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Communicating Through Data Visualization

Overview

HR analytics leaders realize that being able to visualize data in an easy to understand and compelling way is critical. Doing so ensures their stakeholders understand the insights they share and know how to act on them. Yet most talent analytics teams struggle with data visualization and fail to capture their stakeholders' attention. To increase their work's impact on key business decisions, talent analytics teams can incorporate a few data visualization techniques into their work, including audience understanding, simple graphics and well-sequenced visualizations.

Key Findings

Common reasons talent analytics teams fail to influence key business and talent decisions with their data visualizations are:

- They fail to identify their target audience.
- They choose the wrong visuals to convey their data insights.
- They present facts and figures that lack a well-sequenced narrative.

Recommendations

To improve the impact of their talent analytics insights, HR analytics leaders should:

- Identify and understand their target audiences by taking into account the audiences' communication styles, data savviness and subject matter expertise.
- Create simple graphics that show only what is necessary by excluding unnecessary visual elements that are confusing and distracting.
- Make visuals become part of a broader persuasive narrative about how to interpret and use the data by taking advantage of established storytelling principles.

The past decade has seen a proliferation — in both scale and speed — of talent and workplace data from multiple channels (such as HR systems and software,

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social media sites and third-party vendors). As more data and more data analytics techniques have become available, talent analytics professionals have tried to deliver relevant, consumable insights in the form their stakeholders need them. They recognize that one important way to do so is through visualization. Improved visualization leads to better data interpretation and faster decision making.

"We invest significantly and early on in data visualization and storytelling to ensure that the data and insights can be easily understood, consumed and cascaded."

Talent Analytics Leader
Lenovo

However, data visualization can feel daunting for the less experienced data experts and where more complex data is used. In fact, only 16% of organizations have successfully implemented data visualization and storytelling techniques.[1] For talent analytics, lack of data visualization proficiency coupled with an eagerness to showcase comprehensive work often results in difficult-to-consume graphics. Thus, despite generating interesting and creative insights, many talent analytics teams struggle to catch stakeholder attention and impact decision making, especially as their voices get lost among other decision inputs.

This research summarizes the benefits of data visualization, examines common mistakes talent analytics teams make while presenting data and identifies ways to overcome those mistakes.

What Is Data Visualization?

Data visualization refers to the visual presentation of information in a schematic form (using charts, plots, maps, interactive real-time dashboards and other mediums) to represent statistics, facts or figures. Terms such as “infographic” and “visual analytics” are often used interchangeably with “data visualization.” Though the term originated in the 1960s, its rise in popularity has matched that of the term “big data” as knowledge workers and information consumers seek better and faster ways to communicate and digest vast amounts of data.

For talent analytics’ purposes, data visualization can encompass anything from a simple bar chart to the multivariable, interactive displays that impress laypeople and professionals alike.

Data visualization provides several benefits to talent analytics teams.

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Comprehension: Ensuring Fast and Accurate Interpretation of Ideas

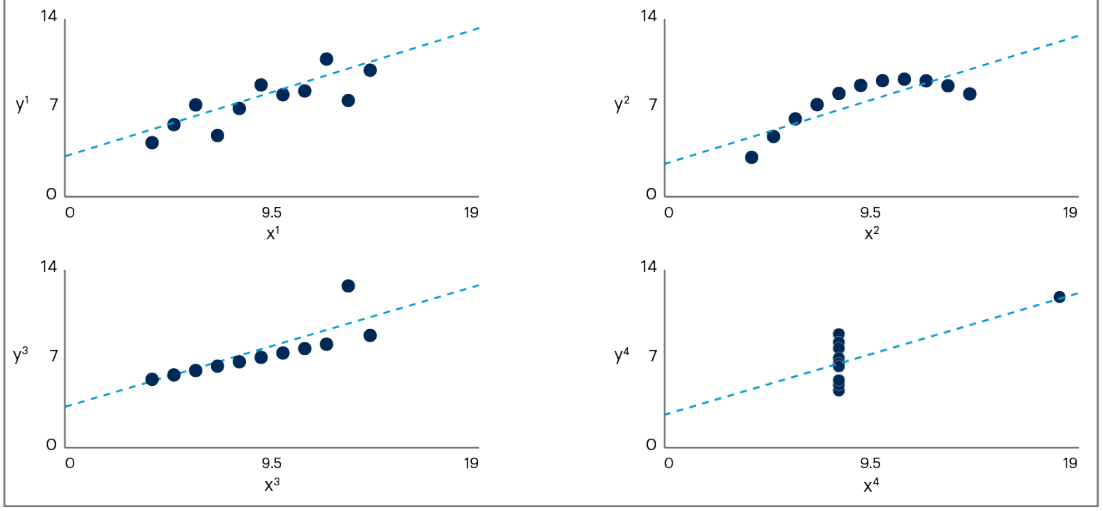
Data visualization helps business leaders see and comprehend data trends, relationships and patterns quickly and easily. In fact, 90% of information transmitted to the brain is visual, and the brain processes visuals 60,000 times faster than text.[2] Data visualization thus minimizes the risk of the audience misinterpreting information, missing important conclusions or spending too much time trying to understand the data.

To demonstrate the power of visualization, English statistician Francis Anscombe developed the famous Anscombe's quartet (see Figure 1). Each dataset in the quartet has identical statistical measurements — mean, correlation coefficient and linear regression line. When graphed, however, the datasets show very different patterns.[3]

Figure 1: Anscombe's Quartet Showing the Importance of Visualization

Anscombe's Quartet Showing the Importance of Visualization

1		2		3		4	
X	Y	X	Y	X	Y	X	Y
10	8.04	10	9.14	10	7.46	8	6.58
8	6.95	8	8.14	8	6.77	8	5.76
13	7.58	13	8.74	13	12.74	8	7.71
9	8.81	9	8.77	9	7.11	8	8.84
11	8.33	11	9.26	11	7.81	8	847
14	9.96	14	8.1	14	8.84	8	7.04
6	7.24	6	6.13	6	6.08	8	5.25
4	4.26	4	3.1	4	5.39	19	12.5
12	10.84	12	9.13	12	8.15	8	5.56
7	4.82	7	7.26	7	6.42	8	7.91
5	5.68	5	4.74	5	5.73	8	6.89



Source: F.J. Anscombe. "Graphs in Statistical Analysis." American Statistician. 1973.

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Engagement: Capturing and Holding Business Leaders' Attention

Humans have an attention span of just eight seconds,[2] so talent analytics teams have little time to capture stakeholders' attention and make a point. Effective data visualization can keep business leaders interested and engaged in the presentation of data and analyses, and it encourages them to think more actively about the insights. Data and analytics leaders have seen that improved visualization leads to greater information receptivity and more follow-up questions from their stakeholders.

"Data visualization has become a necessary component to engage stakeholders. It allows insight to be more of a conversation than a monologue."

VP, Customer Research and Competitive Intelligence
Fortune 500 Company

Retention: Facilitating Later Use of an Insight

Business leaders are more likely to retain effectively visualized insights and use them later in decision making. This is because visual information is not only better understood than textual information but also better retained. Ninety-nine percent of all sensory data gets filtered out of the brain immediately. Visual data is in the 1% that is left.[2] This is known as the "picture superiority effect."

Social scientists at Dartmouth examining this theory found that individuals who held to objectively false statements were more likely to accept and internalize corrections when presented graphically rather than textually.[4]

Overcoming Common Data Visualization Mistakes

While effective data visualization can be powerful, it is also important to understand the impact of poorly visualized data. Poorly visualized data can confuse the audience, amplify the wrong messages, bias decisions or just fail to make an impact. How talent analytics teams use data visualization can therefore have drastic consequences — in either a positive or a negative way.

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The following sections highlight common mistakes talent analytics professionals make while delivering their insights and offers guidance overcoming those mistakes.

Match Your Data Visualization to Your Audience

While developing data visualizations, talent analytics professionals tend to underestimate their stakeholders' diversity and the degree to which stakeholders' roles, communication styles or data savviness might affect their ability to consume data visualizations. Failure to account for their preferences makes it difficult for many stakeholders to understand and connect with insights, no matter how well-visualized.

Given this reality, the first step to visualizing data effectively is understanding the audience. Talent analytics teams should ask:

- Who is the primary audience of my data visualization?
- What is the audience's level of knowledge or expertise in the subject I am visualizing?
- How data-savvy is the audience?
- What does the audience expect to see?
- Do any members of the audience have strong communication styles or preferences?

Answers to these questions will guide talent analytics teams in selecting the type of visualization to use as well as the level of detail to share (see Figure 2).[5] For instance, business leaders may expect a more straightforward and recommendation-focused visualization, whereas a technical audience may seek additional details and explanation.

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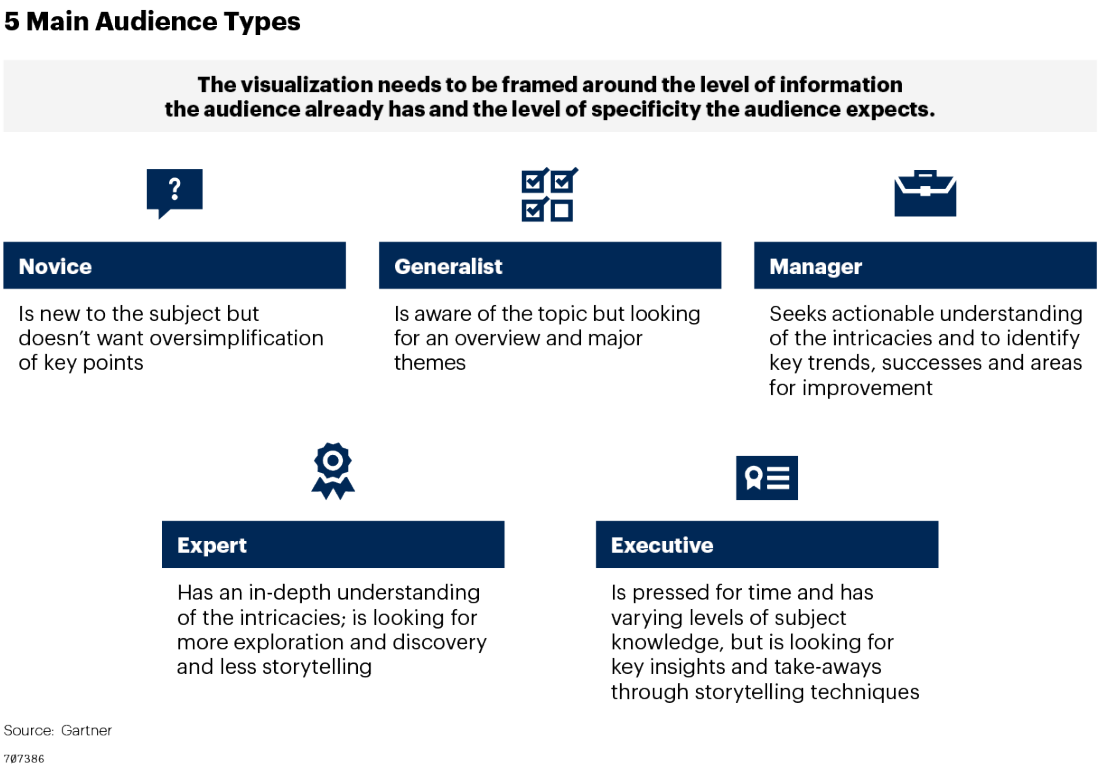
Figure 2: 5 Main Audience Types



Tip to Boost Your Impact: When communicating with a diverse group of stakeholders, orient your data visualizations to the most influential leader in the group.

Create Simple, Effective Graphics

Data visualization is not just about throwing data into colorful charts; it is both an art and a science. The challenge is to get the art right without getting the science wrong, and vice versa. The next step to effective data visualization — and the step where most talent analytics professionals struggle — is conveying insights smartly, accurately and aesthetically. Jarring colors, imbalanced visual elements and faulty scale or design can either distort the data or make it too hard to consume.

When thinking about how to communicate insights visually, most experts on data visualization refer to the work of data visualization expert Edward Tufte. Based

on Tufte's work and recommendations for talent analytics leaders, below are four principles for improving and streamlining the visualizations you create.

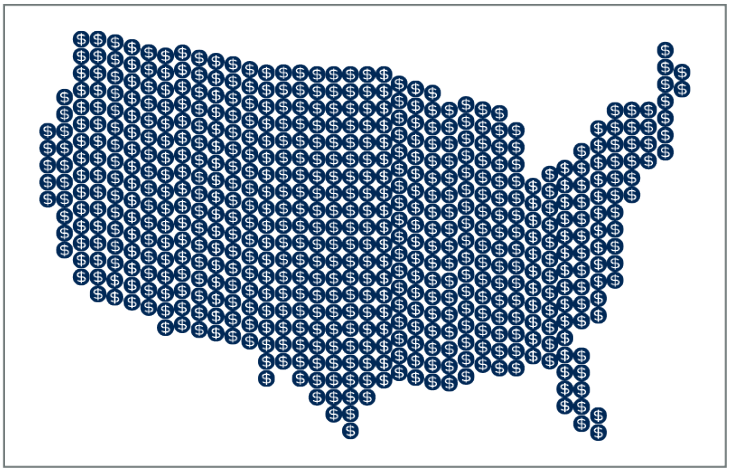
Principle 1: Form Follows Function

The form art takes should be based on the intent and purpose of the insight. For instance, the infographic in Figure 3 does a good job of demonstrating that the designer can place coins in the shape of U.S., but the visualization doesn't help readers understand the data any better.

Figure 3: Example of Overinvestment in Form

Example of Overinvestment in Form
2017 State Government Tax Collections Per Capita

Location	State Collections per Capita
District of Columbia	$11,183
Vermont	$5,017
Hawaii	$4,920
Minnesota	$4,632
North Dakota	$4,587
Connecticut	$4,556
Massachusetts	$4,033
New York	$4,017
California	$3,960
Delaware	$3,767
New Jersey	$3,600
Georgia	$2,174
Hawaii	$4,920
...	...



Source: State Government Tax Collections per Capita

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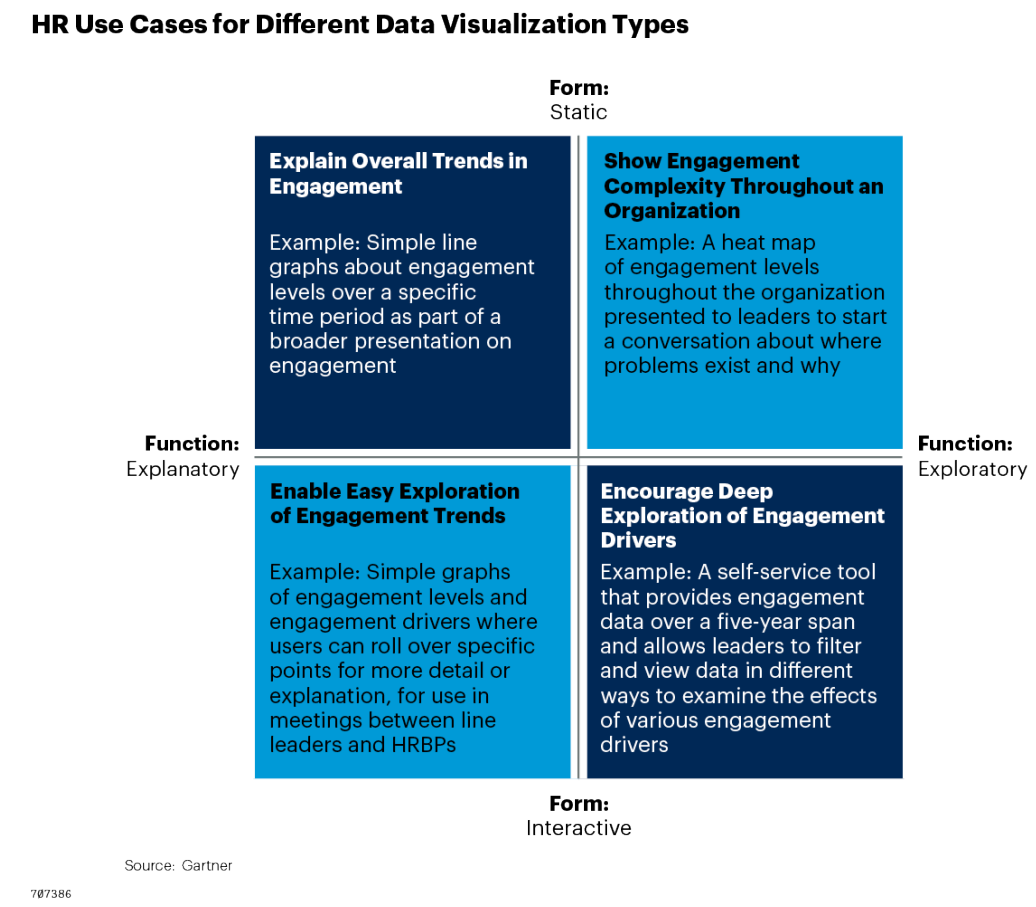
The principle of "form follows function" helps talent analytics teams convey complex ideas with greater clarity, precision and efficiency. Form and function of visualization can be plotted on two intersecting axes. The intersection of the axes results in four quadrants, each representing one category of visualization (see Figure 4):

- Static and explanatory — These visualization types tend to be static and are used to reinforce a point made in the accompanying text. Graphs such as bars, lines and columns fall in this quadrant. (See "Graphical Dashboard [Cambia].")
- Static and exploratory — These types of visualizations lead readers to discover their own stories as they examine the static representation of data. No specific details are pointed out in such graphics; the audience can explore the data to find their own stories, ideas or hypotheses. (See "Real-Time Culture Monitoring [Unilever].")
- Interactive and explanatory — These easy graphic types have an interactive hover or rollover feature layered on top of a static graphic. Such visualizations enable the

audience to tell their own story. (See an example from the U.S. Bureau of Labor Statistics.)

- Interactive and exploratory — These visualizations graphically present a complete dataset and ask users to find interesting stories. This type of visualization can also give the data to audience members and ask them to visualize the outcome on their own. (See "People Factbook [Johnson Controls]."")

Figure 4: HR Use Cases for Different Data Visualization Types



Principle 2: High Content-to-Ink Ratio

All ink on the page that does not convey additional information is suspect and likely not required. Use only what is needed to make a point and no more. Only key features of the data should stand out, ensuring the viewers' attention is not drawn to irrelevant details.

To determine whether your visual follows this principle, ask the following questions:

- Is everything on the page there because it is informative or teaches a point clearly?

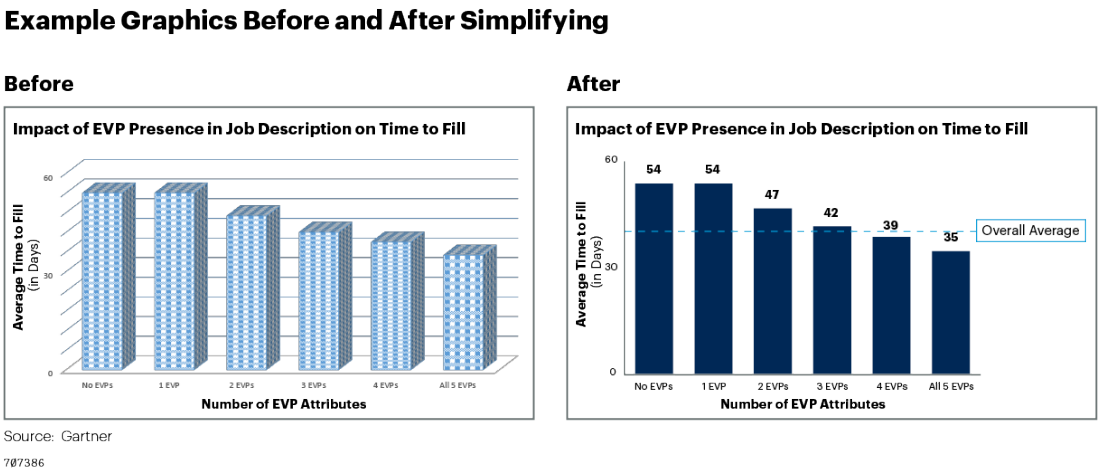
- If I removed anything, would the point or teaching still be clear?
- Do all graphical elements on the page serve a distinct and useful purpose?
- Do all words on the page serve a distinct and useful purpose?
- What would happen if the number of graphs or words were cut in half?

Principle 3: Simplicity Is Key

Because stakeholders have limited time to consume information, it is important to ensure visualizations are as simple as possible. Unnecessary information, or "chart junk," is at best distracting and at worst misleading. Chart junk includes unnecessary gridlines, 3D bars or excessive labeling that may take readers' eyes away from the key message of the visualization.

Below is an example of a visual before and after chart junk is removed.

Figure 5: Example Graphics Before and After Simplifying



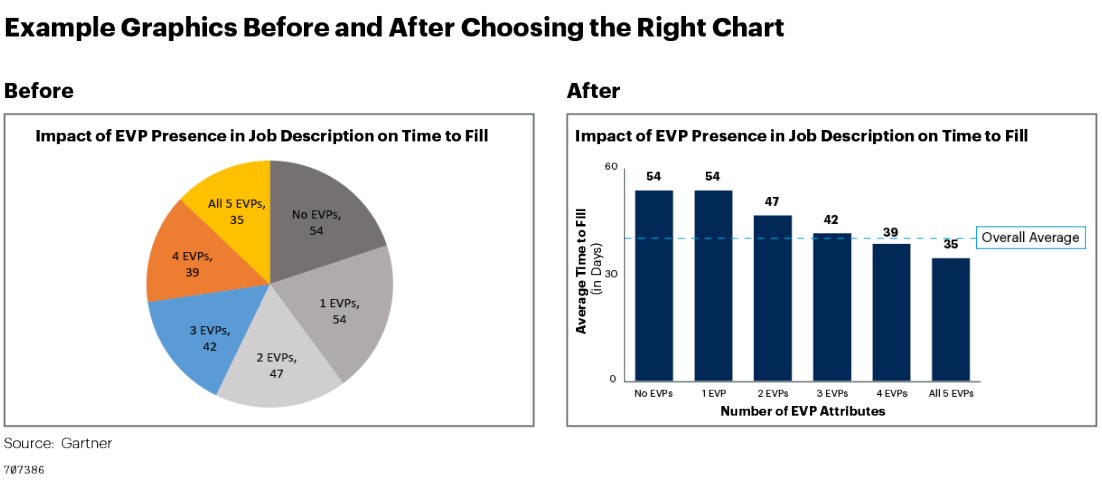
To check the alignment of your data visualization with this principle, answer the following questions:

- Are all the visual distinctions we use (such as different colors) necessary for conveying the point?
- Are the visual distinctions no more visually different than is needed?

Principle 4: Choose the Right Chart

Think about what message you want the audience to take away. Choosing the wrong chart can often be more misleading than just leaving data in a table. For example, in some cases, pie charts can be difficult to follow and do not convey the right message, whereas a bar graph more appropriately conveys the message (see Figure 6).

Figure 6: Example Graphics Before and After Choosing the Right Chart



Source: Gartner

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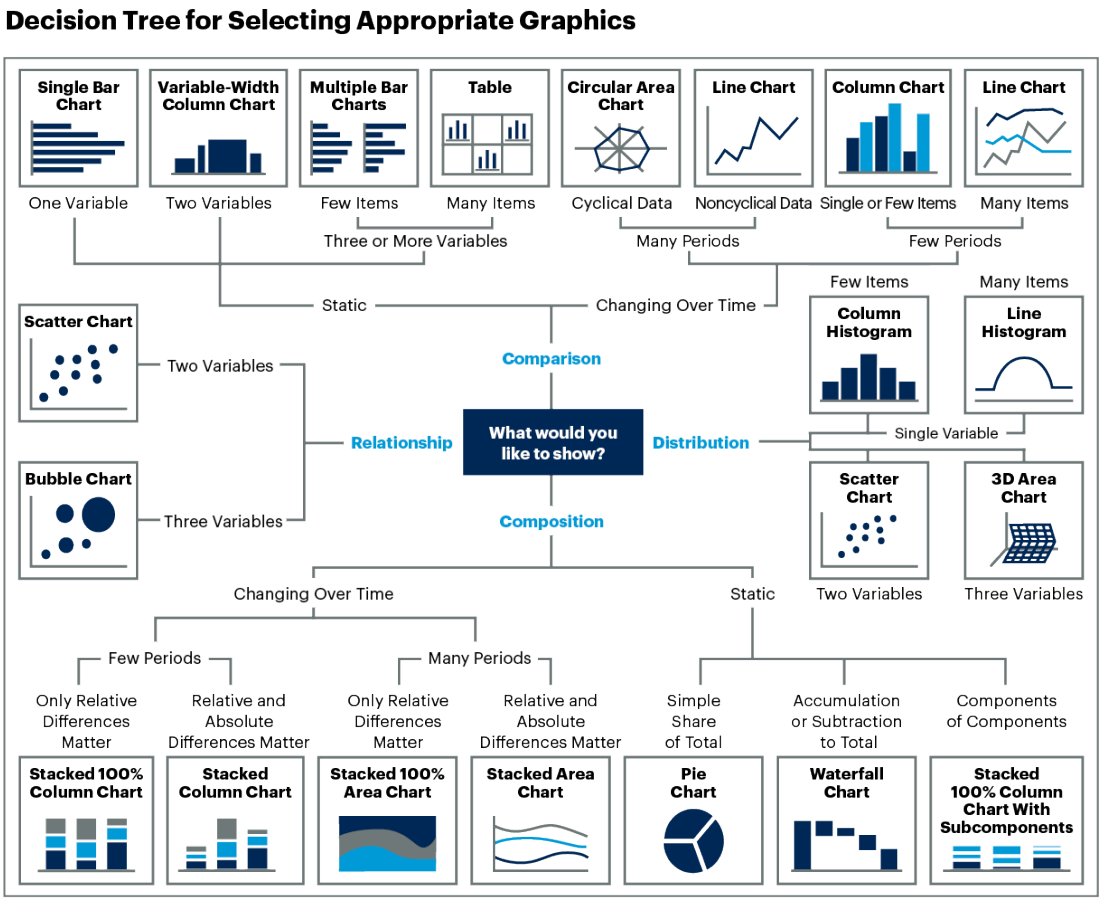
A decision tree can help talent analytics teams determine how to use visualization to make different points (see Figure 7).

Figure 7: Decision Tree for Selecting Appropriate Graphics



Source: Gartner

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Tip to Boost Your Impact: Check your visuals with the "10-second test." Can a peer who is unfamiliar with your work explain the graph or chart to you after reviewing it for only 10 seconds?

Visualize a Narrative, Not Just a Set of Facts

To effectively communicate data insights through data visualization and influence business and talent decisions, it is important for talent analytics professionals to craft a compelling narrative around the visuals they present. Studies show that data insights

presented in the form of a story are more memorable than data presented as simple facts and figures.[6] In the absence of storytelling — when data insights are presented as simple facts and figures — audiences tend to make up their own stories around the data, which may lead to incorrect interpretation and understanding.

Data stories combine data, narrative and visuals in order to share something new and unknown in an easily understandable and relatable manner. While data visualization provides the "what" in the story, it's the narrative that answers the "why." Thus, visualization is not a stand-alone tool but a component in the larger narrative you build and share with the audience.

A good data-based narrative can be organized into a story arc with three parts:

1. Introduce the problem, and build context. Similar to the prelude of a story, the first part of a data presentation is an introduction that hooks the audience. The introduction should identify the problem or reason for presenting the data to the audience and discuss its impact on business and talent outcomes to generate buy-in from stakeholders and establish urgency. Data visualizations in this part of the story should be simple and easy for the audience to relate to.

2. Describe how you analyzed the data. Data and technical details might be tricky to weave into your story, but many talent analytics professionals make the mistake of skipping this important storytelling stage. To build the credibility of your analysis, describe the quantitative and qualitative data and methodologies you used to come to your conclusion. Data visualization in this part should help the audience understand the significance of the data by placing it in visual context.

3. Present your findings. Talent analytics professionals must communicate a clear and memorable message about the conclusion of their analysis through effective data visuals. Don't fall into the trap of throwing too much data at your audience. Instead, focus on the data that directly supports your main teaching and addresses the original problem you sought to solve.

Tip to Boost Your Impact: Start each slide with the insights you want your audience to remember before diving into the supporting data.

Conclusion

Data visualizations can help talent analytics teams communicate more effectively with their stakeholders. They improve comprehension and engagement with the material and increase the "stickiness" of the analysis. However, some mistakes in

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data visualization can have the opposite effect. Before putting pen to paper, talent analytics teams should ensure the use of visualizations will support the story they are telling business leaders. The best visualizations include only necessary information and eliminate what could be confusing or distracting to the reader.

Recommended by the Authors

- "Tools for Analysis Delivery"
  A common reason talent analytic teams fail to influence decisions is they present ineffective final analyses to stakeholders. Focused on being comprehensive or showcasing the work done, presentations often become difficult to consume and fail to answer business partners' specific questions and concerns. Use these tools to deliver effective analyses.
- "NGA's Guide to Creating Actionable Presentations for Talent Analytics"
  NGA's talent analytics team creates actionable presentations by engaging its clients as active participants during every step of the presentation process. This guide helps you identify influential stakeholders and deliver consumable content that helps leaders self-discover insights.
- "Graphic Selection Guide"
  To truly have an impact when presenting data, talent analytics professionals must select only the graphics that best illustrate their insights and clearly support their messages. Use this guide to generate ideas about what graphic best suits your purpose and data.

About This Research

This research provides guidance for HR analytics leaders on how to better visualize their data insights to influence key business and talent decisions. We gathered data through secondary research on key visualization challenges that talent analytics teams face. Additional input was collected from conversations with industry thought leaders.

201645552

Endnotes

[1] "25 Research Insights to Fuel Your People Strategy," EY, DDI and The Conference Board

[2] "This is Your Brain on Visualization," Quicksprout

[3] F.J. Anscombe. "Graphs in Statistical Analysis." American Statistician. 1973.

[4] B. Nyhan and J. Reifler. "The Effect of Self-Affirmation and Graphical Information on Factual Misperceptions." Dartmouth University. September 2011.

[5] "How to Tell a Story With Data," Harvard Business Review

[6] "A Good Presentation Is About Data and Story," Forbes

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