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Operationalizing Data Storytelling

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The art of telling stories has evolved from drawing on cave walls, oral communication, inscription, and printing to projecting stories on majestic cinema screens. In essence, storytelling is about communicating a message. It makes sense that we now want to apply storytelling to communicate a message about data.

Similar to traditional stories, data stories come in many forms. Infographics are popular for presenting in-depth data around specific topics, ranging from movie ratings to climate impact. To be more persuasive at work, practitioners have gravitated toward adapting well-known story frameworks such as situation-complication-resolution and Gustav Freytag's pyramid of dramatic structure, as described in "Mastering the Art & Science of Storytelling" by Brent Dykes.

For the most part, these story types are single-use; they are created to deliver a targeted message. Since these stories are contained and focused, authors can infuse them with their personalities and styles. However, these story types don't scale. The majority of day-to-day data delivery for operating a business does not fit into this model because there's no known insight or recommendation to deliver. If organizations want to transform the typical dashboard or report into a data story, they need a new customer-centric framework to scale the capability and ensure consistency in how the stories are created and told.

Why Operationalize Data Storytelling?

Historically, practitioners have followed their own ways of working, from collecting requirements to creating visuals they feel get the job done. When self-service tools like Tableau and Microsoft PowerBI arrived, practitioners swapped them into their existing workflows. Such tools made it easier to connect to data, create sophisticated visuals, and develop a variety of dashboards. Unfortunately, while practitioners can deliver more dashboards that look better, in less time, those dashboards are not necessarily more useful in moving the business forward.

When organizations encourage practitioners to tell data stories without providing guidance, they perpetuate the problems with current dashboards. Each practitioner applies their own thinking on how to transform a dashboard into a story. Each decides what a story means, what goes into a story, and how to write a story. This approach doesn't turn out well. Instead, we must focus on developing a new capability around data storytelling, along with a framework to scale this new capability.

Shift from a Project Mindset to Product Mindset

The work of reporting and dashboarding has its roots within IT business intelligence teams, and by nature, the work is project oriented. When other corporate functions such as marketing, HR, and finance adopt this work, they also adopt the processes and mindset. The steps from collecting data requirements through dashboard development cycles are deeply ingrained.

In "Developing a Product Orientation for Analytics and AI," Tom Davenport makes the case for using a product management framework for the deployment of enterprise analytics and AI. The same approach is equally transformative when applied to the day-to-day analytics for operating the business.

This means that the practitioner who builds dashboards to provide operational insights would need to think and behave like a product manager, which is a new skill.

Rather than adding to or modifying their current workflows, practitioners can adopt a new workflow, or storytelling framework, as described in this brief. This framework yields more actionable deliverables in less time, with less rework. When this framework becomes operationalized as part of their jobs, practitioners improve communication with their customers, build trust, and foster a data culture.

FIGURE 1: PROJECT MINDSET VS. PRODUCT MINDSET

FIGURE 2: THREE COMPONENTS OF AN OPERATIONALIZED STORYTELLING FRAMEWORK

Three Components to Operationalize Storytelling

The new workflow goes beyond building stories as a replacement for existing reports and dashboards. This is an opportunity to reimagine what is possible and transform decades-old thinking. The workflow consists of three components that are flexible enough for you to adopt independently but have maximum impact together. If your organization already applies some of these principles today, use the new ideas discussed here that integrate well.

Storytelling Foundations

Consider this scenario: You are taught every feature and function of Microsoft Word or Google Docs. You are a certified expert. However, you were never taught your native language, so you have little vocabulary and poor grammar. Your excellent word-processing skills will not help you author a story.

The same thing is true when it comes to authoring a data story. You must have basic proficiency in the language of visualization, good writing skills, and consistent use of the language across the organization. It is not enough to know how to operate the data visualization software. Think of it as a visual word processor for crafting the story.

- **Learn the language of visualization**: When you understand visualization structures, you know why certain charts are easier or harder for your audience to read, and you know how to adjust them. You begin to control the software rather than setting options until your chart looks good or meets the requirements you were given. In fact, you will avoid situations where the software may allow you to make selections that violate the language.

  The language of visualization provides a methodology for encoding data into visual traits like size, position, and intensity—called *pre-attentive attributes*—that are based on how the brain processes these traits in specific ways. However, when using software, authors tend to treat them equally with a click—for example, to encode sales as size or intensity.

  More to the point, knowing this language builds data literacy for those who are crafting data stories and the readers consuming them. Simply, good writing supports critical reading skills and data fluency for audiences across the company. Over time, you will build a visual vocabulary that makes your stories more fluid and interesting to read. You do not have to be creative to write visually; just follow the structure. In fact, you may have experienced how too much creativity can detract from, rather than enhance, visualizations.

- **Improve your writing skills**: As in written language, readers of your data stories prefer conciseness. For visual communication, remove anything unnecessary. Depending on the data and chart type, this includes chart elements such as gridlines, too many digits on numbers, and scrolling. Since time is usually in short supply, most authors accept the software defaults, which aren't concise. Think of the famous quote, "If I had more time, I would have written you a shorter letter," attributed to 17th-century French mathematician Blaise Pascal.

  Consider the larger organizational impact. Usually, the additional authoring time needed to remove the unnecessary elements is on the order of minutes. Making these changes will quickly become second nature. If the product will be used by tens, or possibly thousands, of customers, those few minutes to make your story easier to read will have a huge multiplier effect.

- **Establish communications policies**: Building data literacy across an organization requires a significant, coordinated effort. The complexity increases dramatically when each author is able to decide how to represent core business information.

  Similar to branding guidelines, agree on how to visually represent and design common elements of the business. For example, always showing sales as a bar chart, line chart, or histogram, and specifically the design of those charts. Document a common vocabulary for speaking about data, e.g., sales vs. revenue, profit margin vs. profit ratio, YoY vs. compared to previous year.

  While these policies are guardrails that serve most needs, allow authors the flexibility to make other choices for particular communication needs. Encourage innovative thinking. Be clear about any required approvals, and collect new ideas to potentially add to the policies.

New Product Development

The second component of operationalized storytelling (Figure 2) is new product development.

Current World: Data-Centric Dashboards and Reports

Consider the visualization in Figure 3.

Organizations want to use data to drive decisions and actions. Therefore, how that data is communicated should directly support that end goal. On the next page are a few checkpoints to gauge your work:

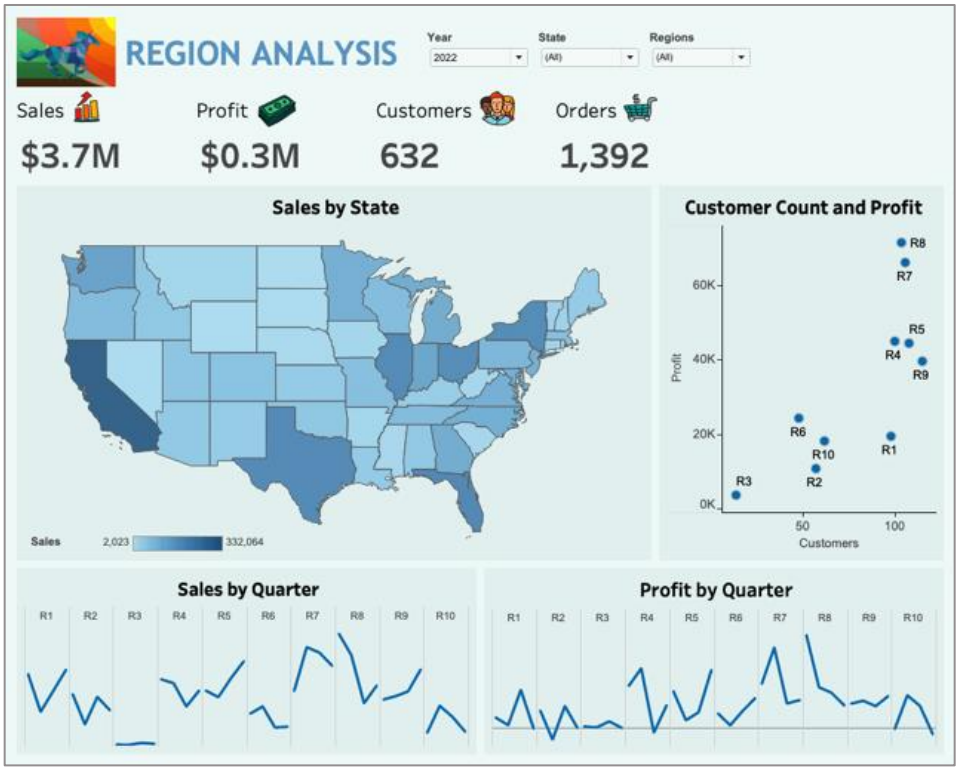

FIGURE 3: DASHBOARD EXAMPLE USING TYPICAL VISUALIZATION TECHNIQUES

Does the title create a clear message in the reader's mind of how it will help them?

Since this dashboard presents data about regions, a more accurate title is "Regional Data," which still does not clarify how the dashboard is to be used for moving the business forward.

Are the visuals connected in a way that helps the reader through an analysis?

Remember that the reader may not be an analyst or analytical. Here, they are tasked with making (possible) connections within the various data. Is this to understand sales, profit, customer count, or orders? What should the reader look for?

Is the reader responsible for the heavy lifting of looking through the data (haystack)?

A tedious and time-consuming part of the discovery process is working through the permutations of the year, state, and region options in hopes of finding insights. Design visualizations to streamline analysis and present data so fewer options are needed.

Your organization might use the type of dashboard in Figure 3 to track business performance. It likely started with a request for data, followed by a development cycle, then multiple iterations through a series of designs. It might take days or weeks to deliver. While visuals and interactive features have advanced, it is basically a modernized version of the previous generation of business intelligence reports and dashboards. A new type of data story, the Analytic Story can transform the work and make it easier to realize value from the data.

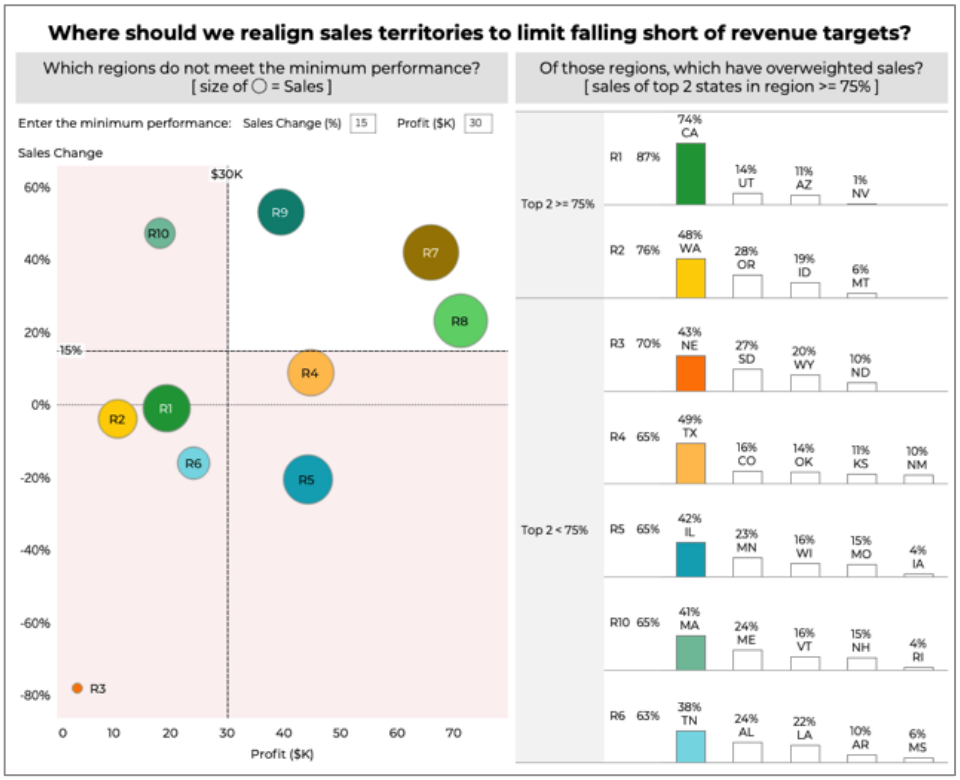

FIGURE 4: DASHBOARD EXAMPLE USING ANALYTIC STORY TECHNIQUES

New World: Outcome Driven Analytic Stories

Consider the visualization in Figure 4.

Let's gauge Figure 4 with the same checkpoints as Figure 3:

Does the title create a clear message in the reader's mind of how it will help them?

Yes. There may be other reasons to realign sales territories, but this story is specifically written to manage against revenue targets. A story with too many messages is confusing.

Are the visuals connected in a way that helps the reader through an analysis?

Yes. The left chart focuses on sales change and profit as the two main factors to determine performance; customer count and orders are not relevant. The right chart excludes regions 7, 8, and 9, which meet the minimum performance and are no longer needed in the analysis.

Is the reader responsible for the heavy lifting of looking through the data (haystack)?

Seeing that region 4 (R4) is close to hitting the 15% sales change, it's simple to enter a new value in the input box and see how the right chart adjusts. Also, the next chapter in the story will only address regions 1 and 2, which are overweighted. Help the reader focus on what is important.

Five Elements of an Analytic Story

The Analytic Story replaces the typical report and dashboard for managing the day-to-day business. (Technically, you are still creating what the software likely refers to as a dashboard.) It helps the reader quickly assess whether to continue reading or move on to more important work. As an author, your goal is to have them read only what is necessary and no more—not necessarily the entire story.

The Analytic Story is based on five areas of transformation. While each requires learning and implementing new processes, greater effort *would be* required to change personal and interpersonal behavior.

Analytic Stories:

- **Are customer-centric**: The dashboard pictured in Figure 3 is typically intended to serve a wide audience of customers (users). The customer has to sift through the data, looking for meaningful connections. This can be frustrating and often leads to low engagement with the dashboard. If your customer was searching on Amazon, they would want to purchase a solution that solved their need with the least effort. As Brent Dykes describes in "Mastering the Art & Science of Storytelling," data stories should follow a narrative based on knowing the audience. In similar fashion, Analytic Stories are authored for a specific customer segment. The single self-service dashboard (or set of dashboards) is replaced with an appropriate Analytic Story for each customer segment. Don't worry, by operationalizing storytelling, you will do the work in less time, with less effort, and less rework.
- **Make decisions and action the stars**: While customers might ask for data or specific chart types, that's not what they need. What they need is to make decisions and take action to run the business. Over the years, organizations have been conditioned to ask for data. You might get the occasional "here's a question I want to answer," but that is only part of a larger picture. This is the only way they know to communicate, so you as the practitioner must break the pattern. For example, when you are asked to create a dashboard for sales trends, you could reply, "Imagine you are looking at the sales trends, what specifically do you want to understand?" A follow-up question could be, "If you knew that, how does it fit into your decision making?"
- **Create engagement and curiosity:** The underlying goal for leveraging data is to answer questions. Yet, how dashboards are structured goes directly against this goal. Dashboard and chart titles are typically in the form of statements that do not engage the reader or generate deeper thinking. Also, vague titles allow the various audiences to assign their own expectations and interpretations of what the data represents. Switching to titles in the form of a specific question automatically pivots the reader's brain into a mode of wanting to answer that question. When the visual and title are synchronized, it's like making a direct line from the visual into their brains.
- **Provide a jump-off point for analysis**: There is a false belief that a handful of dashboards, or two handfuls, can support a complete analysis from exploring and understanding the data, to (maybe) finding an insight, discovering the solution, making decisions, and, finally, taking action. It is possible, but unlikely. Instead, the Analytic Story acts like a compass and helps the reader chart a path in which further investigation may be required by an analyst or data scientist. Because the Analytic Story is written for a target customer segment and based on the decisions and actions relevant to them, the time to read the story and determine possible next steps is significantly shortened.

- **Launch ASAP to get feedback**: In traditional report and dashboard development, the team only releases the project when all the requirements have been completed. They are concerned with showing incomplete data. However, during that time, the customer has no visibility into the business problem. Instead, use agile methodologies to release each dashboard when it is finished. Think of each dashboard as a chapter in your story. This way your customers can begin to form an understanding. Additionally, they may learn something that influences the next part of the story, which minimizes using valuable time and resources on unnecessary work. This approach may feel awkward at first, so have the fortitude to stick with it until the entire story has been written.

Go-To-Market Playbook

The third component of operationalized storytelling (Figure 2) is the go-to-market playbook. Today, a typical dashboard project ends when stakeholders sign off, someone uploads it to a server, and someone else emails a link to the user base. Congratulations are shared and the next project is queued up.

If your organization managed its products and services this way, it would struggle to stay in business. Instead, products are launched into the marketplace using a go-to-market playbook. There are processes for creating customer engagement, measuring performance and understanding behavior, and ensuring that customers are achieving the expected benefits.

Your playbook should cover the following three areas and be used across the organization. Be clear on which elements are mandatory, optional, and flexible.

- **Activate the market**: You may follow the language of visualization, write with clarity, and author an Analytic Story, but these do not guarantee customer acceptance and engagement. This may be the first time they are exposed to this data or chart type, or they are looking at a certain business problem. Always keep in mind that your customer may not be an analyst or analytical.

  Consider how to market your product, whether it's a company-wide video from the CEO laying out expectations or a featured intranet story describing the team's journey and how the product will impact the business.

  Decide what type of training is required and whether it is mandatory before accessing the product. You can include instructions with the dashboard or a video demonstrating various analysis scenarios. Executives might prefer one-on-one walkthrough sessions.

  Set up a process to provide support and collect feedback. Keep it simple with one, at most two, communication channels. Is it better to provide support via email or Slack/Teams? How will you handle emergencies? Maybe a weekly ask-me-anything (AMA) session is enough.

- **Track behavior and retention**: A common dashboard measure is the number of users or views, but often there is no target. This is the equivalent of knowing the number of web site visitors, but with no idea whether it's good or bad news. Staying with the web site theme, metrics like top customers, repeat visitor rate, and retention rate act as indicators of product performance.

  Since your Analytic Story was written for a specific audience, throughout the authoring cycle you will have come to understand when and how often they are likely to engage with the story. This serves as an initial target. If the observed behavior is too far off-target, you need to determine whether the expected behavior has changed or targets need to be adjusted, or both.

Establish a measurement plan that will be core to all projects, and work with your technology team to ensure the required data is available, captured, and easily accessible to you. At the beginning of each project, determine any needs in addition to the core.

Don't set it and forget it. Actively monitor behavior and investigate the unexpected. If someone is far below or above their target usage, have a conversation (don't email) to understand why. It could be due to a technical issue, not enough training, or a shift in their job or the business.

- **Earn a five-star rating**: Imagine selling your product on Amazon. You want to earn five stars and gather customer testimonials. Instead of collecting this feedback through a survey or requesting comments by email, speak with your customers. Explore their issues and ideas, and capture the nuances of any emotion or body language that doesn't come through online. Design your conversation to address the six feedback loops described next.

Feedback Loops for Continuous Improvement

Adjust the Story Line

Identify your best and worst customers, especially any outliers. Find out why they show up on Tuesdays at 8:00 a.m. or three times every day. Most importantly, is your product delivering the intended benefits? What did they learn and what decisions and actions has it led to? Did the customer get the expected results from those decisions and actions?

Enhance the Product

Your Analytic Story is a living product, not a completed, static project. You may have collected feature requests through the support channel, but that is usually the tip of the iceberg. Have customers demonstrate how and where the product can be improved. Get permission to record sessions so you can focus on the customers rather than taking notes. You should be able to roll out quick updates versus major enhancements.

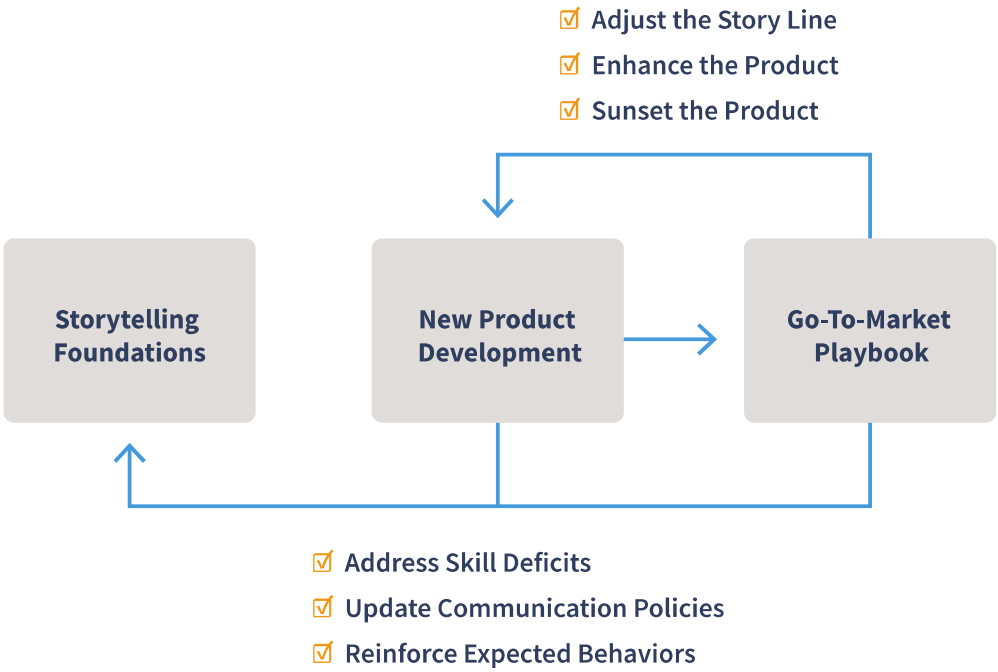

FIGURE 5: OPERATIONALIZED STORYTELLING WITH FEEDBACK LOOPS

Sunset the Product

An all-too-common problem is the build-up of unused reports and dashboards. Not only do they consume technology capacity, they also pose organizational risk. If business needs change and the product is obsolete, you must prevent it from being used. If someone authors a new Analytic Story as a replacement, prevent access to the old version. Contact current users to address potential impacts to their work and have a graceful sunset period.

Address Skill Deficits

Writing well takes time and practice. The language of visualization and new content guidelines require breaking away from the way-it's-always-done status quo, putting aside individual preferences of what looks good, and shifting from a project mindset to a product orientation. Examine the deliverables and how the work is getting done to uncover patterns that may be blockages. Identify where to review specific skills with individuals or a wider segment of the organization.

Update Communication Policies

As business needs and software capabilities change, consider how to modify the visual and business communication policies. You must also monitor design trends and visualization best practices so that your products remain modern. What your customers experience outside of work sets their expectations.

Reinforce Expected Behaviors

Operationalizing storytelling is an organizational transformation that will move people out of their comfort zones. Switching from collecting data requirements to a customer-centric focus on decisions and actions is non-trivial. When the customer is your boss' boss or someone from the C-suite, do people hold their ground or fall back on what's familiar? Is the customer open to new approaches or simply makes demands? Soft skills are as important as the tactical work and process changes—and harder to master. Communicate successes to demonstrate good practices and that the transformation is happening.

Putting It All Together

Create a proof-of-concept (POC) program based on a team of experienced practitioners or a cohort of champions from across teams. Include customers, too. In parallel, begin to model an organizational strategy for operationalizing storytelling. What you learn at the team level will inform how you scale across the company and address cultural issues. These work streams should collaborate closely and be empowered to provide candid feedback.

Projects in the POC should have enough variety to tackle different areas of the business. Use existing projects so there is a before/after comparison throughout the work and, ultimately, for the impact of the deliverables. Familiarity with the issues and the data remove some variability in this experiment.

Pressure test areas that are likely to encounter the most resistance, whether personal, process, or political. For example, if executives tend to dictate the data they want, they must actively participate in discussing decisions and actions even if they don't see how it fits into the bigger picture.

Operationalizing storytelling under a product framework requires organizational support to succeed. You must establish consistency, otherwise implementations will vary widely. This is a change management initiative with process and behavioral challenges ahead. Allow time for learning and practice, and provide coaching to work through the awkward and uncomfortable moments. Celebrate the successes and course correct when it doesn't go as expected.

Related Resources:

- "Mastering the Art & Science of Storytelling" (Research Brief)
- "Developing a Product Orientation for Analytics and AI" (Research Brief)
- "Indicators of a Successful Data Literacy Program" (Inquiry Response)
- "Supporting Data Literacy Efforts with Self-Service BI" (Webinar)
- "Upskilling Your Organization" (Webinar)

Lee Feinberg

Lee Feinberg founded DecisionViz (https://decisionviz.com) in 2012 to help data leaders create armies of trustworthy decision makers. Feinberg developed the Design To Act ® system as a way for organizations to scale data literacy and data storytelling. He has worked for 20 years in analytics, data visualization, and strategy.

He graduated from Cornell University with a BS and MS in Electrical Engineering. He is a consultant to the University of Chicago's Masters of Science in Analytics program and adjunct faculty at NYU. He runs storytelling workshops at TDWI and the Marketing Analytics Summit. For over a decade, Feinberg has worked with Tableau Software as a Services Partner, leading the NJ and NY User Groups, and serving as an Ambassador and Tableau Foundation Contributor.

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