

: *How do you tell a 'good' story based upon data?*

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Analysis of data should result in telling managers and sponsors stories to summarize what was found. Story telling is however an art. Some of us are born story tellers, many of us need to learn to tell stories. A story has a beginning, a middle and an end. Sometimes a story begins with the final events and then recounts how it happened. Other stories are more sequential and recount events chronologically. There are many story patterns. Data may contain a story, but analysis must reveal the story. Data often has patterns, data is not usually a random collection of observations. During analysis we do need to be careful about removing and eliminating data, removing "outliers", observations that are distant from others, can distort the story.

Data stories start with raw, lightly processed, or previously used data. Raw data has **not** been processed and analyzed, rather it has been accumulated for later use. Many actions of people and machines generate raw data that is captured and stored.

Roehrig and Pring (2013) argue that deploying best practices in analytics can create enormous value, but they explain "No data set will ever hold complete answers to every business question." They note it is important "to find the story in the bits and bytes, and derive tangible, actionable business insight. The data — however it is derived, analyzed and communicated — must tell a meaningful story, and that narrative should matter to a real-life decision-maker. The story — and the business decisions it drives — is what making meaning is all about."

Loukides (2010) explains "data scientists are involved with gathering data, massaging it into a tractable form, making it tell its story, and presenting that story to others".

How do you tell a "meaningful" story from data and make it useful? First, the data must be analyzed. To make the analysis meaningful it must be interpreted. The analysis must have yielded results. To make the meaning of the data clear and persuasive to others we must then tell a good story about the data and the analysis. A thoughtful data story has a **theme** and it connects the data analysis and the interpretation to an important concern or issue.

Telling a story based upon data means it is anchored in past actions. Data captures actions, events, and status and now someone has had the opportunity to analyze what was occurring. The analysis is hopefully "objective" and the analyst hopes the findings make sense of the past, reliably predict the future, and/or recommend actions.

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Overall telling a story means you are **communicating an idea or a message**: sales are stagnating, people are excited about our new products, employees are unhappy with their pay. A well-developed story transforms data into meaningful information. Managers can then act on the information to make appropriate changes.

Tableau Software identified the 5 most influential data visualizations of all time. Each visualization tells a story. The visualizations are: 1) John Snow's London Cholera Map, 2) Rosling's Income and Life Expectancy plot, 3) Minard's March on Moscow mortality chart, 4) Nightengale's War mortality from preventable diseases chart, and 5) Priestly's Chart of Biography showing links between people, ideas and nations. Data visualization is the key to great data stories. The visualization should promote a better understanding of the data.

Pixar story artist Emma Coats tweeted a series of "story basics" on how to create appealing stories (<http://www.pixartouchbook.com/blog/2011/5/15/pixar-story-rules-one-version.html>). Some of her basics are true for data informed stories. Preparing a PowerPoint presentation about your data analysis is something like creating an animated cartoon. The following basics are derived from Coats (2011):

1. Keep in mind what's interesting to your audience.
2. "Trying for theme is important, but you won't see what the story is actually about til you're at the end of it. Now rewrite."
3. Simplify. Focus.
4. Come up with your ending before you figure out your middle.
5. "Putting it on paper lets you start fixing it. If it stays in your head, a perfect idea, you'll never share it with anyone."
6. What's the essence of your story? What is the snapshot, the synopsis of your story? If you know

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the "essence", you can expand and elaborate.

According to Microsoft (<http://products.office.com/en-us/powerpoint>), PowerPoint can help you tell a powerful story in your presentations. The visuals used to explain analyses tend to be "simple" charts and graphs. Excel, Tableau and R are popular tools for developing visualizations. Dashboards include visualizations, but a dashboard is part of a decision support or executive information system. In general, presentation software like PowerPoint or Prezi (<https://prezi.com/>) is used to discuss, present and summarize a data story. People seem frustrated with the complexity of simplifying findings for a general audience. Tell a simple, straightforward story when possible.

If you are preparing a presentation or writing a report, follow a story structure when you present your analyses (cf., Monarth, 2014). Begin by discussing an inciting or instigating incident, tell your listeners what changed. Then discuss how important the situation is for the stakeholders, next explain what the data analyses show, then discuss the "highlights" of the details, the data sources and how you did the analyses. Finally, explain the actions that can be taken and your recommendations.

Good stories can and should impact those who hear or read them. Zak (2014) explains "When you want to motivate, persuade, or be remembered, start with a story of human struggle and eventual triumph. It will capture people's hearts – by first attracting their brains." Monarth (2014) further explains "A story can go where quantitative analysis is denied admission: our hearts. Data can persuade people, but it doesn't inspire them to act; to do that, you need to wrap your vision in a story that fires the imagination and stirs the soul."

Boring data stories focus on the data and the analysis you did, great data stories focus on why your listeners should care about your analyses and what they mean for them. Tell the whole story and tell a "good" story.

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