Introduction to Process Capability

Data Science for Quality Management: Process Capability

with **Wendy Martin**

Learning objective:

Discern between process capability measures and process performance measures

Performance Measures

Capability		Performance
Cp	→	Pp
Cpk		Ppk
Cpm		Ppm

Process Performance vs. Capability Measures

- Statistical control is not required for analysis (or capability would be assessed)

- Common and special causes are both present

Process Performance vs. Capability Measures

- Analysis cannot assess the shape of the underlying process/population distribution; distributional analyses potentially constitute multiple sources of variability and process streams.

Process Performance vs. Capability Measures

- This renders the analysis of limited use (some conservative practitioners would say useless versus limited) versus Capability analysis

- Assesses past performance only, does not predict the future (enumerative, not analytical)

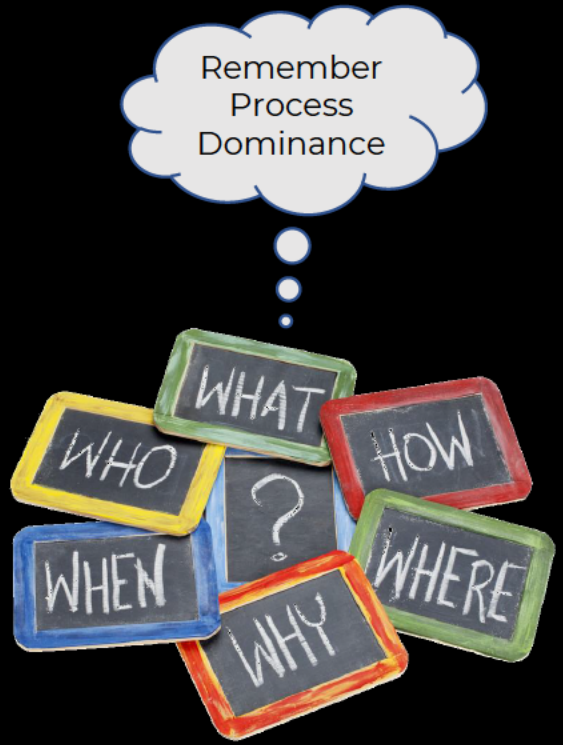
Potential Contributions of Process Performance Analysis

- Assesses the process(es) before statistical control is achieved
- Provide insight to help determine potential sources of process loss

Potential Contributions of Process Performance Analysis

- Make broad comparisons among plants, characteristics, products, and suppliers
- Determine control and improvement priorities
- Assess results of process improvement efforts

What If the Process Is Not Capable?



What is Good Enough?

- What does "meet customer specifications" mean?

- How capable we must be depends on the business and what the customer will tolerate

Sources

The material used in the PowerPoint presentations associated with this course was drawn from a number of sources. Specifically, much of the content included was adopted or adapted from the following previously-published material:

- Luftig, J. An Introduction to Statistical Process Control & Capability. Luftig & Associates, Inc. Farmington Hills, MI, 1982
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