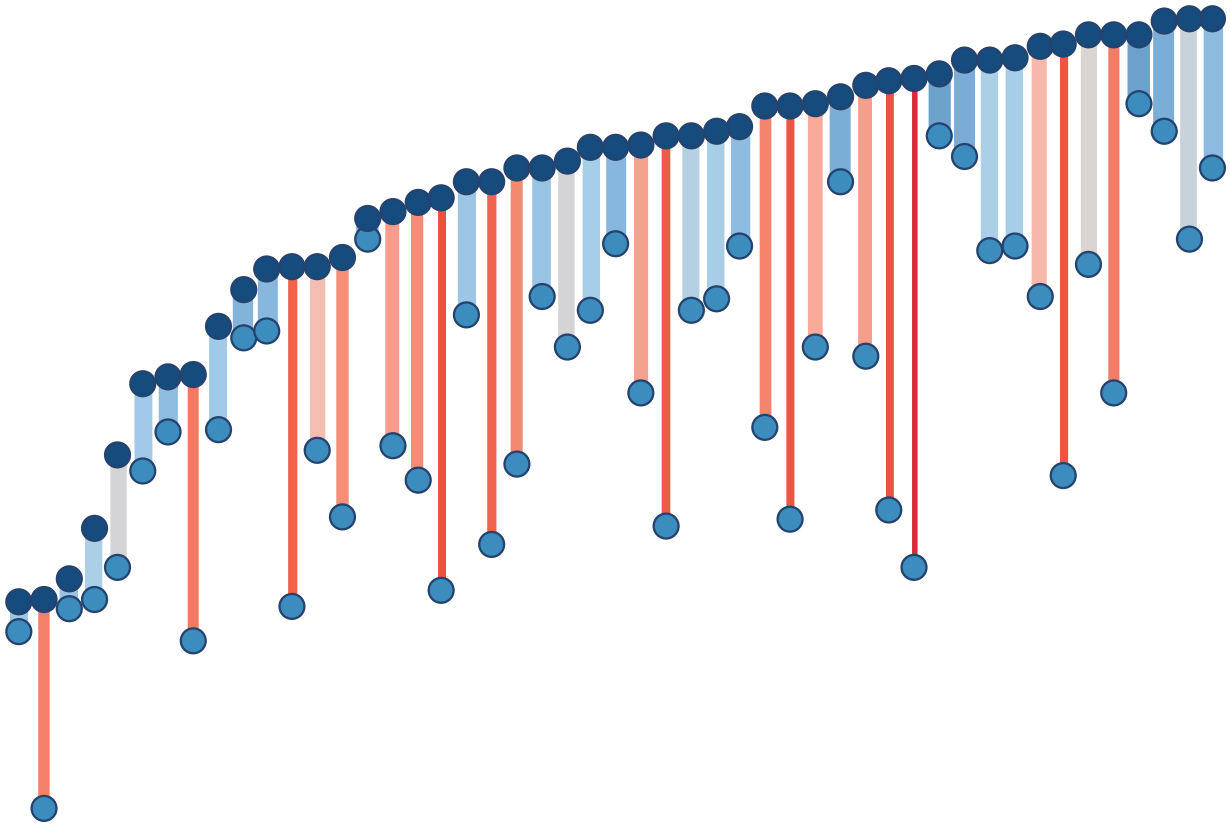
narrative science



The Evolution of Data Storytelling

Co-authored by Tableau
and Narrative Science

tableau

> *"Whenever I speak with successful analytics people—and I do that all the time—it's usually not long before they mention the phrase 'telling a story with data.'"*
>
> —TOM DAVENPORT, THE DISTINGUISHED PROFESSOR, AUTHOR, AND THOUGHT LEADER ON DATA AND ANALYTICS

Introduction

These days, data storytelling is top of mind for data explorers of all types. These include business users looking for intuitive analytics, analysts sharing findings with non-technical users, and even vendors who claim their platform tells data stories best. Yet the definition and techniques used to create stories have varied substantially. They've also matured over time in both level of sophistication and automation.

In fact, data storytelling has evolved alongside the development of better data analytics tools. In the beginning, people manually extracted their data and published analysis. Then came the era of annotated, interactive storyboards and contextual insights. And today, we are advancing yet again with the rise of automated generation of narrative insights and reports.

Here's a look at how our data-storytelling capabilities have grown over the years.

Traditional Reporting: Where's the Story?

People have always told stories with data. In World War II, human "computers" stationed in the US would crunch numbers regarding temperature and air density. They would manually compile the analysis into tables, then publish and send the results for use in the battlefields. This information helped soldiers understand how certain conditions affected their artillery.

Soon after came the transformation of the analog to the digital, ushering in the birth of the mainframe. Data became more available and advances in computational power allowed us to better understand it. Fast-forward to the beginning of this century, to a time of heavily-stacked, IT-authored reporting systems. The resulting reports informed employees about the drivers impacting their business.

Throughout the past few decades, the objective has not changed: Find answers to the questions plaguing the people who need to be informed or make decisions: What is at risk and why? How is my team performing? How can we increase revenue while decreasing costs?

But it took too many resources to find these answers. "Human computers" equated to hundreds of people. Massive data infrastructures required significant investment. And traditional reporting systems demanded specialized skillsets to get up and running. This left the majority of employees who were asking critical questions beholden to report authors. And those authors, buried under countless requests and equipped with inflexible tools, couldn't meet those requests in a timely manner.

When those requests were met, answers came in a data table, a cube, a report, or a static dashboard. None conveyed a story on its own, leaving the consumer to wonder, "What am I looking at, exactly, and what action am I supposed to take here?" The means of communication placed much of the burden on each individual to interpret the data. As a result, each user's interpretation of the report led to inconsistent results. Or the story remained hidden in the data because the end user was reluctant to perform the manual work necessary to understand it. Abysmal, stagnant adoption rates of traditional reporting systems prompted the question: Isn't there a better way to disseminate and consume information? Where's the story?

Data Visualization & Discovery: The Rise of Data Storytelling

Things have improved drastically in the last decade with the arrival of interactive data-discovery capabilities and dynamic visualizations. These tools meet the demands of business people seeking greater control over their analysis and better access to consumable content. All users, regardless of skillset, have become empowered to ask and answer their own questions and limit their reliance on IT.

With the pervasiveness of the cloud, these employees can now get started quickly without a substantial investment. Power users have also greatly benefitted from self-service offerings. They can now blend multiple data sets for more robust analysis. They can leverage advanced analytics to predict future outcomes. And they can create rich visualizations to highlight insights that remain hidden when looking at the data or report table alone.

Visualizations themselves have become a means to express a vivid story with the data. Static dashboards and canned reports of the past failed to meet the data-storytelling mark. The story was either too simple (and often misleading due to the misrepresentation of measures and dimensions) or too complicated (and unable to be interpreted by the everyday viewer). And whatever the story, it quickly became outdated as it couldn't be updated in real-time.

With interactive visualizations, all users can participate in the discovery process and, using the intuitive interface, immediately uncover patterns in the data. The best part? Data storytelling now contains, well, an actual story. Anyone can share insights by creating storyboards that provide further context to the insights contained in the charts and graphs.

Tableau's Story Points feature, for example, lets users create compelling and interactive data stories. Users can write annotations to accompany specific visualizations in a sequential presentation. This approach provides deeper context and brings the insights to life via an explanatory narrative.

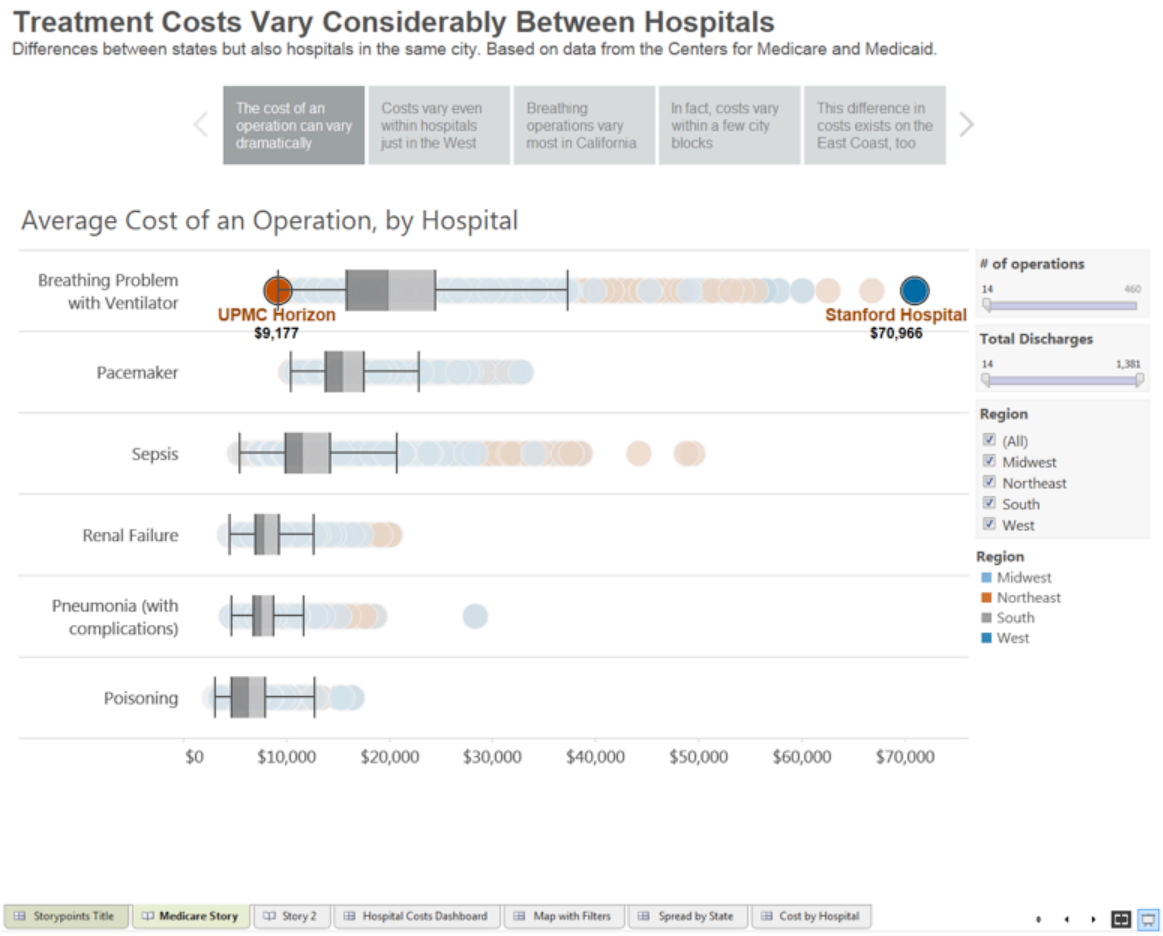


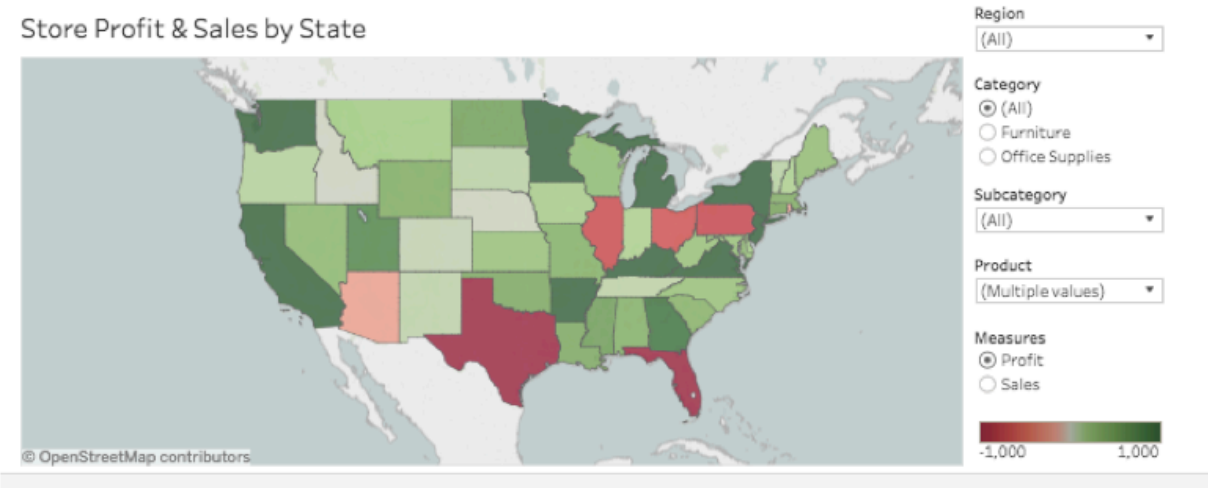
Tableau Story Points

The use of tools like Story Points to communicate insights is light years beyond the era when static reports ruled the world. But someone must still manually explore the data and discover the insights necessary to craft a meaningful story. What if there was a way to introduce artificial intelligence to help the end user uncover new insights and tell a more comprehensive and consistent story in a scalable way?

Natural Language Generation: Automated Data Storytelling

The next chapter in the story is unfolding now: We live in the era of automated data storytelling. Natural language generation (NLG) is a technology that transforms data into narratives. And it is revolutionizing the data-discovery and visualization process by immediately generating natural-language insights to accompany charts and graphs.

Tableau has partnered with Narrative Science to bring NLG to Tableau users via a product extension called Narratives for Tableau. Narratives for Tableau generates intelligent insights that are fueled by advanced analytics and identify findings that are most interesting and important in Tableau visualizations. The insights are then rendered in intuitive, easy-to-understand language, indistinguishable from what an analyst would write.



Store Profit & Sales

This analysis measures Profit and Sales by State.

- Across all 48 states, Profit accounted for 9.54% of Sales.
- Profit has a higher degree of concentration among the top states while Sales has a more even distribution.
- Washington stands out with the highest values for both Profit ($6,668) and Sales ($50,551).

For Profit:

- Total Profit is $22,075 across all 48 states.
- The distribution ranges from -$5,116 (Texas) to $6,668 (California), a difference of $11,784.
- The distribution is positively skewed as the average of $460 is greater than the median of $235.

For Sales:

- Total Sales is $231,348 across all 48 states.
- The minimum value is $10 (Idaho) and the maximum is $50,551 (California), a difference of $50,541.
- The most common value is $700 which occurred five times.
- The distribution is positively skewed as the average of $4,820 is greater than the median of $1,439.
- Sales is highly concentrated with 76.61% of the total represented by just ten of the 48 states (20.83%).
- Put another way, the 38 smallest states (79.17%) represent just 23.39% of the total Sales.
- The top two states combine for over a quarter (35%) of overall Sales, and the top four states account for over a half (52%).

Narratives for Tableau

The ability to automate data storytelling expedites time-to-insight for those engaging in the data discovery process. These data-driven narratives identify and communicate correlations, trends, and anomalies within the data. Novice users can better understand their visualizations while expert users can delve deeper faster.

The narratives can also be embedded into a web page and published alongside the visualization. That means they also provide a quick mechanism to report findings to others—without the need for manual annotations to the chart or graph. Government agencies in particular appreciate the ability to hook up a screen reader to explain the insights within the visualizations as this capability satisfies 508 compliance requirements per the American for Disabilities Act.

Enterprises such as Deloitte, Credit Suisse, and Franklin Templeton are utilizing Narrative Science's Advanced NLG platform, Quill, to transform their data into intelligent narratives. For example, Credit Suisse uses Quill to power the narratives within its investment research platform, HOLT, which compares and values approximately 20,000 companies. Quill incorporates hundreds of variables from these companies, including asset growth and risk. Quill analyzes those variables, then generates narratives that objectively explain a company's performance. These narratives accompany HOLT's existing visualizations so that investors of all skillsets can make better investment decisions.

The ability to automatically unlock and convey insights via language has many benefits. It allows people to interact with their data in a fluid and natural way. It also reduces misinterpretation of data and ensures consistency in data sharing. And last but not least, people can act quickly on their key findings and drive decisions.

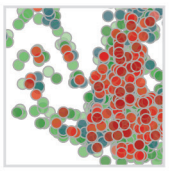
This is the "next phase in the evolution from standard reporting to storytelling," according to Gartner.

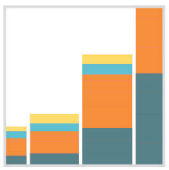
"The combination of NLG with automated pattern detection and self-service data preparation has the potential to drive the user experience of next-generation smart data discovery platforms, and expand the benefits of advanced analytics to a wider audience of business users and citizen data scientists," said Gartner in its Hype Cycle for BI and Analytics.

As automated data-storytelling rises, more people will be empowered to explore their data, uncover insights, and maximize the impact of their work.

About Tableau

Tableau Software helps people see and understand data. Offering a revolutionary new approach to business intelligence, Tableau allows you to quickly connect, visualize, and share data with a seamless experience from the PC to the iPad. Create and publish dashboards and share them with colleagues, partners, or customers—no programming skills required. See how Tableau can help your organization by starting your free trial at tableau.com/trial.





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