Control Chart Cheat Sheet

Key Concepts

- ♦ A control chart is a graph of your data with average and sigma lines to determine process stability.
- \diamond $\;$ The average and sigma lines are calculated from the data.
- $\diamond~$ The upper control limit (UCL) and lower control limit (LCL) represent the \pm 3 sigma lines.
- \diamond 99.7 % of your data should fall between the UCL and LCL.

Processes Have Two Different Kinds of Variation

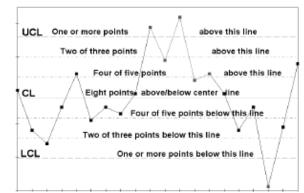
Common Cause: The natural variation that exists within any process. **Example:** Your commute to work takes varying amounts of time each day.

Special Cause: Variation that is due to something out of the ordinary. **Example:** A contruction zone, blizzard, or traffic accident.

Special causes require immediate cause-effect analysis to eliminate the source of variation. Once special causes have been addressed and a process is stable, you can launch an effort to reduce common causes of variation.

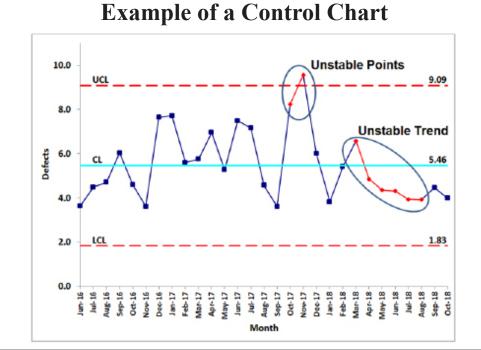
Stabilty Analysis

- ◊ Stability analysis is designed to identify <u>special cause</u> variation.
- \diamond An unstable condition, can be a single point, a set of points or a trend.
- ♦ Control charts use the zones created by the sigma lines and the stability rules to analyze your data and identify unstable conditions.



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Types of Control Charts

Attribute Charts	Variable Charts			
for Counted Data	for Measured Data			
defects, errors, injuries, etc.	length, weight, depth, time, etc.			
c chart	XmR / ImR Chart			
p chart	(Individual Moving Range Chart)			
u chart	XbarR Chart			
np chart	XbarS Chart			

Control Charts for Special Situations

- EWMA and CUSUM charts for small shifts in a process
- g charts and t charts for rare events
- Levey Jennings standard deviation chart used in healthcare labs
- Short Run control charts when making a few parts of different sizes

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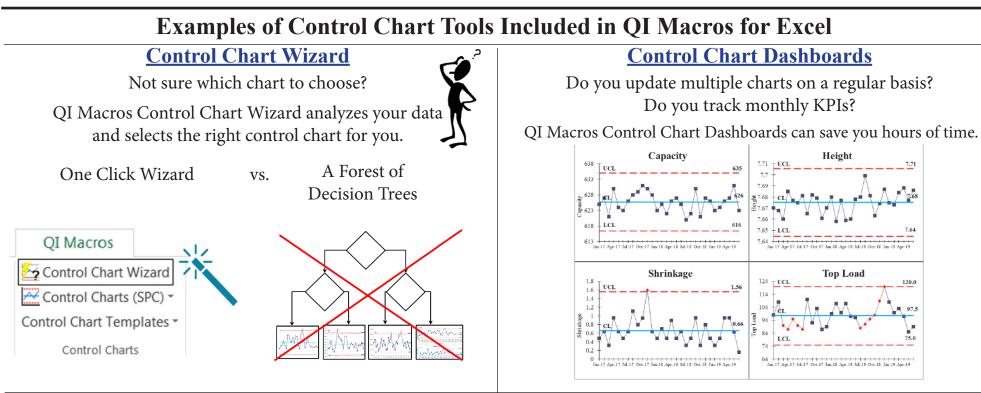


Chart Menu Automates Common Tasks

File	Home	Insert	Page Layout	Formulas	Data	Review	View	Add-ins	QIMacros Chart	
+ Add	Data		💵 Analyze Stability		📩 Sł	now/Hide Ru	ule Number	s 💆 Proce	ess Change Wizard	
Add Target Line to Chart محب			Analyze Stability Green Up/Down ~			Show/Hide Sigma Lines ~			🚰 Process Changes 🛩	
🗄 Add Text to Point			< Clear Stability Analysis			Convert SkyLine/Wave 🛩			🕀 Ghost or Delete Point 🛩	
	Chart Tools				Contr	ol Chart Tool	s			

- Add Data, Text or Target Lines \Diamond
- Calculate or Recalculate Control Limits
- Show Process Changes with Stair Step Limits
- Run and Re-run Stability Analysis $\langle \rangle$
- Display or Hide Control Limits
- Format and Share Charts



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Capability Suite of Six Charts

Analyze normality, stability and capability with one click.

