Dataviz

Making Smarter, More Persuasive Data Visualizations

A HARVARD BUSINESS REVIEW WEBINAR FEATURING

Scott Berinato

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MAKING SMARTER, MORE PERSUASIVE DATA VISUALIZATIONS

OVERVIEW

Good visualizations communicate business ideas with incredible power. Traditionally, "dataviz" has been left to specialists, like data scientists and professional designers. But new tools and massive amounts of data now make it easy for anyone to create visualizations that communicate ideas effectively.

Building good charts is quickly becoming a need-to-have skill for managers. To generate more effective charts, individuals should follow basic guidelines and a three-step process based on talking, sketching, and prototyping.

CONTEXT

Scott Berinato shared insights on data visualization and described how to turn uninspiring charts into smart, effective visualizations that powerfully convey ideas.
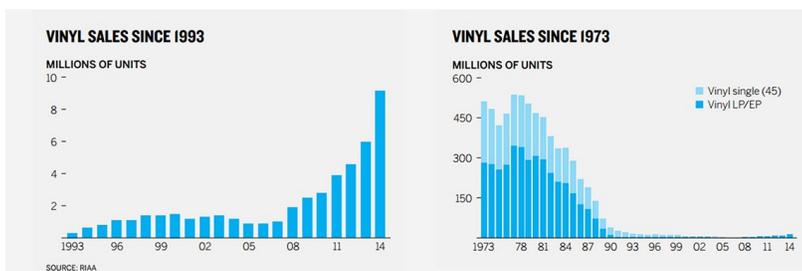
KEY LEARNINGS

When creating charts, context is more important than "visual grammar."

Defining what is a good chart is not as simple as one might think. When people judge charts they focus first on the structure, rather than on the information. People react positively to "pretty" charts, even though the impact of eye candy wears off quickly.

When it comes to visual grammar, things like color and gridlines matter. However, context matters more. Context defines what a person is trying to say, to whom, and where. Context relates to three elements:

- **Field of view.** By taking a close-up look or a broader view of information, charts can convey dramatically different messages. In the examples below, the chart on the left (beginning in 1993) suggests that vinyl record sales are growing, while the chart on the right (which begins in 1973) shows that sales have declined enormously since the 1970s. Field of view matters.

CONTRIBUTORS

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VINYL SALES SINCE 1993
MILLIONS OF UNITS
SOURCE: RIAA

VINYL SALES SINCE 1973
MILLIONS OF UNITS
Vinyl single (45)
Vinyl LP/EP

Figure 1
The Field of View Affects Context

- **Angle.** Charts can present different insights, based on the information, perspective, and "angle" used. Below, the chart on the left only shows the absolute prices of gold and silver, while the chart on the right shows the changes in those prices.
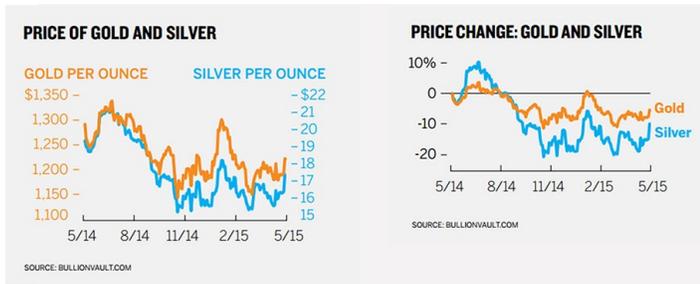
Figure 2
Angle Also Changes
the Context

- **Point of view.** Charts also present a particular perspective. Both charts below show customer purchase activity by time of day. The chart on the left shows data according to the time of day on the server where purchases were made, while the chart on the right shows data according to time of day in the locations where consumers actually made purchases.
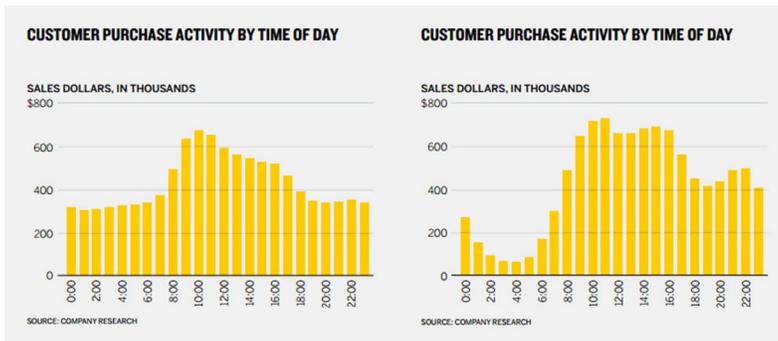
Figure 3
Charts Present
a Certain Point
of View

As people create charts, they should spend more time considering the context related to visual grammar. To determine the proper context, many questions must be answered such as:

- How much time do I have?
- How will the chart be displayed?
- How big is the room?
- Has the audience ever seen this kind of chart before?
- What does the audience already know?
- What am I trying to accomplish?
- What do I want the audience to do about the information in the chart?
- Who else might see the chart?

> "A beautiful chart can be a spectacular fail if you have to spend a lot of time explaining it to the audience."
>
> **– SCOTT BERINATO**

High contextual awareness and excellent design execution lead to good charts.

Good charts are those with high contextual awareness and excellent design execution.
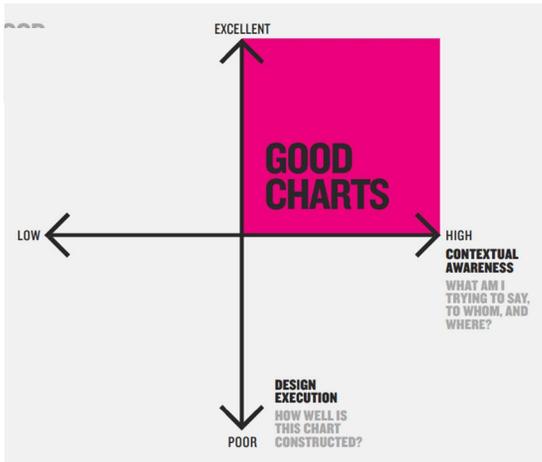
Figure 4
The Good Chart Matrix

The "bad" chart below (Figure 5) has axis labels that are hard to read. In addition, the y-axis on the right only goes to one third of the value of the y-axis on the left. In Figure 6 the same data is transformed into a more readable and actionable chart, thanks to good design execution and high contextual awareness.
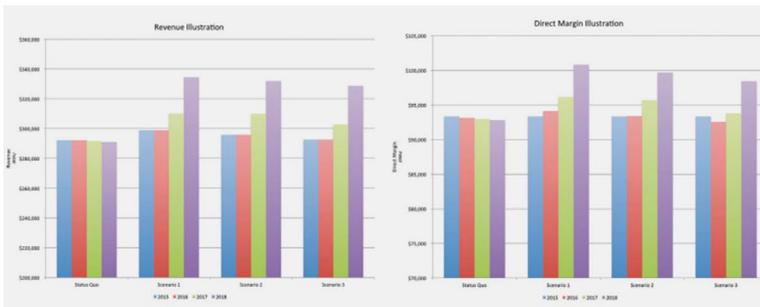
Figure 5
Example of a Bad Chart
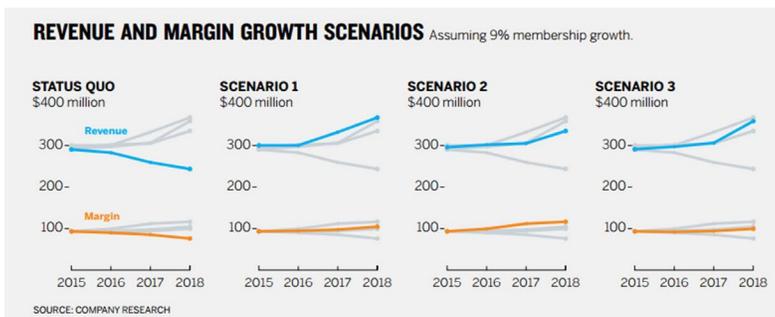
Figure 6
A Bad Chart Transformed Into a Good Chart

A three-step process leads to better charts:

1. **Talk.** It is important to ask exploratory questions to increase contextual awareness.
2. **Sketch.** Draw different chart ideas. Often, the temptation is to skip sketching and move directly to prototyping with tools. Talking and sketching, however, opens the door to more effective charts.
3. **Prototype.** Many good tools are now available to create prototypes.

Good visualization matters to business, news, public debate, learning, and more.

Good visualization is important for companies, as well as for consumers and citizens.

- **Companies that use visualization to make sense of their data will win in the marketplace.** Tesla, for example, has embraced data visualization. Building good charts is a need-to-have skill for professionals. Accenture, for instance, has developed a visual literacy curriculum for new consultants.

- **As news becomes more complex, visual storytelling is playing a larger role.** Clear charts can illustrate key points faster and more clearly than text. In just a few seconds, well-crafted charts can communicate relationships between disparate data such as gas prices and percent of consumer income spent on gas.

- **Charts are becoming an integral part of public debates.** In social media and other forums, more people are using charts to promote their points of view. For instance, the National Review recently tweeted a flatline graph and claimed it was the only chart on climate change that people needed to see. This generated anger and debate online. The public must be dataviz literate and understand what is being shown in charts.

- **Visualization can help people learn about complex topics.** The website R2D3, for example, uses visualization to show how machine learning works in an elegant way. A single chart clearly conveys, for instance, how data flows through decision tree models and can be used to make predictions.

To create effective charts, it is important to understand, create, refine, present, and practice.

There are four steps to creating effective charts:

1. **Understand.** Understand the history and science of data visualization.
2. **Create.** There are four types of charts: everyday data visualization, idea illustrations, idea generation, and data exploration.
3. **Refine.** Good charts impress and persuade others, but they don't lie. Many decisions must be made about what to include and exclude from charts. To deceive others, some use truncated y-axes, dual y-axes, or map making in charts.

> "Good data visualization helps people make better decisions, especially when the stakes are high."
>
> – **SCOTT BERINATO**

4. **Present and practice.** The key to visual storytelling is captivating the audience. Most charts can be broken down into stories that feature a setup, conflict, and resolution. Critiques are an integral part of creating better charts.

OTHER IMPORTANT POINTS

▪ **Interactive charts.** These are a powerful new tool. Interactive charts increase engagement with content and enable presenters to change data visualizations on the fly.

▪ **Color.** Humans can't process many colors simultaneously in charts. Best practices are to use no more than six colors in a chart and choose colors based on where you want people's eyes to go. Gray is a good color for secondary information.

▪ **Don't look for data visualization "unicorns."** Some organizations seek people skilled at both data and design, and who also understand the business. Very few possess all of those skills. Using a team approach to dataviz is often more effective.

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BIOGRAPHIES

Scott Berinato

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Scott Berinato is a self-described "data-viz geek" and a senior editor at *Harvard Business Review*. In addition to editing features for the magazine, he has championed the use of visual storytelling and data visualization at HBR. He is the author of *Good Charts: The HBR Guide to Making Smarter, More Persuasive Data Visualizations*.

Angelia Herrin (Moderator)

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Angelia Herrin is the editor for special projects and research at HBR. Her journalism experience spans 25 years, primarily with Knight-Ridder newspapers and *USA TODAY*, where she was the Washington editor. She won the Knight Fellowship in Professional Journalism at Stanford University in 1990. She has taught journalism at the University of Maryland and Harvard University.

Prior to coming to HBR, Angelia was the vice president for content at womenConnect.com, a website focused on women business owners and executives.