' menu is open, showing options: Measurement Systems Analysis (MSA)..., Capability Analysis..., Graphical Analysis..., Hypothesis Tests..., Regression..., and **Control Charts...**. A tooltip for 'Control Charts' is shown, with the text: 'Control Charts Use to monitor process stability and control.'

The 'Session' window shows the following text:

```
Welcome to Minitab, press F1 for help.

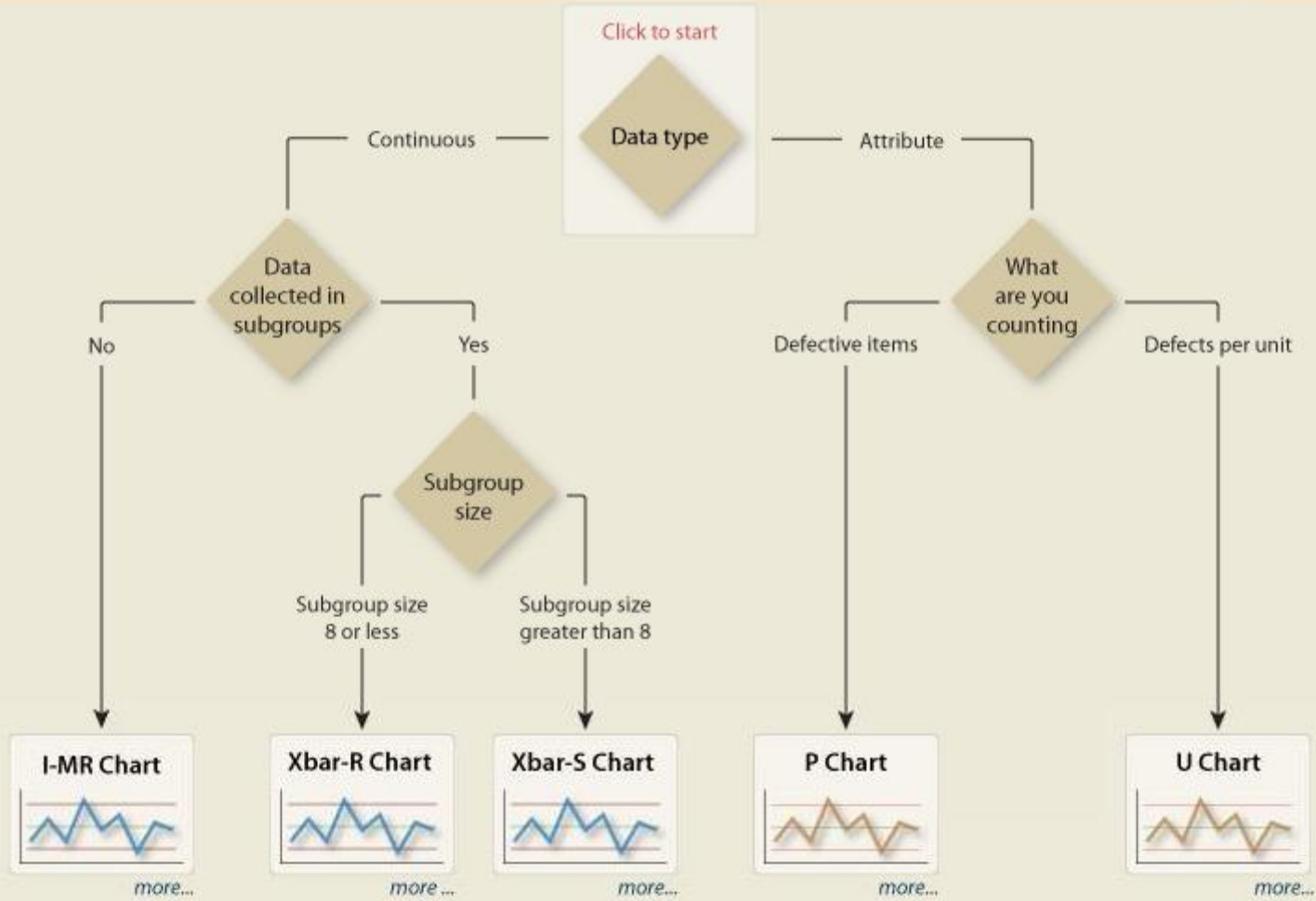
----- 11/16/2011 1:41:29 PM -----

Welcome to Minitab, press F1 for help.
Retrieving project from file: 'S:\MINITAB\QA MINITAB DOCS\Minitab
Introduction Files\AssistantDatasets.MPJ'
```

The 'Control Charts ***' window displays a data table with the following content:

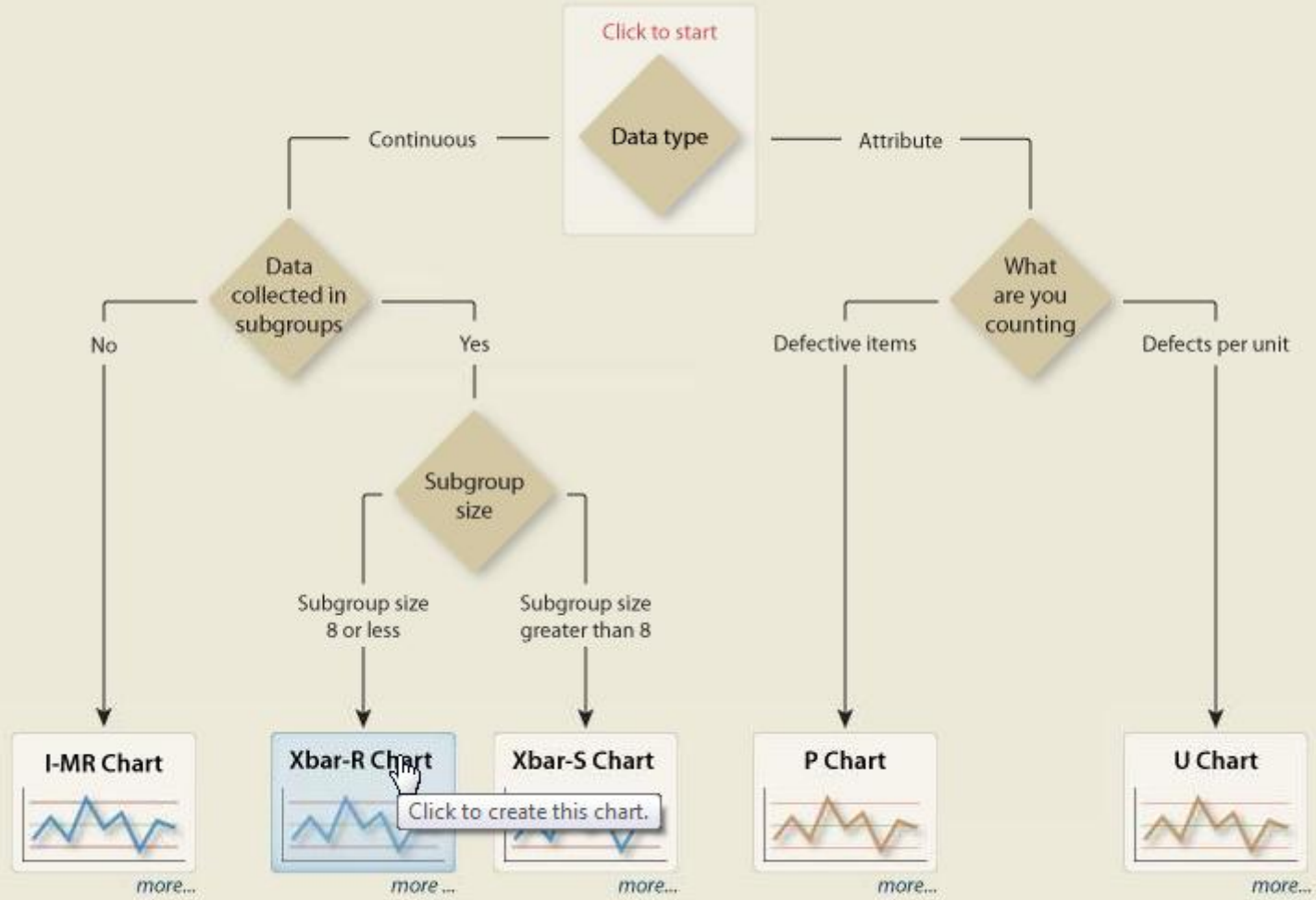
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C1
	Minutes														
1	2.7														
2	5.6														
3	5.2														
4	1.7														
5	2.8														
6	6.5														
7	5.9														
8	5.2														
9	2.9														

Choose a Control Chart



Cancel

Choose a Control Chart



Cancel

Xbar-R Chart ✕

Process data

How are your data arranged in the worksheet?

Data are in one column for all subgroups

Data column:

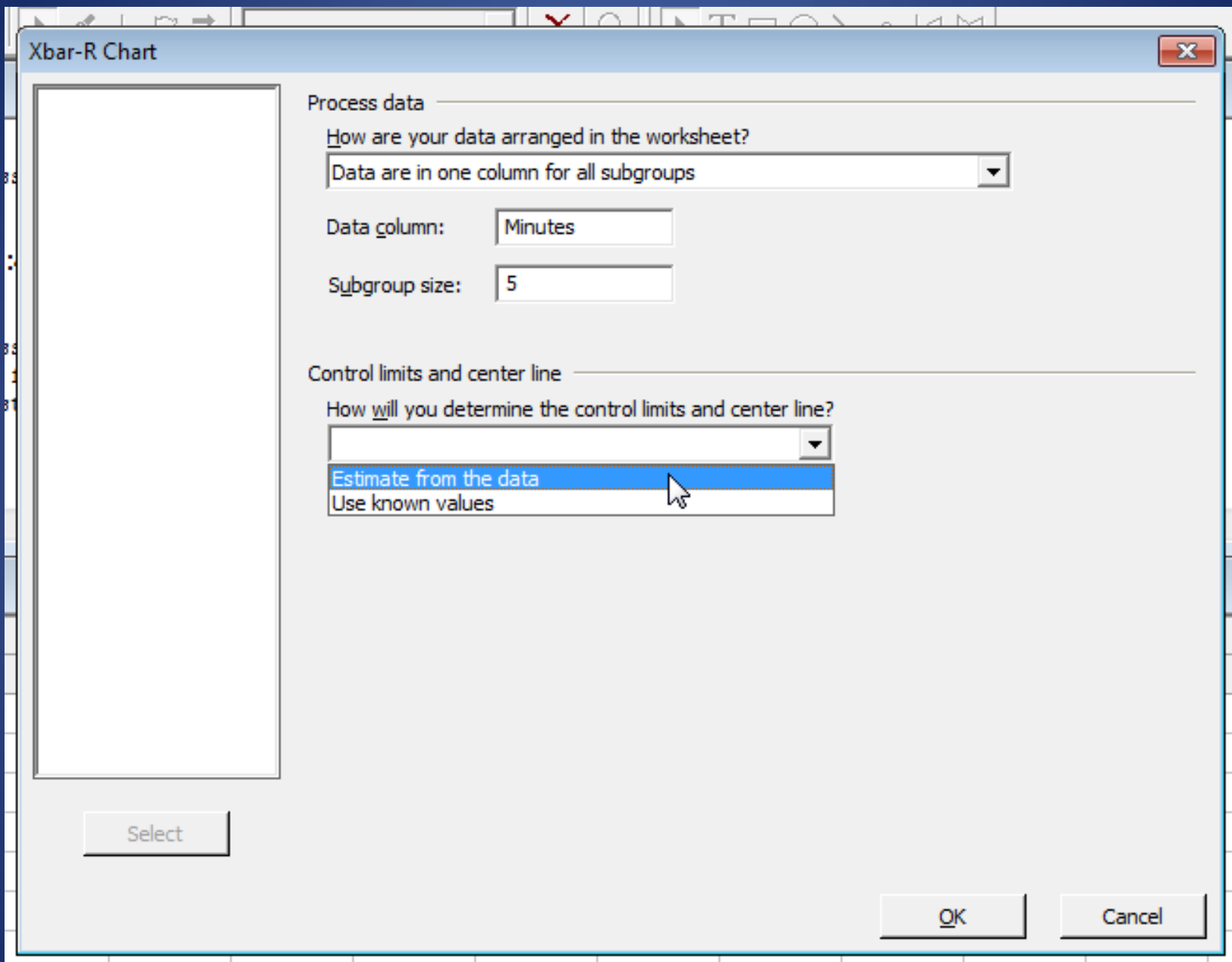
Subgroup size:

Control limits and center line

How will you determine the control limits and center line?

Select

OK Cancel



Xbar-R Chart

Process data

How are your data arranged in the worksheet?

Data are in one column for all subgroups

Data column: Minutes

Subgroup size: 5

Control limits and center line

How will you determine the control limits and center line?

Estimate from the data



Minitab has determined that some subgroups are out of control. Because control limits should be calculated from a stable process, you should identify which subgroups have special causes and omit them from the calculations.

If you omit a subgroup, it is excluded from the calculations for both charts.




Omit	Subgroup	Chart	Reason
<input type="checkbox"/>	6	R	Above upper control limit

Select

OK

Cancel

Xbar-R Chart of Minutes Report Card

Check	Status	Description
Stability		The process mean and variation may not be stable. Although no subgroups are out of control on the Xbar chart, there is an out-of-control subgroup on the R chart. This may affect the validity of the control limits on the Xbar chart making it difficult to assess the stability of the process mean. One (4.0%) subgroup is out of control on the R chart (you may see 0.5% out-of-control subgroups by chance, even when the process is stable). You should investigate the out-of-control subgroup and if it has a special cause, omit it from the calculations.
Amount of Data		You do not need to be concerned about the precision of your control limits because 100 or more data points are included in the calculations.
Correlated Data		If the data are correlated, you may see an increased number of false alarms. Because less than 2% of the subgroups are outside the control limits on the Xbar chart, the correlation test is not needed.

Xbar-R Chart of Minutes Stability Report

Is the process stable?

Investigate out-of-control subgroups. Look for patterns and trends.

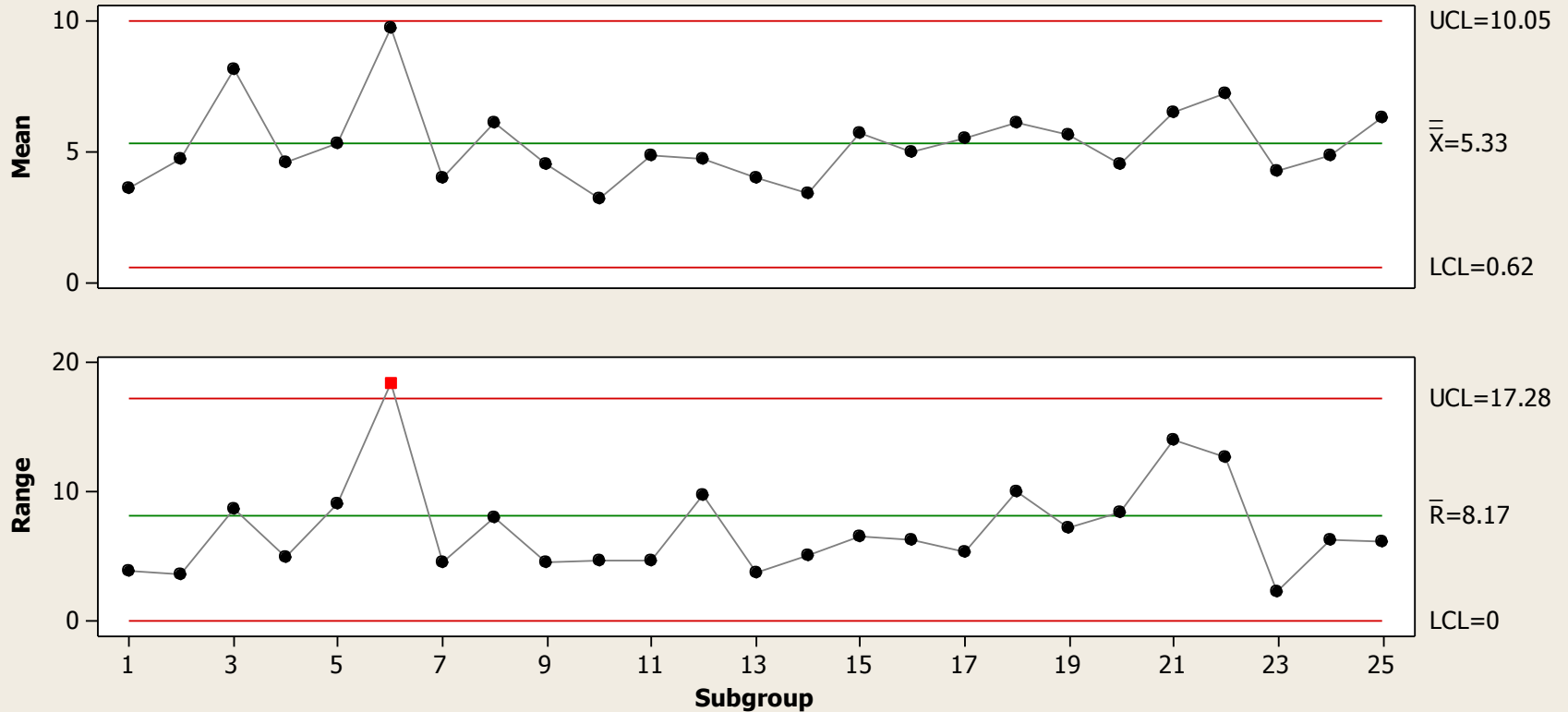
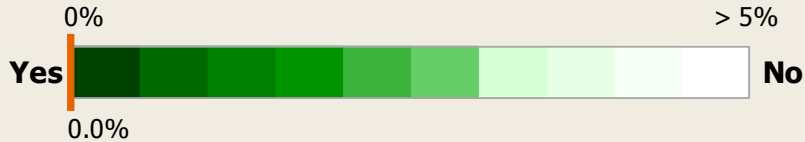


Chart	Reason	Out-of-Control Subgroups
R	Unusually large range	6

Xbar-R Chart of Minutes Summary Report

Is the process mean stable?

Evaluate the % of out-of-control subgroups.

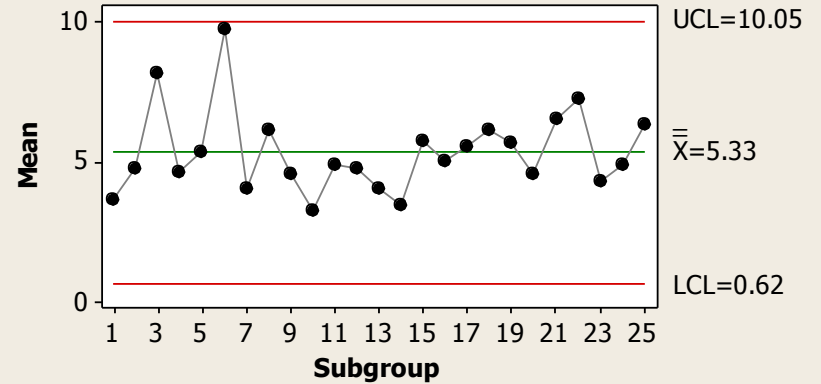


Comments

The process mean is stable. No subgroups are out of control on the Xbar chart.

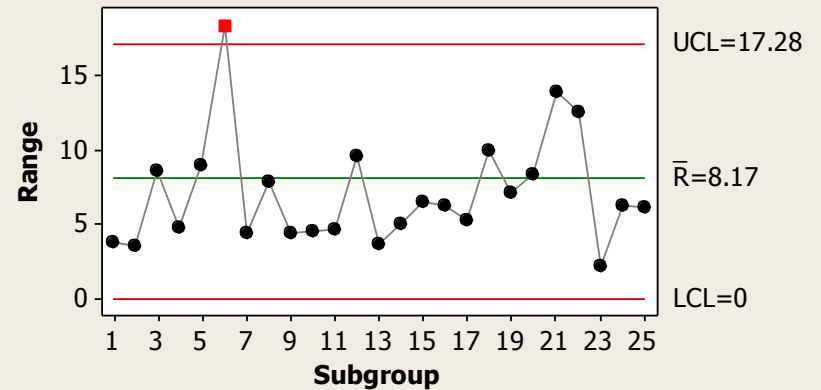
Xbar Chart

Investigate out-of-control subgroups.



R Chart

Investigate out-of-control subgroups.



Questions?

- Thanks!