KEY PERFORMANCE INDICATORS: GETTING BEYOND THE NOISE

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AGENDA

- About Me
- Defining KPI's
- Goals and Standard Setting
- Managing and Normalizing KPI's
- Calculation Concerns
- Goodhart's Law
- Examples
- Conclusion
- Questions

ABOUT ME

- Ethan Durda – Ascension BI LLC
- BI Consultant for the past 12 years
- Primary focus on Strategy, Training, Project Management, Data Modeling/Architecture, KPI Design and Alignment, Technical delivery of WebI, Crystal, Universe, etc.
- I say this because…

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DEFINING KPI'S

- Recognize these pictures?

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- Where are we Carmen Sandiego?
  - Ordos, Kangbashi in Inner Mogolia, China
- The city was built in 2003 as a solution for a growing capital about 25 miles away that was running out of both water and room to grow
- It was a massive project master planned for 1,000,000 residents
- Total public cost: 17 billion yuan or roughly $2,721,530,000
- Currently about 28,000 residents live there and the rent for most businesses is free…for the first 3 years
- So you must be asking yourself, why?

KPI's of Course!!!

DEFINING KPI'S

- KPI's are generally speaking a composite measurement of business activity used to drive behavior in an organization
  - Composite in that they normally are written as ratio's with a numerator describing the behavior that is designed to be moved and a denominator typically used which is either a given in the business or drives the numerator
  - For instance: Sales per Investments or Accidents per million miles/hours etc.
- In general they are used to:
  - Provide focus for management
  - Create a common language across organizations
  - Consolidate complex, intangible goals into something measurable and well defined
  - Provide a common scoring system across the organization often with financial remuneration associated it

DEFINING KPI'S

- KPI's should drive business behavior therefore:
  - All KPI's should be actionable
    - Meaning the people being measured by it must be able to effect action based off of it
  - All KPI's should be meaningful
    - Too easy to find a "gee wiz" metric and call it a KPI
  - KPI's should tie directly back to:
    - Measured results
    - Actions or inactions that can be affected by the KPI owner
    - True corporate goals (i.e. making money not reducing overhead for instance)

- Big Philosophical Question:
  - Do we want to be data driven…or data informed? Do we have a choice?

DEFINING KPI'S

- The curse of data
  - Too easy to be entrapped by the million KPI dashboard.
  - If everything is important, then nothing is.
  - The goal is the story, not the number!
- Perfection is the bane of KPI's
  - If matching everything to the penny to the GL and the IS is the baseline, expect a long process, and the same value if you stopped a few levels of accuracy before that.

GOALS AND STANDARD SETTING

- How do we build KPI's?
  - Start with understanding the goal
    - What do we want to change?
    - Change and measurement go hand in hand
    - Examples include overtime/inventory/sales
  - Define numerator
    - "Top" number, usually a count or total – total defects
  - Define denominator
    - "Bottom" number, usually a normalized distribution, where fights often start – employee hours…or good production?
- We need to be very careful about setting goals that can be incorrectly manipulated by moving the denominator when we want the numerator moved!
  - Cut people and instant revenue per sales person growth! For this quarter anyway

MANAGING AND NORMALIZING KPI'S

- How can you tell if they are working?
  - First, are they being used?
  - Second, do they change the needle, again, what are you after?
- Leading/Lagging KPI's
  - Does it talk about tomorrow or yesterday?
- Tactical KPI's
  - Does it change what I do each morning, help me prioritize?
- Strategic KPI's
  - Does it help leadership know what is going on?
- Does leadership appreciate that they are working? i.e. broken clock syndrome

MANAGING AND NORMALIZING KPI'S

- Each KPI must be normalized across multiple axes
  - Time (both source and destination)
    - Normally a denominator problem…but often a numerator problem as well with events not being statistically even. i.e. orders for spices and sauces spike for Christmas so what do we do?
  - Business Units
    - Can often be addressed using denominator solutions, but what about KPI's that are more or less meaningful across companies? i.e. drink sales ratio to total sales for a unit with a bar?
- KPI is made up of numbers, symbols, they also need to be analyzed:
  - Statistical Issues: fliers, nulls
  - Units of Measure
    - This should be easy…right?
    - One company weighs in metric tonnes, another in pounds, yet another short tons
    - USD, Pound, Drachma or Euro? How do you convert?
    - Do we count total units or components?

MANAGING AND NORMALIZING KPI'S

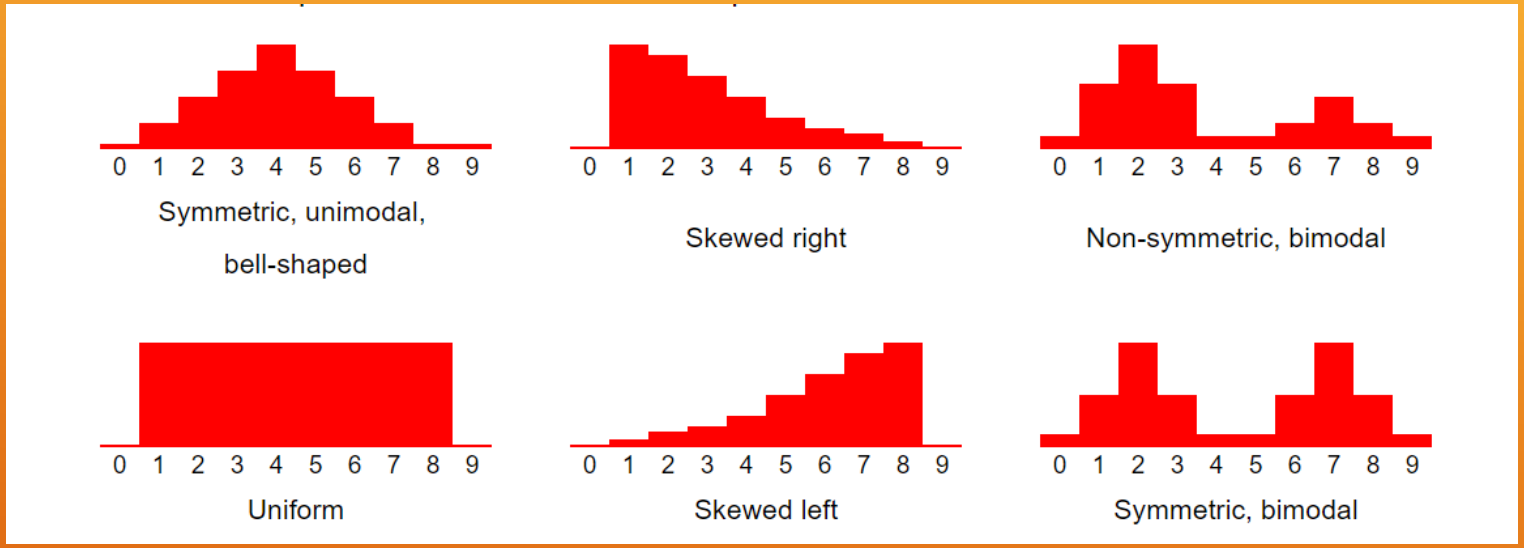
- When normalizing you will likely find:
  - Non standard definition of metrics
  - Non standard method of goal definition
  - Data incongruences
  - Even if everyone agrees on a KPI and what it's goal should be…how close to the goal constitutes success? Is 110% really the goal or is that a stretch (i.e. impossible) goal?
- When normalizing you will likely find:
  - How precise can you be?
    - What is the normal number of decimal places you can trust?
    - If you have high precision with one metric and low in another, their KPI should be the lowest level…normally
    - Example: Accidents per 100,000 man hours
  - Nulls, Zero's and logic holes oh my!

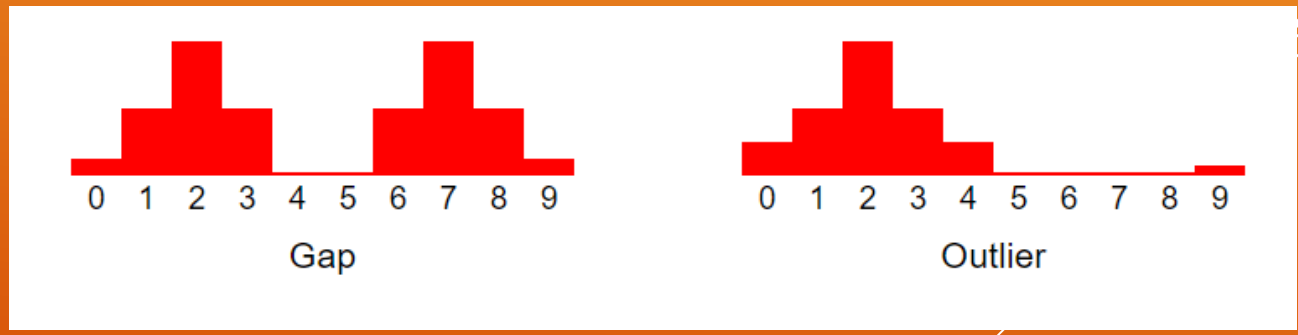
CALCULATION CONCERNS

- Big issues here, after you have sourced the data and identified denominators and numerators:
  - Average of Averages
  - Ratio of Ratios
  - Holes
  - Z Scores
  - Statistical Analysis – enough data?
  - Mean, Median, Mode
  - Control Charts

CALCULATION CONCERNS

- **Data Shape Concerns:**





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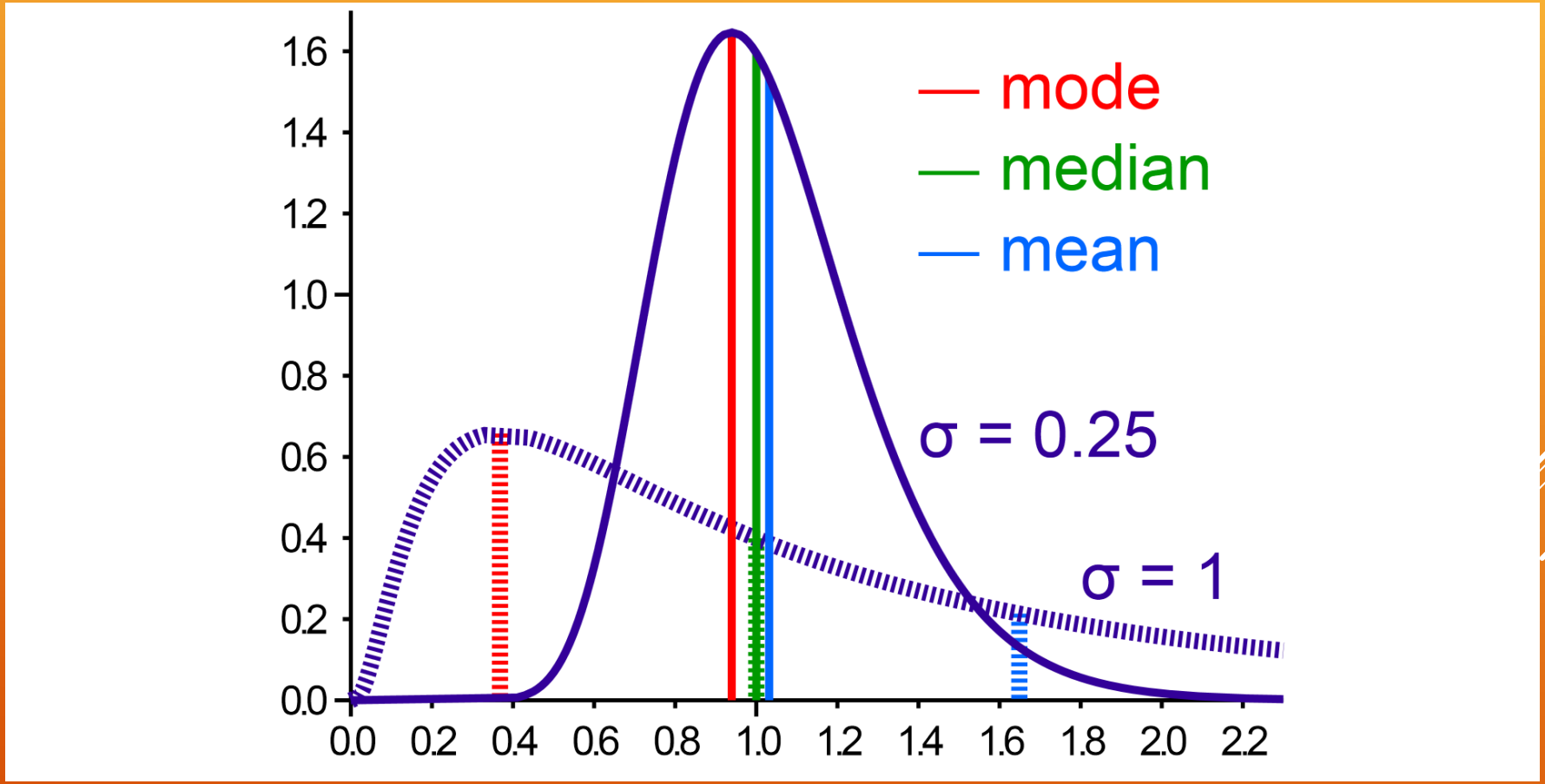

GOODHART'S LAW

- Goodhart's Law / Unintended Consequences
  - Simply stated, people will find the best way to optimize a target at the cost of the true goal
  - i.e. in the Soviet Union, when managers were measured by the number of nails, the factory would produce tiny useless nails. By weight, super heavy ones.
  - When incentivized to drill by feet in exploration wells, lots of short wells regardless of geology
  - A more complex description of unintended consequences
- VA hospitals example:
  - Heavily incentivized to shorten wait times
  - No audit to ensure actual compliance vs. paper compliance.
    - Started off as a slight fudge to hit the numbers
    - Grew as goals were solidified and past performance was set as a metric for future standards
    - The pyramid scheme takes off!
- HBR Review of CEO compensation
  - What do you think they found?

EXAMPLES

- Transportation company's daily KPI's
  - Value added for sure, but to watch them everyday ended up being an exercise in looking at noise!
- Mining company's cascading KPI's and the chart of happiness
  - Overly complex solution that literally needed pages of flowcharts so people would understand them
    - Give the consultants a raise for coming up with those!
- Large retail company with KPI's that weren't incentivized and managed
  - Numerous KPI's that weren't incentivized at all and other than retail employees "gamification" of the numbers they weren't even looked at!
- Retail company with simple, communicated KPI's that were pasted on the wall for customers to see!
  - Very effective in simply letting the employees know what was important to management
  - Reminds us that everyone wants to be successful!

CONCLUSION

- The story about Ordos is about an unhealthy focus on GDP, which can be manipulated by large projects with little economical benefit. The person who ran the Ordos project up is now the vice premier in China. See, not just US politicians are rewarded for questionable decision!
- KPI's should be used to focus management and employees on the same goals…not to cause us to lose focus on what is important!
- KPI's are highly susceptible to data issues and gaming, intentional or not.
- Normalizing and knowing when NOT to normalize goals and KPI's is key when you build them. Not all goals can or should be cascaded down…or up.
- Goodhart's law should be assumed in ALL KPI's and should be accounted for.
- KPI's are a key method of managing our businesses, but remember the question, do we want to be informed by this number, or driven by it?

Questions, Comments, Suggestions Wanted!

Let's Keep in Touch!

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GOODHART'S LAW - DETAILS

Goodhart's Law / Unintended Consequences

- Superiors want an undefined goal G.
- They formulate G* which is not G, but until now in usual practice, G and G* have correlated.
- Subordinates are given the target G*.
- As time goes on, every means of achieving G* is sought.
- Remember that G* was formulated precisely because it is simple and more explicit than G. Hence, the persons, processes and organizations which aim at maximizing G* achieve competitive advantage over those trying to juggle both G* and G.
- P(G | G*) reduces with time and after a point, the correlation completely breaks down.