Supplement for Davis Balestracci’s Data Sanity Seminar

Rationale
- Become more aware of what you tolerate – an important quote p. 1
- Improvement’s daily hard realities: projects, teams, and PDSA p. 2
- Live links to brief articles covering today’s topics more thoroughly p. 3
- Three KEY concepts of the day p. 4

Transforming from Data INsanity to Data Sanity
- The bacteremia example: bar graph display and chart calculation p. 5

Summary material dealing with everyday reality and culture
- Six Everyday Statistical Traps and Clemmer’s brilliant quote on “process” p. 6

Post-seminar highly recommended readings, references and “nuggets” p. 7 [live links]

Worksheets:
- Questions to Ask About a Process pp. 8-9
  o Helpful for sitting down with the front-line and getting them to understand their work as a process
  o And if they don’t, it will help you understand their work as a process
- Localize Recurring Problems pp. 10-12

Any good quality management system is the sum of the decisions made within it...Each time we choose to sacrifice the good of the system for one person, or allow an ineffective, outdated legacy practice to continue, we take small steps toward lower and lower standards.

When we have a culture that puts quality and environmental attainment at a lower priority than feelings and keeping the status quo, slowly we make the hundreds of decisions that eat away at total performance.

Over time, harmless little decisions can derail a quality management system. -- Jim Verzino

WHAT ARE YOU TOLERATING?

Davis’s contact information
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- phone: 207.899.0962
- web site: www.davisdatasanity.com

I am delighted to follow-up on any questions with you via e-mail and will gladly help you “plot your first dot”
Improvement’s daily hard realities: projects, teams, and PDSA

Some things to ponder about your role:

- Careful: Activity is Not Necessarily Impact – FOCUS! [Work on “5-Star” projects]

- How about applying critical thinking to the process of using Rapid Cycle PDSA? – this will make it very useful.
  http://archive.aweber.com/davis-newslettr/76Wtr/h/From_Davis_Balestracci_.htm

From Matthew E. May: Seven seemingly unshakable truths about projects (every audience to whom I’ve presented this shakes its collective head in total agreement)

- A major project is never completed on time, within budget, or with the original team, and it never does exactly what it was supposed to.

- Projects progress quickly until they become 85% complete. Then they remain 85% complete forever - sort of like a home improvement project.

- When things appear to be going well, you’ve overlooked something. When things can’t get worse, they will.

- Project teams hate weekly progress reports because they so vividly manifest the lack of progress.

- A carelessly planned project will take three times longer to complete than expected. A carefully planned project will only take twice as long as expected.

- The greater the project’s technical complexity, the less you need a technician to manage it.

- If you have too few people on a project, they can’t solve the problems. If you have too many, they create more problems than they can solve.

Projects may be necessary, but they are not sufficient

Don’t ever lose sight of the need to create cultural “Will” and “Belief” by your “Wherewithal”

- New conversations via plotting dots
- Fewer “account for” meetings
- “Process” vs. “Goal” focus
- Promotions reflect exhibiting improvement behaviors, including…
- …routine use of and management generating their own run & control charts
- ZERO tolerance for blame
BRIEF (easily read in 5 minutes) articles by Davis that cover key concepts from this seminar

- Review the articles on page 1 of the pre-reading document and notice how you read them differently

Data INsanity and Data Sanity

1-2 page “Statistical Corner” articles by Davis for Quality Digest covering main topics of today:

- TQM, Six Sigma, Lean and…Data? [Trust me: they’re all the SAME!]
  http://www.qualitydigest.com/july06/departments/spc_guide.shtml

- Why avoid commonly used bar graphs? – easy: most of them are worthless!
  http://www.qualitydigest.com/june06/departments/spc_guide.shtml

- Sick of Boring Meetings that Waste Your Time? [Beware of trend lines and direct two-point comparisons]
  http://www.qualitydigest.com/sept05/departments/spc_guide.shtml

- A Common Cause Strategy for Count Data [Pareto matrix concept: uses data from article above]
  http://archive.aweber.com/davis-newslettr/LxEbz/h/From_Davis_Balestracci_A.htm

- It’s Time to Ignore the Traffic Lights (Example shown in seminar)
  http://www.qualitydigest.com/july05/departments/spc_guide.shtml

- The common cause strategies:
  o http://www.qualitydigest.com/inside/quality-insider-column/final-common-cause-strategy.html#

- Lurking dangers in the “data process

- Year-end performance review scenario discussed in class:
  http://archive.aweber.com/davis-newslettr/C5qT1/h/From_Davis_Balestracci_.htm
  o Expanded to a three part series in LinkedIn:

- “When should I recalculate my limits?”
  o https://www.linkedin.com/pulse/ask-me-two-questions-your-own-risk-davis-balestracci?trk=pulse_spock-articles

- “How many data points do I need for a valid chart?”
  o https://www.linkedin.com/pulse/yet-another-predictable-question-davis-balestracci?trk=pulse_spock-articles

- Statistical Stratification: (not covered in class, but important)
  o Part 2 – p-charts: http://archive.aweber.com/davis-newslettr/7E07T/h/From_Davis_Balestracci_.htm
1. EVERYTHING is a process

**ALL Work is a Process!**
LEADER – “How I would like to think things work...or SHOULD work” Just DO it!

“Gap” between ‘REALLY’ and ‘SHOULD’ = VARIATION

UNAWARE?

Less variation = Better prediction

FRONT-LINE – How things REALLY work: unintended variation

Undocumented

Confusion...Conflict...Complexity...Chaos

Unless your improvement process is consciously based on this framework, you will not be solving the “deeper” problems of which no one is aware.

Focus on reducing the “four Cs” of confusion, conflict, complexity, and chaos and the “other C” – costs – will go down.

Focusing solely on costs will increase confusion, conflict, complexity, and chaos – AND costs!

2. Why “traditional” statistics courses don’t work in the real world

- A visual of why the statistics you are taught in a “basic” academic course are many times NOT APPLICABLE in the real world – NO concept of either “process” or HUMAN variation.
- Unfortunately, the computer will do anything you want.
- The more you know what is wrong with your data (“human variation”) the more useful it becomes.

The following brief newsletter explains things further and shows the example I did during the seminar comparing three hospitals: [http://archive.aweber.com/davis_book/52KHQ/h/From_Davis_Balestracci_Old.htm](http://archive.aweber.com/davis_book/52KHQ/h/From_Davis_Balestracci_Old.htm)

3. Brian Joiner’s “Levels of Fix” [from *Fourth Generation Management*]

**Levels of Fix (Brian Joiner)**

- Level 1 – fix the **incident**
- Level 2 – fix the **process** that produced the incident
- Level 3 – fix the **system** that tolerates this and similar processes
  - Perhaps do a RCA of all of your individual RCAs?
  - Where else is a similar or identical process lurking...and “ticking”?

**Push for “deep level” fixes:**
Elegantly Simple Example: “After that downward trend, why did we go back up?”

![Graph showing MRSA Bacteraemia 2001-02 to 2005-06]

<table>
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<th>Bacteraemias</th>
<th>Sorted Order</th>
<th>Moving Range</th>
<th>Sorted Moving Range</th>
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<td>1</td>
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<td>3</td>
<td>3</td>
<td>ABS (3-7) = 4</td>
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<td>5</td>
<td>7</td>
<td>2</td>
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<td>4</td>
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<td>13</td>
<td>9</td>
<td>[9 smaller, 9 larger]</td>
<td>6</td>
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<td>5</td>
<td>13</td>
<td>ABS (5-12) = 7</td>
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MR$_{med}$: Avg. of $9^{th}$ and $10^{th}$ = 4  
[KEY to process variation]

MR$_{med}$ = 4  
MR$_{max}$ = $4 \times 3.865^* \sim 15$

Process common cause: $8 \pm (4 \times 3.14^*) \sim [0– 20]$

* From theory: Always used with MR$_{med}$

“Perfectly designed”
Six Everyday Statistical Traps

1. Treating all observed variation in a time series data sequence as special cause
2. Treating things that “shouldn’t” happen as special cause
3. Fitting inappropriate “trend” lines to a time series data sequence.
   - What part of “NEVER!” don’t you understand?
4. Unnecessary obsession with and incorrect application of the Normal distribution
   - How often did I mention it?
5. Choosing arbitrary cutoffs for “above” average and “below” average
   - The process WILL tell you
6. Improving processes through the use of arbitrary numerical goals and standards
   - Goal = “Fact of life”
     - Is it a “would be nice to achieve” target (arbitrary) or a “We don’t attain this, we don’t survive” target (fact-of-life for anyone)?
   - “Is the ‘gap’ from the goal common or special cause?”

Key Quote on Why It’s Processes, not People, 85 to 96% of the time:

Laminate the following and hand it out liberally: ZERO tolerance for blame!

Only about 15 percent of [problems] can be traced to someone who didn’t care or wasn’t conscientious enough. But the last person to touch the process, pass the product, or deliver the service may have been burned out by ceaseless [problem-solving]; overwhelmed with the volume of work or problems; turned off by a “snoopervising” manager; out of touch with who his or her team’s customers are and what they value; unrewarded and unrecognized for efforts to improve things; poorly trained; given shoddy material, tools, or information to work with; not given feedback on when and how products or services went wrong; measured (and rewarded or punished) by management for results conflicting with his or her immediate customer’s needs; unsure of how to resolve issues and jointly fix a process with other functions; trying to protect himself or herself or the team from searches for the guilty; unaware of where to go for help. All this lies within the system, processes, structure, or practices of the organization… --Jim Clemmer Firing on All Cylinders
Highly Recommended Useful Follow-up References

Good basic material [Start here!]


  [Available in e-book format for all e-readers, including iBook, Nook and Kindle (includes downloadable .pdf)]

  Easily found on Amazon: https://www.amazon.com/Data-Sanity-Quantum-Unprecedented-Results/dp/1568294387/ref=sr_1_1?ie=UTF8&qid=1469037751&sr=8-1&keywords=balestracci+data+sanity

  If you liked my lecture, you will like this. I “write like I talk.” I also address the “cultural” issues you will face as you try to implement changes. [Chapter summaries and Preface/Intro on my LinkedIn profile]


  Outstanding overview of a sound everyday quality perspective with which to approach all work.


  This is the book you will need if you then want to become your organization’s data / analysis expert. Excellent, comprehensive, and packed full of practical guidance.
Questions to Ask About a Process [from The TEAM Handbook, with permission]

The process being studied is _____________________________________________________________

1. Who are its external customers? What individuals, groups, or systems outside our organization rely on or could benefit from this process? Who has (or could have) expectations about this process?

2. How do we know what the external customers like or don’t like about this process? What satisfies or dissatisfies them?

3. Who are its internal customers? Describe those within our organization who do (or could) rely on the successful operation of this process or the resulting product or service.

4. How do we determine what the internal customers like or don’t like about this process? What satisfies or dissatisfies them?

5. What are the operational definitions of quality in this process? What specifically determines whether the process is working well or poorly?

6. What records are kept regarding quality? Who uses this information? How do they use it? Are these record formats suited to how they are used?

7. What are the most common mistakes or defects that occur? What is the operational definition for each mistake or defect? What proportion of these is commonly assumed to be a worker’s fault? What proportion do we usually attribute to the system? How do people arrive at these conclusions?
8. By what process do we inspect, evaluate, and report problems regarding:
   A. Planning required for this process.
   
   B. Incoming materials, supplies, and information critical to this process.
   
   C. The process itself.
   
   D. The final product or service received by the external or internal customer.

9. List the critical elements of this process: materials, components, parts, information, etc.

10. List the suppliers or vendors of each critical element

11. Describe the company’s procedures for purchasing materials or services brought in from outside the facility. To what extent is “low bid” a governing factor in our purchasing decisions?

12. Describe the impact of the most common mistakes or defects in this process. What do they cost in time, money, customer loyalty, or worker pride?

13. Who is responsible for quality in this process? Who is responsible for detecting mistakes/defects? Who is responsible for identifying and correcting the causes of mistakes or defects?
Localize Recurring Problems

⇒ Define recurring problems
⇒ Assess the impact of each problem
⇒ Localize each major problem
⇒ Discuss conclusions with key players
⇒ Take action

1. Define Recurring Problems
2. Assess the Impact of Each Problem

- How often does this problem occur?
- How severe is it when it occurs?
- Do you already have any data on its impact?
- Would other data be useful to determine its impact? How can you get them?

3. Localize Each Major Problem

- When does or doesn’t the problem occur?
- Where does it occur or where is it first observed? Where doesn’t it occur? Where is it not observed?
- Which materials and machines have the problem most often? Least often?
- Are there other problems that always or often occur together with this problem? Could these be related somehow? Are there problems that you might ordinarily expect to see but don’t?
- Who tends to have the problem most often?
- Do you have any data already?
- What other data would be useful? How can you get them?
- What do the data tell you about the occurrence of this problem?
4. Discuss Conclusions With Key Players

- Do the results of your data collection seem logical to the people involved?
- Do they agree with the conclusions you reached about the occurrence of this problem? If not, what other data do you need?

5. Take action

- Are there obvious changes that would eliminate the problem? Are there obvious ways to prevent similar problems in the future?
- What steps should be taken next?