My Most Favorite Book Ever

Understanding Variation
The Key to Managing Chaos

Donald J. Wheeler, Ph.D.

http://www.spcpress.com/
The 2017 Society for Health Systems Conference
Two Data Points Are Not a Trend: Using SPC to Manage Better

Mark Graban
VP of Innovation & Improvement Services, KaiNexus
Dr. Wheeler taught us... now what?
“Statistical Process Control is a way of thinking… with some tools attached.”
Sounds like Lean...
A Lean Management System

Methods

• Value Stream Mapping
• Kaizen Boards
• Daily Huddles
• A3 Problem Solving
• Strategy Deployment
• Performance Measures
• Etc.

Mindsets

• Customer Focus
• Respect for People
• Create a system in which people can be successful
• Engage everybody
• Scientific, systematic problem solving and improvement
One goal is reducing waste

This includes “management waste”
- Wasted motion
- Overprocessing
“What gets measured, gets managed.”
How do we manage?
% UA Completed Prior to Appointment

Target: 75%
Actual: 66%

Week:

6/5/17
Three Key Questions

1. Are we achieving our target or goal?
2. Are we improving?
3. How do we improve?

% UA Completed Prior to Appointment

Target  Actual: 6/5/17 Week

75%  66%
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Three Key Questions

1. Are we achieving our target or goal?

2. Are we improving?

3. How do we improve?
### Additional Questions

- Which of these numbers (if any) suggests that the system has changed significantly?
- Which of these merit reaction, investigation, or explanation?
- How do we prioritize?
There is Variation in Every Metric

- The question is "how much variation is routine?"

- Personal examples:
  - Body weight
  - Time to drive to work
  - Resting heart rate
“While every data set contains noise, some data sets may contain signals. Therefore, before you can detect a signal within any given data set, you must first filter out the noise.”
"Process Behavior Chart” – Measures of Success

Run Chart (Daily Book Sales)
"Process Behavior Chart" – Measures of Success

X Chart (Daily Book Sales)

AVERAGE
"Process Behavior Chart" – Measures of Success

X Chart (Daily Book Sales)

- Measures of Success
- AVERAGE
- UPPER NATURAL PROCESS LIMIT
- LOWER NATURAL PROCESS LIMIT

NOISE

PREDICTABLE METRIC
3 Rules for Finding a Signal

X Chart (Individuals Data)

Upper Natural Process Limit

Lower Natural Process Limit

Rule 1
3 Rules for Finding a Signal

**Rule 1**

**Rule 2**
3 Rules for Finding a Signal

- **Rule 1**: A single point outside the control limits.
- **Rule 2**: Eight or more consecutive points on one side of the centerline.
- **Rule 3**: Six or more points in a row increasing or decreasing.
"Process Behavior Chart" – Measures of Success

X Chart (Daily Book Sales)

WHAT CHANGED?

SIGNAL

UPPER NATURAL PROCESS LIMIT

LOWER NATURAL PROCESS LIMIT

AVG
Is the System Changing?

Ways we can get it right:

- The system changes and we interpret the change in the metric as a signal.
- The system does not change and we interpret the change in the metric as noise.

Mistakes we can make:

- The system does not change, but we interpret the metric as representing a change. (overreaction)
- The system changes and we interpret the metric as not changing. (missed signal)
Weekly Process Behavior Chart – Measures of Success

X Chart (Weekly Book Pre-Orders or Sales)

PREDICTABLE METRIC

Shift in Performance

LOWER NATURAL PROCESS LIMIT
KaiNexus Webinar Registrations

SIGNAL

WHAT CHANGED?

NOISE

CAN WE RECREATE IT?
My Weight for a Particular Timeframe

X Chart (Weight)

Upper Natural Process Limit

Target = 185

Average

Lower Natural Process Limit

Date Range:
- 5/27/16 to 7/5/16

Graph shows fluctuations in weight over the specified timeframe with limits and target.
Three Key Questions

1. Are we achieving our target or goal?
2. Are we improving?
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Bowling Chart as Run Charts

**Run Chart (Falls w/ Sev Injury)**

**Run Chart (CLABSI)**

**Run Chart (CAUTI)**

**Run Chart (Team Engagement)**

**Run Chart (Recommend)**

**Rating**

**WHEN DO WE REACT?**
Bowling Chart as PBCs

**X Chart (Falls w/ Sev Injury)**

**X Chart (CLABSI)**

**X Chart (CAUTI)**

**X Chart (Team Engagement)**

**X Chart (Recommend)**

**X Chart (Rating)**

[Signal] [Noise]
Three Key Questions

Question 1: Are we achieving our target or goal?
   a. Are we doing so occasionally?
   b. Are we doing so consistently?

Question 2: Are we improving?
   a. Can we predict future performance?

Question 3: How do we improve?
   a. When do we react?
   b. When do we step back and improve the system?
   c. How will we know if we’ve improved?
Bowling Chart as PBCs with Red/Green

X Chart (Falls w/ Sev Injury)

X Chart (CLABSI)

X Chart (CAUTI)

X Chart (Team Engagement)

X Chart (Recommend)

X Chart (Rating)
Unpredictable & Not Meeting Target

X Chart (Individuals Data)

STABILIZE THE SYSTEM!

ROOT CAUSE?

ROOT CAUSE?
Predictable & Not Meeting Target

IMPROVE THE SYSTEM!
Predictable and Always Meets Target

IMPROVE THE SYSTEM?
Predictable and Sometimes Meets Target

DON'T OVERREACT!
IMPROVE THE SYSTEM!
Shifting into the Green

X Chart (Hospital Ratings Score)
Looking for Signals in a Metric That Meets Target
React Less
Lead Better
Improve More
Why Don’t the Best Methods Win Out?

• Total Quality Management
• Statistical Process Control
• Lean Management
• Acuity-Based Staffing
Having the right answer isn’t enough...
Why aren’t best practices more common?
Can we improve the way we improve?
Questions?

Resources: MeasuresOfSuccessBook.com
Slides: MarkGraban.com/SHSWebinar
Email: mark@markgraban.com
Web: www.LeanBlog.org
www.MarkGraban.com