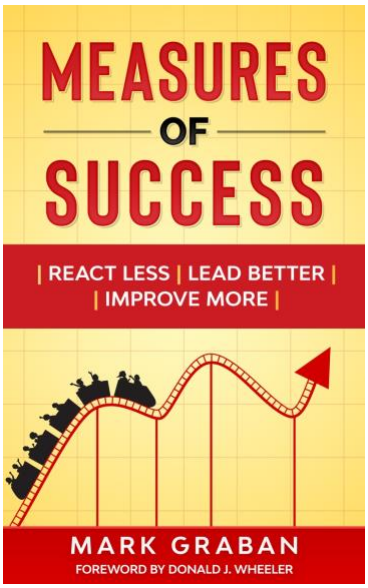

Measures of Success Reviewer Summary

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Contents of this document:

- Preface from the book
- Introduction from the book
  (expanded with highlights from some chapters)
- 3 core questions the book answers
- 10 key points from the book
- About the author

Preface

Why am I writing this book? I want you and your organization to be more successful, to improve more, and to be less frustrated in your improvement efforts. My intent is that this book's methods will help managers, executives, business owners, and improvement specialists in any industry – using your limited time more effectively.

As I've worked and talked with leaders throughout my career, I've heard many common challenges that aren't always easily articulated. One leader expressed a vague underlying concern:

> "We're trying really hard, but this approach [of managing]… I don't know; it seems not to be working."

For all of the attention placed on performance, goals, and metrics, many leaders haven't been taught the most modern and effective ways to improve and gauge progress. Many of our common management practices, as taught in business schools or passed down from generation to generation, can actually interfere with improvement. There is a better way.

I see many well-intended leaders doing what they think is best for the organization and their customers. Or, they're doing what they think is necessary. But, their best efforts and long hours often end up being a waste of time. Leaders and their employees get stressed out; they react; but are they more effective as a result?

Accepting a better way requires first that we recognize problems or shortcomings with current management practices.

Another leader told me:

> "We have an old-school, command-and-control (if not bullying) culture. Leaders demand better performance and throw goals at people, whether they're achievable or not. They celebrate when we make a small improvement and come down on us when performance

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> dips. They throw solutions at us instead of helping us develop our improvements. We're trying to shift from a blame-and-shame culture to a data-driven culture."

I've seen too much workplace bullying throughout my career. I've seen far too many leaders blaming employees for a system's poor performance. It's especially sad to see in healthcare, where the human stakes are so high for everyone involved.

The best efforts of individuals might not be enough to guarantee success for a team or the organization as a whole. We often see great people being defeated by their broken workplace. For example, think of the famous video of Lucy and Ethel in the chocolate factory. They're working hard, and they can't keep up. A badly designed or managed system defeats good people every time, as they say.

Far too often, leaders at all levels are in the same predicament as Lucy and Ethel. They're under enormous pressure to improve. They aren't meeting their targets. Bad results and problems are flying at them faster than they can handle, like chocolates on a conveyor belt. So, everybody is working hard to improve — but the management methods we've been taught might not be enough to make a difference.

Thankfully, many organizations are very intentionally trying to move toward more collaborative and participatory management styles. I think this book will help people work together better in the name of improvement.

A different leader said:

> "We're not very good at using data to inform daily decisions and problem solving. We're trying to build that culture. We need to push daily metrics."

As we'll discuss in this book, daily metrics can be more helpful than weekly or monthly metrics. In so many settings, I've seen leaders draw poor conclusions about single data points (or two data points). More data points might just mean more overreaction. Again, there is a better way

I'm fortunate to have learned and used some methods that enable better management decision making. I'm happy I can share them with others. These methods, grounded in math and science, help us to be more data driven and to make better decisions that are based on facts instead of opinions, hunches, or feelings. Doing so will reduce the amount of time we spend chasing our tail, if you will, in the name of improvement. We can turn data, metrics, and charts into knowledge, wisdom, action, and better results.

I wouldn't call this a "statistics book." I'd consider it to be a management book that happens to draw upon a few simple statistical concepts and methods. These methods aren't complicated; they're just different. Anybody can use them without a Six Sigma "Belt" or a statistics degree.

Using these methods, we can learn how to distinguish between activity that adds value to the customer and activity that's wasted motion. Not all motion or effort is useful, even for leaders. We might take pride in being busy, but, a lot of management activity doesn't lead to progress.

One leader told me:

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> "Our team meets daily and talks about our metrics. They get better, and then they get worse. Our monthly strategic reviews are the same thing but on a monthly basis. Instead of stating the obvious, such as 'that measure is better than before,' can we move to a deeper understanding of our data that leads to real improvement?"

This book will show you how to draw more timely, more valid conclusions based on your metrics, leading to more focused and effective improvement.

The methods in this book come from a line of legendary thinkers, including the famed management guru W. Edwards Deming, known as "the American who taught the Japanese about quality" after World War II. Deming learned from Walter Shewhart, who invented the "statistical process control" methods that Deming built upon to create a broader system of management that included a knowledge of variation, appreciation for a system, psychology, and the theory of knowledge.

In recent decades, Donald J. Wheeler, Ph.D. has built upon and spread these methods including what he dubbed "Process Behavior Charts." He has inspired many, including me, through his seminal book *Understanding Variation: The Key to Managing Chaos*. I was very fortunate that my father, Bob, had a copy of Dr. Wheeler's book (along with Deming's *Out of the Crisis*) after being a student in classes they taught at General Motors. My browsing of his bookshelf piqued my interest in these topics and opened my eyes to a different way — one that I've learned to be a better way. And, I'm extremely honored that Dr. Wheeler wrote the foreword for this book.

Working in many industries has allowed me to test and validate the practical and helpful nature of these methods, even if these methods were not in sync with the organizational culture as a whole. I'm convinced these methods are helpful, which is why I feel driven to share them through this book and my other work.

As Dr. Wheeler says, these management and statistical methods are "a way of thinking, with some tools attached."

By reading this book, you'll learn tools and this new way of thinking. Once you learn to understand variation, it's impossible to unlearn. You'll see opportunities to apply these principles every day – in news headlines and your workplace. Hopefully, we can agree that metrics and targets should be used for improvement, not for punishment. Hopefully, this book is helpful. Thanks for reading.

Mark Graban
25 June 2018

Introduction and Book Highlights

This book presents a practical, simple method ("Process Behavior Charts") that separates "signal" from "noise" in our metrics (a.k.a. "performance measures"), so we can learn when and how to evaluate and respond to our metrics appropriately over time. By using this method and overreacting less often (or reacting in different ways), we can stop wasting time and start improving more. This will also reduce frustration in the workplace and boost performance through higher morale and increased engagement.

I hope this book will be helpful to many types of readers, including those who will *create* Process Behavior Charts (including analysts, process improvement specialists, quality department staff,

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etc.) and those who will primarily *consume* and use such charts and metrics (including managers, executives, business owners, venture capitalists, and more).

Chapter 1 introduces the idea of "what gets measured gets managed," but takes a deeper dive into what "managed" means. Topics in the chapter include choosing the right metrics, the danger of arbitrary targets, and the case for why Process Behavior Charts matter: leaders and employees can waste less time "chasing the noise" in a metric, which allows them to spend more time on systematic and sustainable improvement.

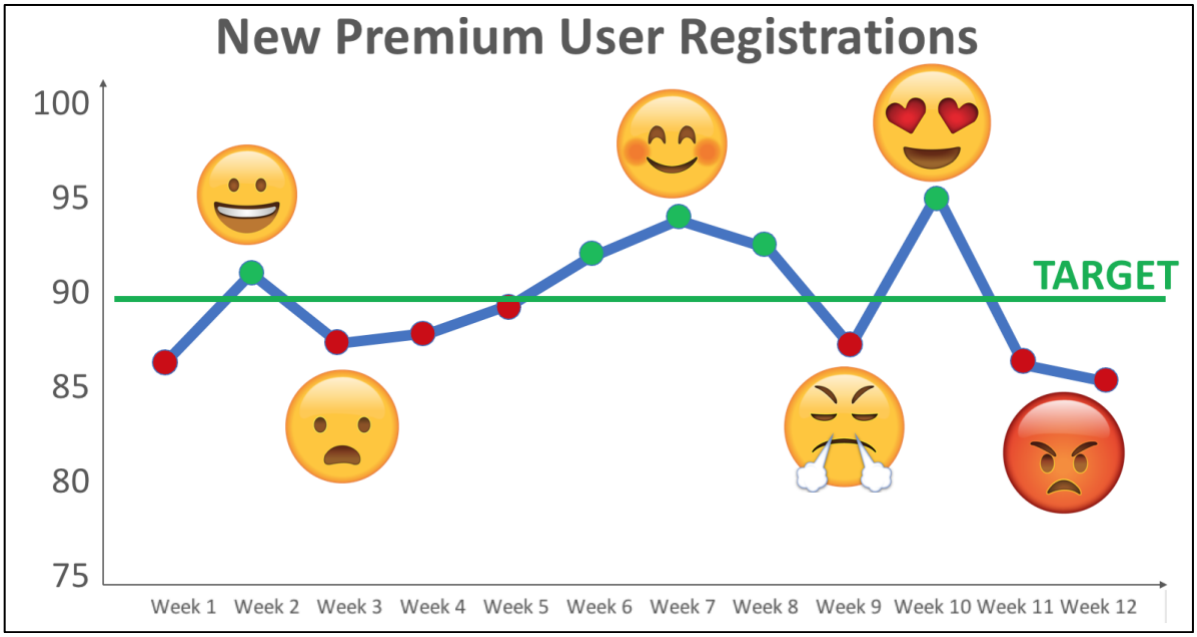
- Asking people to investigate or provide an explanation for every up and down in a metric results in a lot of wasted time and effort.

Chapters 2 and 3 introduce the Process Behavior Chart (PBC) method and how to use such charts. Comparisons are drawn to some common existing methods for tracking metrics and evaluating performance against targets. Why are Process Behavior Charts more effective than two-data-point comparisons, "Bowling Charts," and the like?

The PBC (or even just the X Chart) helps us hear the "voice of the process" better than tables of numbers or comparisons of two data points. Can you see trends in this table of numbers?

Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
48074	43519	42518	42749	40039	37336	30454	37670	35860	36817	37919	32542
Jan-17	**Feb-17**	**Mar-17**	**Apr-17**	**May-17**	**Jun-17**	**Jul-17**	**Aug-17**	**Sep-17**	**Oct-17**	**Nov-17**	**Dec-17**
50241	45044	44493	60373	37152	29048	29361	30899	30532	34912	31796	24222

Reacting to every up and down or every point that's worse than a target leads to a frustrating game of "management by emoji," as illustrated in one story and scenario in the book:



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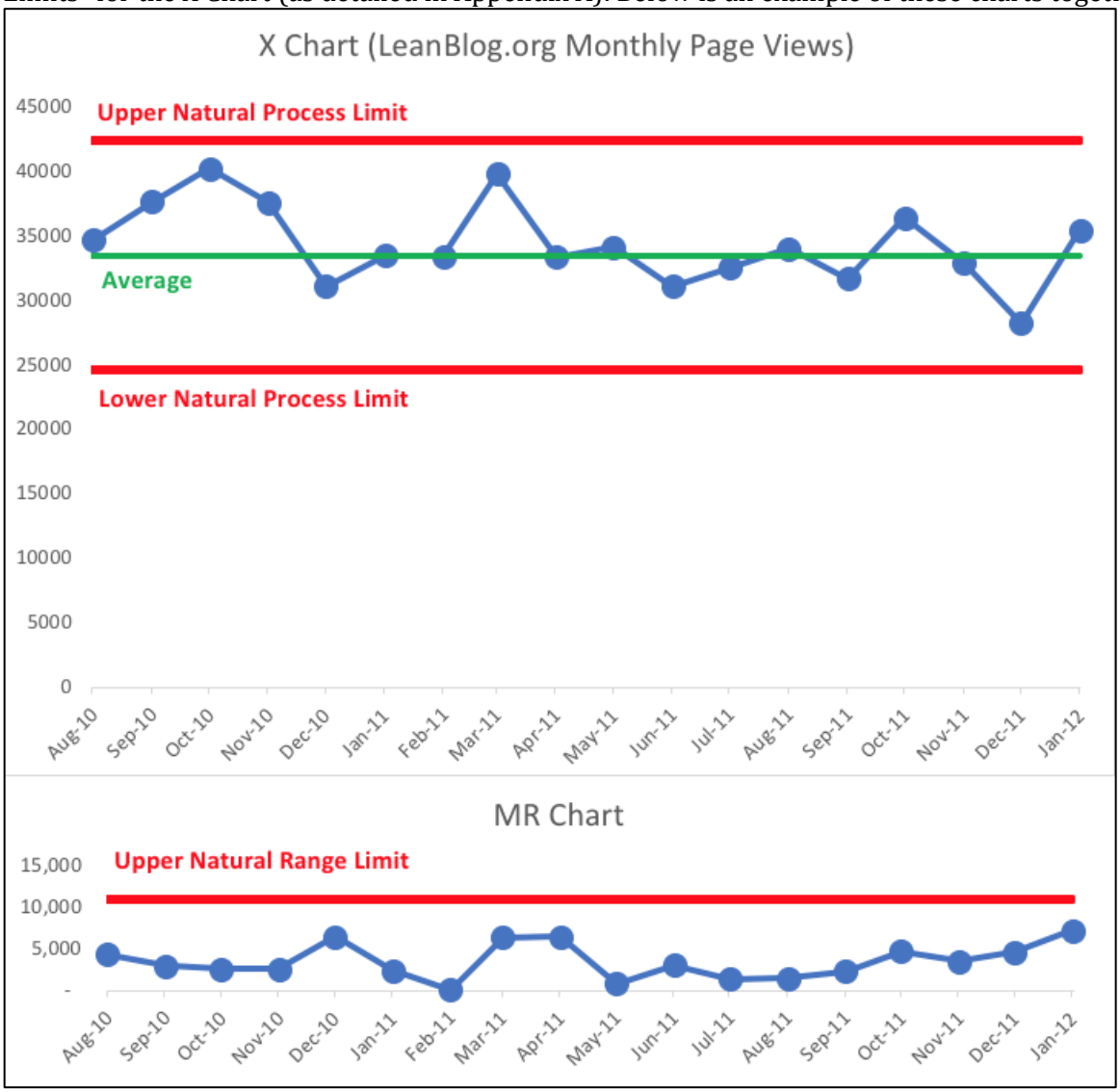
An example Process Behavior Chart (PBC) is shown below, tracking monthly traffic for my blog, LeanBlog.org. A full PBC has two related charts:

- The "X Chart" that plots the actual data points of our metric.
- The "MR Chart" that plots the "Moving Ranges" or the point-to-point variation between each data point.

In practice, many organizations use just the X Chart to more simply display the metric.

The calculated "Average Moving Range" is used to calculate the Lower and Upper "Natural Process Limits" for the X Chart (as detailed in Appendix A). Below is an example of these charts together.



The PBC helps us see trends in our data over time. There are some statistical rules that filter out "noise" in the data so we can find possible "signals" that tell us something has changed in the system that generates our metrics.

The three rules we use to identify signals in the X Chart of a PBC are:

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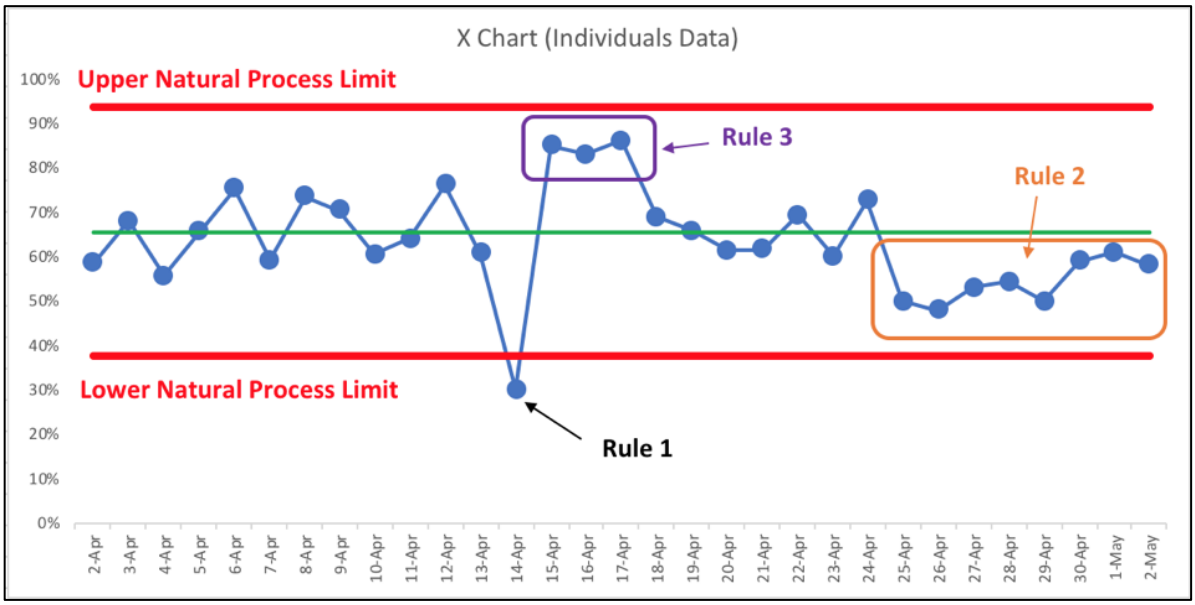
- **Rule 1**: Any data point outside of the limits.
- **Rule 2**: Eight consecutive points on the same side of the central line.
- **Rule 3**: Three out of four consecutive data points that are closer to the same limit than they are to the central line.

There is an additional rule for the MR Chart that we use to identify signals:

- **Rule 1**: Any single data point above the MR Upper Range Limit

This next X Chart illustrates the three rules for finding a signal:



If there are no signals, as in the blog traffic chart, it's said we have a "predictable" system. If we are trying to improve the system, we can use the above rules to show if the metric has changed in a significant way. When we discover a signal, that's the time when we should ask "why?"

This next chart shows how blog traffic has shifted down in a significant and sustained way:

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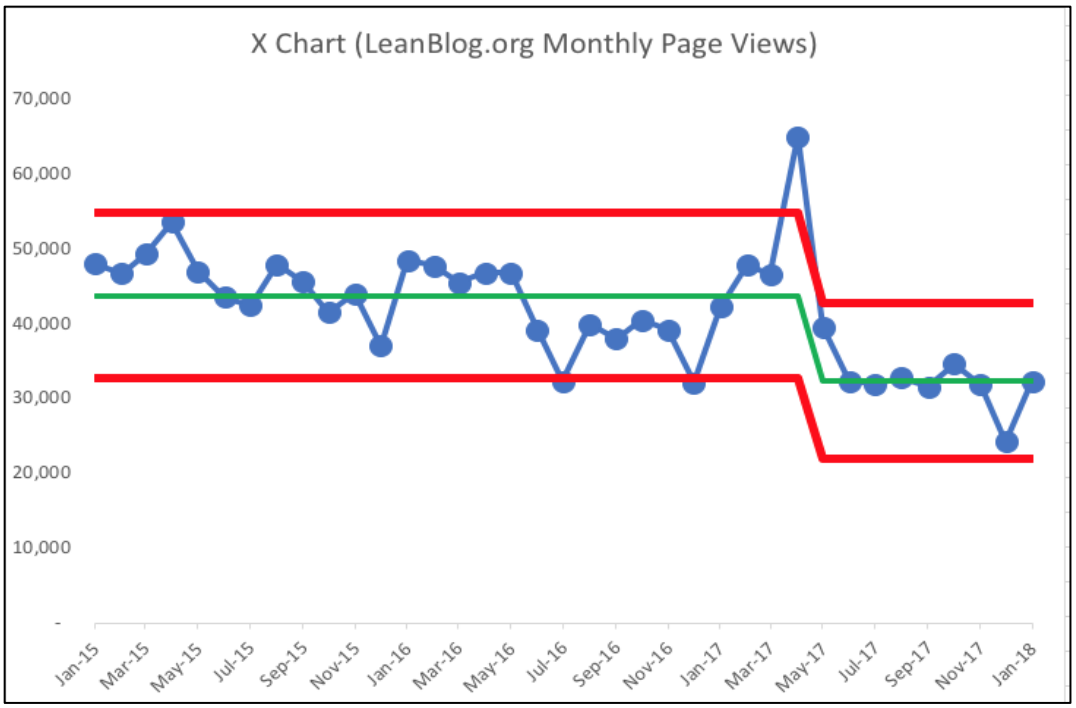

Chapter 4 connects charts and metrics to our primary goal of improvement. The chapter explores methods for turning an unpredictable system into a predictable system by reacting to signals and, then, how to improve a predictable system in less-reactive ways.

A system or a metric being predictable doesn't mean that performance is acceptable. We have two dimensions in our analysis:

- Is the metric predictable?
- Is the metric meeting our target or goal?

This chapter explores a methodology as outlined below:

- If we have an unpredictable system, then we work to eliminate the causes of signals, with the aim of creating a predictable system.

- If we have a predictable system that is not always capable of meeting the target, then we work to improve the system in a systematic way, aiming to create a new a system whose results now fluctuate around a better average.

- When the range of predictable performance is always better than the target, then there's less of a *need* for improvement. We could, however, *choose* to change the target, then continue improving in a systematic way.

Below is an example of a healthcare metric that started as predictable but was not capable of meeting the "Door to Balloon" time goal of 45 minutes:

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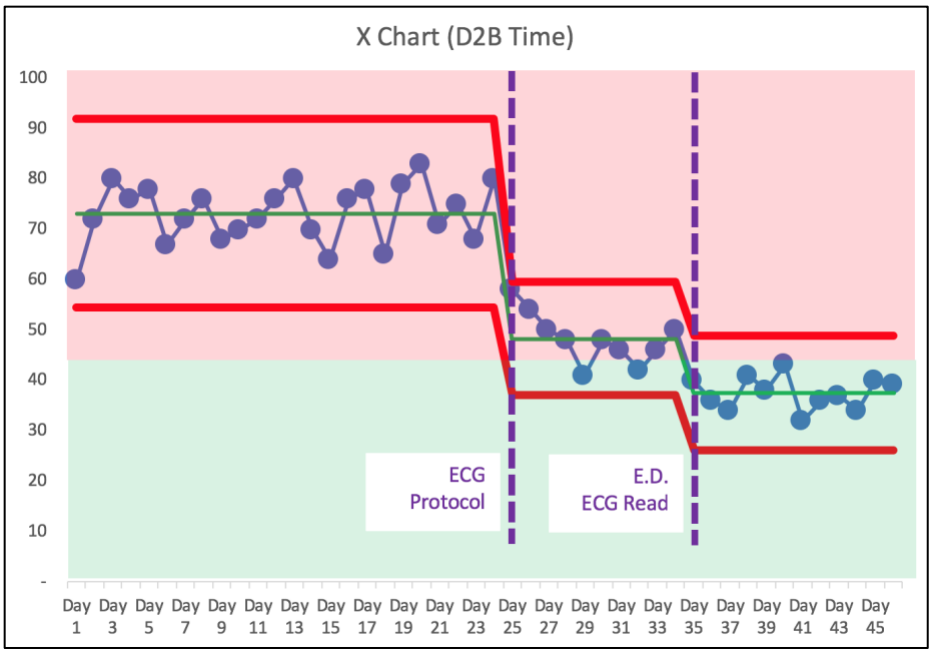

After one improvement to the system, the average D2B time came down and started fluctuating in a range where it would sometimes, but not always, be "green." After another improvement, the system is now predictably hitting that target most of the time.

Chapter 5 is a narrative description of an exercise that's effective in learning how to understand variation: the "Red Bead Game" that was made famous by the late, great Dr. W. Edwards Deming. Readers will have a chance to reflect on some of the common management tactics that are generally ineffective in a real workplace.

Chapter 6 shows how Process Behavior Charts can be used to better investigate situations that are posed in newspaper headlines. How are comparisons between two data points sometimes misleading? Does the "highest number in X years" mean that there's a significant shift in our data?

- Are Airline Pilots Staging a "Sickout?"
- Two-Four-Six-Eight, College Football Attendance Data's Really Great
- Homicide Rates Have Dropped?
- Being Dramatic About Oscars Ratings, or a Comedy of Noise?

Chapter 7 further compares Process Behavior Charts to common management methods and analysis approaches, including linear trend lines, column charts, and more.

Chapter 8 comes back to workplace case studies and how we would use Process Behavior Charts to make better management decisions.

Chapter 9 explores ideas related to change management and successfully introducing a new method into an organization.

Appendix A takes a deeper dive, for those who need it, into the process and method for creating Process Behavior Charts.

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Three Core 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 know if we've improved?

Summary of Key Points

KEY POINT #1: We don't manage the metric; we manage the system that leads to the results and we lead the people who help us improve the system.

KEY POINT #2: Two data points are not a trend.

KEY POINT #3: "No data have meaning apart from their context."

KEY POINT #4: A chart will always tell us more than two data points or a table of numbers.

KEY POINT #5: The job of management is not just to look backward, but also to look forward and predict, if possible, what is likely to occur.

KEY POINT #6: There is variation in every metric or data set. Process behavior charts filter out noise so we can identify signals.

KEY POINT #7: Don't waste time explaining noise in a metric. There is no simple, single "root cause" for noise.

KEY POINT #8: More timely data is better for improvement. Daily is better than weekly, which is better than monthly, as long as we don't overreact to every data point.

KEY POINT #9: If there was an intervention in the system, make it clear in your chart or your discussion of the chart when that change was started or implemented.

KEY POINT #10: When showing the "before" scenario, show enough data points to illustrate the previous level of variation, not just a single data point.

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Single Page Summary: Process Behavior Charts

1. Get the Initial Baseline Data
    a. Ideally, have 20 data points as a baseline
    b. Can start with just six data points, worst case

2. Calculate the Central Line for the X Chart
    a. The average of the baseline data points

3. Draw a Run Chart
    a. Plot the data points
    b. Add a horizontal line for the average

4. Calculate the Moving Ranges (MRs) and Average Moving Range
    a. Each data point from the second one on has an MR value
    b. MR [Point 2] = Absolute value of [Point 2 minus Point 1]

5. Calculate the Natural Process Limits
    a. Lower Natural Process Limit = Average - 2.66 * (MR-bar)
    b. Upper Natural Process Limit = Average + 2.66 * (MR-bar)

6. Create and Review the X Chart
    a. Add the Upper and Lower Limits to the X Chart
    b. Look for signals:
        i. ***Rule 1***: Any data point outside of the limits.
        ii. ***Rule 2***: Eight consecutive points on the same side of the central line.
        iii. ***Rule 3***: Three out of four consecutive data points that are closer to the same limit than they are to the central line.

7. Create and Review the MR Chart
    a. Calculate the Upper Range Limit = Average MR * 3.268
    b. Plot the MR points and add the MR Upper Range Limit to the chart
    c. Look for signals (***Rule 1*** only)

8. Add Data Points Over Time, Look for Signals, Continue to Improve
    a. Do not continually recalculate the average the limits

9. Shift the Limits, When Appropriate

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Also By Mark Graban

Lean Hospitals: Improving Quality, Patient Safety, and Employee Engagement (3rd edition, 2016) — Available in eight languages — Shingo Research Award

Healthcare Kaizen: Engaging Front-Line Staff in Sustainable Continuous Improvements (co-authored by Joe Swartz) — Shingo Research Award

The Executive Guide to Healthcare Kaizen: Leadership for a Continuously Learning and Improving Organization (co-authored by Joe Swartz)

Practicing Lean: Learning How to Learn How to get Better… Better (anthology edited by Mark Graban, with 15 other authors)

About the Author

Mark Graban is an internationally-recognized consultant, published author, professional speaker, and blogger.

He builds upon a deep education in engineering and management with practical experience working with executives and frontline employees in multiple industries to synthesize and practice methods including Lean management, continuous improvement, statistical methods, and people-centered leadership approaches.

Mark's motivation is to humbly help others learn how to improve and sustain performance. In his healthcare work, this means improving the quality of care and patient safety, while also reducing cost and improving the workplace experience. Across multiple sectors, aims also include improving

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the customer (or patient) experience, to help the development of leaders and employees, and to build stronger, more adaptive organizations for the long term.

He has learned, practiced, and taught these methodologies in settings including manufacturing, healthcare, and technology startups. Working independently since 2010, and in partnership with other consulting groups, Mark enjoys working with organizations that are looking for better ways to improve, with leaders who are willing to lead that charge.

Mark is also a Senior Advisor for healthcare clients with the firm Value Capture. He works as a Senior Advisor to the technology and software company KaiNexus.

Mark earned a Bachelor of Science in Industrial Engineering from Northwestern University as well as a Master of Science in Mechanical Engineering and an MBA as a Fellow in the MIT Sloan Leaders for Global Operations Program.

To learn more, you can visit Mark's website at www.markgraban.com.

To learn more about the book *Measures of Success*, visit the website: www.MeasuresOfSuccessBook.com.

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