Health Data Analytics

Presentation to the Illinois Association for Healthcare Quality

May 2017 | Jason E. Gillikin, BA, CPHQ

Disclaimer

Although I am a member of the board of directors of the National Association for Healthcare Quality, and also of the board of trustees of the Healthcare Quality Foundation, I am presenting to you on the subject of health data analytics based solely on my personal professional expertise and experience.

My presentation, and any material contained herein, does not necessarily reflect the views of NAHQ or the HQF, and do not convey any specific endorsement by NAHQ or the HQF, or of my employer, Priority Health.

Learning Objectives

- Discuss practical possibilities for clinical quality improvement when deeper analytic skills are added to the project team
- Discuss the professional skills of a data-analytics expert
- Explain ways to enhance continuous quality improvement projects through engagement with analytics SMEs

Housekeeping

- Thank you for the privilege of visiting Illinois to speak to you today
- Information specific to the case studies is proprietary and cannot be shared in written form
- If you cannot hear me, please raise the bat signal
- Your actionable statements on the feedback form are welcome tools for my self-improvement
- Interrupt (i.e., “start a dialogue”) as you see fit

Case Studies

Preliminaries

- Health care is a full decade or more behind other industries, relative to our data savvy
- Analytics as a business function rarely has a good home in a complex healthcare organization
- Analytics experts often imperfectly align with industry silos and compensation arrangements
- Insurance companies are usually significantly farther along the analytics journey than hospitals and physician groups

Preliminaries

- The mission of Quality is evolving as incentives among stakeholders change
- The *structure* of Quality often struggles to keep pace and earn respect in the C suite
- The exciting signals from the nexus of analytics and Quality may be drowned by the noise of tightening margins or even by “alarm fatigue” arising from myriad disparate KPIs and measures

Three Case Studies

…AND NOW, THE GOOD STUFF!

Home-Based Primary Care

- What happens to the cost curve when the frail elderly receive in-home primary care services?
  - Significant cost savings *if* the member remains enrolled for a “goldilocks” period of time
  - Longer enrollments = more cost incurred, lower ROI
  - Shorter enrollments = less cost avoidance, lower ROI
  - High satisfaction, so incentive to enroll is also high
  - Needed to model attrition and death
    - *Our model outperformed the CDC death-risk model!*

Surgical Site Infections

- What's the downstream financial effect of SSIs within the community?
  - Check your **assumptions**: *No payment for SSEs?*
  - Check your **methodology**: *How do you detect SSIs from administrative claims data?*
  - Check your **clinical acumen**: *How long does it take for typical organisms to colonize a surgical site?*
  - Check your **financial acumen**: *What's the total downstream cost to society of avoidable SSIs?*
  - Check your **story**: *How do you create a sense of urgency to prompt meaningful change?*

Fall Avoidance Program

- Can there be a solid return on the investment for in-home interventions to reduce fall risks for elderly patients?
  - Identify at-risk members
  - Provide treatment (home renovations)
  - Compare whether populations differ in long-term cost (matched cohort analysis)
  - Reconcile results incongruent with peer-reviewed lit
  - Deep dive into NNT
  - Present recommendation to leadership


Professional Skills for Analytics SMEs

Key Drivers of Shifting Skillsets

- CMS and private insurers increasingly focused on pay-for-outcomes arrangements
- Shifting revenue arrangements among industry stakeholders, partially driven by consolidations
- Increasing precision (i.e., *obtrusiveness*) among watchdogs — especially NCQA
- Vendors selling "big data" solutions to poorly educated C-suite leaders, so analytics often has a strong IT flavor

Key Drivers of Shifting Skillsets

- More grad schools and certificate programs jumping on the "analytics" bandwagon
- Growth of Six Sigma, Lean and other math-heavy QI frameworks
- Engagement by professional groups (NAHQ, AHIMA, HIMSS, IAHQ) in advancing the cause
- Low-hanging fruit obtainable through basic reporting no longer offers a competitive edge

Poll the People

- Does your QI team have reasonably robust access to all the analytics skills you need to drive material improvement along well-defined organizational strategies?
- Are the tools and skills you use aligned to the complexity of the work as influenced by your practice setting and organization size?
- Do you have recourse to all five modes of analytic expertise?

Data Management

- Understands relational database-management theory (normal forms, joins, nulls, keys)
- Experienced with data munging (clean-up and prep for later analysis)
- Capable of data modeling (building self-contained "data marts")
- Accounts for ETL (extraction, translation & loading) and lags in data arising from rev cycle
- Skilled at programming in SQL *and* in a general-purpose language like Python, Java, R or C

Statistics

- Grounded in solid framework in probability
- Experienced with non-uniform/non-normal distributions and messy/subjective datasets
- Skilled with hypothesis testing and survey-research methodology
- Prepares multivariate linear & logistic regressions
- Develops propensity-score and matched-cohort analyses
- Accounts for actuarial risk and censoring, with recourse to medical economics literature

Data Journalism

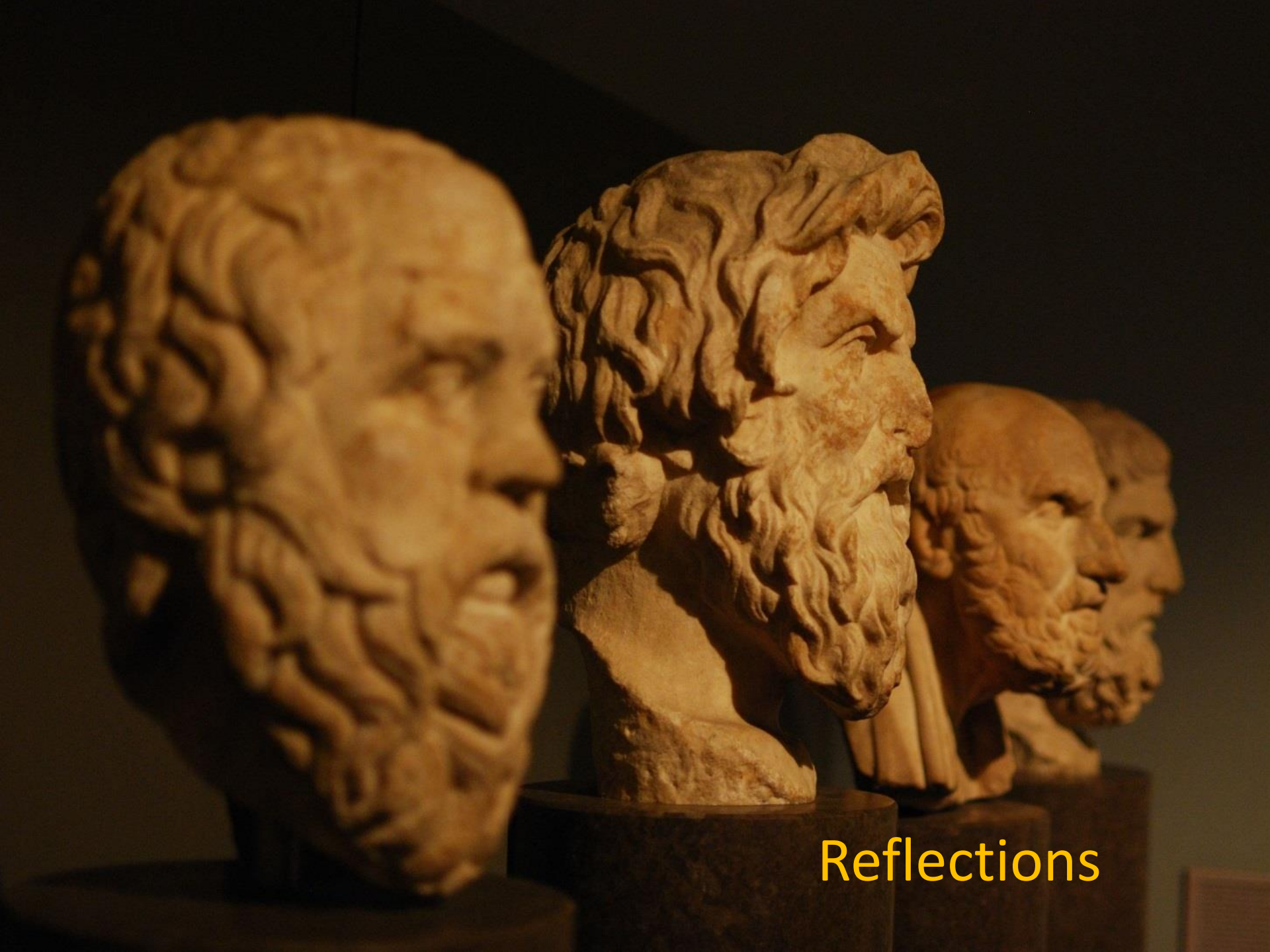
- Prepares engaging and methodologically honest data visualizations
- Condenses complex findings into meaningful talking points for different audiences
- Conveys meaning/urgency through anecdotal stories (i.e., is a skilled persuader)
- Ensures written analytic work product is coherent — "white-paper analytics"
- Coordinates overall branding for an entire department's analytic output

Business Acumen

- Understanding of basic flow of the clinically driven revenue cycle
- Exposure to medical terminology and regulatory restrictions
- Familiarity with basic (i.e, CPHQ-level) QI history, processes and tools
- Approaches questions with a spirit of inquiry rooted in the scientific method

Data Stewardship

- Transparent about the sausage-making of analytics to ensure reproducible outcomes
- Uses repeatable and widely understood processes and definitions to avoid confusion
- Participates in uniform, *enforced* standards of documentation for findings, code & data
- Advocates for “standard work”
- Curates data assets to protect against orphaned or outdated published work product


Reflections

A Path Forward

- *Analytics* informs strategy; *reporting* informs operations
- Hub-and-spoke models for analytic/reporting alignment have proven successful in many organizations
- Senior leadership must be willing to accept the recommendations of independent, high-functioning analysts, even when such guidance is politically inconvenient

A Path Forward

- People who do “quality” and people who do “analytics” don’t overlap as cleanly as they should
- A skilled analytics team should be considered a peer service line, not an ancillary support department or a quasi-IT reporting group
- Beware false lines in the sand

Questions

- Your questions are welcome
- Thank you for your engagement

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Thanks, good bye & good luck!