Data Visualization Award Judging Guide

How to judge posters?

1

Determine if data visualization is present!

What is data visualization?

*Data visualization is the **graphical representation of information and data** designed to help people carry out tasks more effectively.*

Some of the common **data visualization techniques** include:

Pie Chart	Scatter Plot	Bar Chart	Gantt Chart

Heat Map	Box and Whisker Plot	Area Chart	Word Cloud

| Pictogram Chart	Timeline	Map	Network Diagram
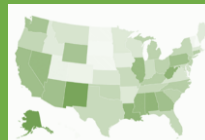
Data visualizations are often confused with infographics.

Both are visual representations of data. An important difference is that a data visualization is just one (i.e. a map, graph, chart or diagram), while an infographic often contains multiple data visualizations. A second key difference is that infographics contain additional elements like narrative, pictures, and icons. Sometimes, however, the infographics will not contain any data visualizations at all. While data visualizations emphasize the quantitative data, infographics, most of the time, include quantitative data that's usually limited to singular numbers.

DATA
VISUALIZATION

INFOGRAPHICS

*THIS IS AN INFOGRAPHIC
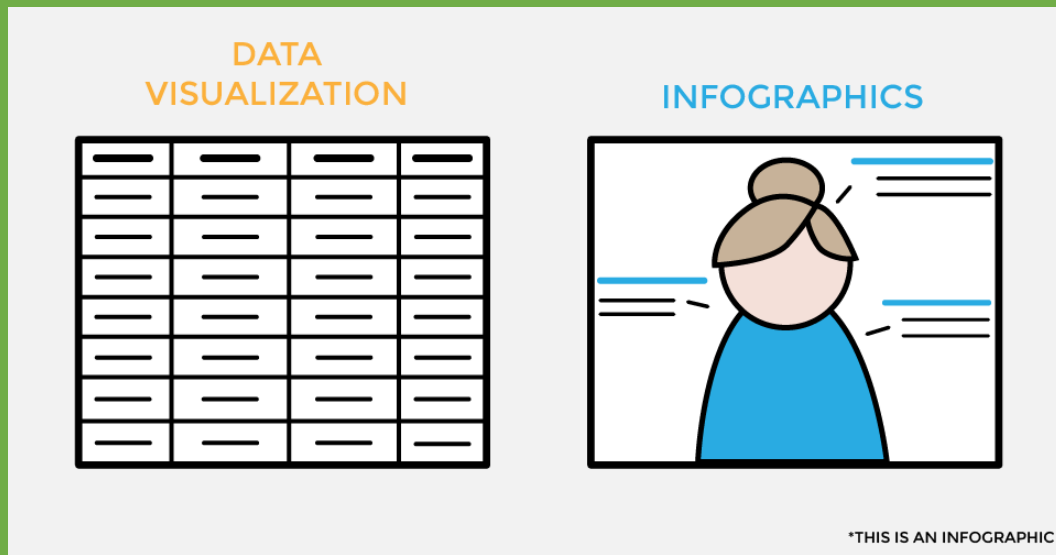
We will **only consider infographics for Data Visualization Award if it contains data visualization**, so the graphical representation of information and data in a form of map, chart, diagram, etc. – please refer to data visualization techniques for more information.

What to do with misleading data visualizations?

Visualizations are as good as the data you use to create them. When data is incorrect or faulty, inappropriate data is selected to answer the research question, it can lead to misleading visualizations or, worse, misleading insights.

> **Misleading visualizations** or visualizations inconsistent with the rest of the poster should **receive the lowest possible score for every section in the judging rubric.**

Examples of common misleading data visualizations:

- **A truncated Y-axis is a common mistake** in data visualization where the scale of the Y-axis is shortened to make changes in the data appear more significant. For bar charts, the baseline should always start at 0 - in bar charts, the length of the bar is what we focus on when we analyze visualizations.
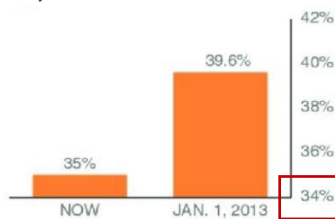
- **Correlation vs Causation** - confusing the two can lead to incorrect conclusions and misleading visualizations. A strong correlation between two variables does not necessarily imply causation and vice versa. Ensure that data visualizations accurately reflect the relationship between variables. An example of data visualization that might lead to incorrect conclusions:
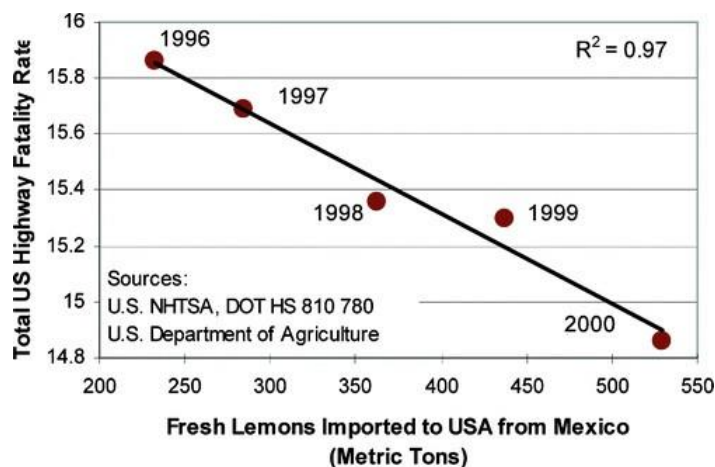
3 **Evaluate visual presentation of data visualization**

In this section you will consider design and aesthetics, readability, and ease of comprehension.

Elements that you want to see are described in the judging rubric below.

10(A+)	9(A)	8(A-)	7(B+)	6(B)	5(B-)	4(C+)	3(C)	2(C-)	1(D)
• outstanding visual appeal • excellent use of color and font • graphics engaging and enhance text • clear and orderly arrangement • Title, figure caption, and labels: appropriate size, spelling, and content • Color used according to data visualization best practices • Publication quality figures, aesthetically pleasing, limited clutter	• effective visual appeal • adequate use of color, and font • graphics enhance text • somewhat orderly arrangement. • Figures may be cluttered • Occasional spelling errors • Appropriate use of color and good color contrast • Figure caption, figure legend (if appropriate), and labels present • Minor inconsistencies in design elements (e.g., font choice changes throughout design)	• adequate visual appeal • color and font inconsistent • excessive text, few supporting graphics • arrangement not well organized. • Frequent spelling errors • Missing figure caption, figure legend, and/or labels • Figure text is too small • Low quality figures that are cluttered or have poor color contrast	• appearance lacks professionalism • color and font distract from understanding • graphics missing or do not enhance text • arrangement detracts from understanding

Following is one example (Marson, Pittman-Munke & Stanton, 2016, p.190) of the correct presentation of a bar chart:
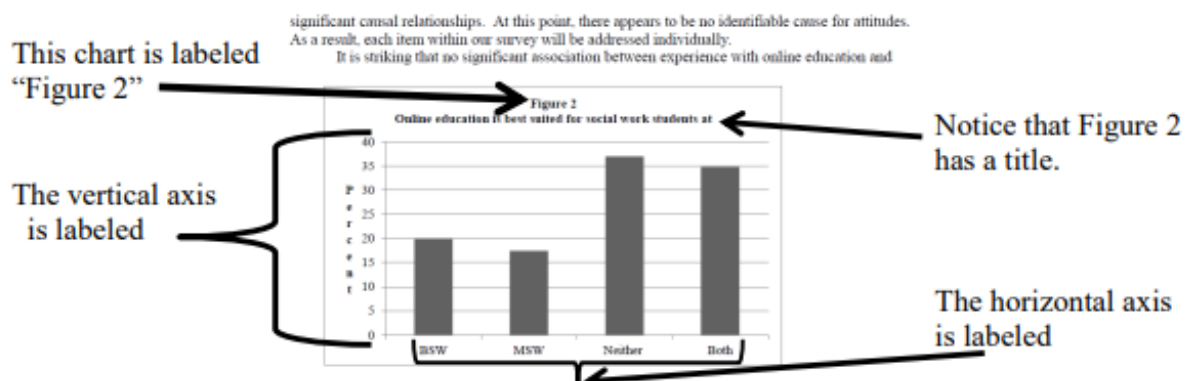
Verify that the data visualization is communicated clearly

Best data visualization efficiently conveys the message that author is trying to communicate. It considers the type of data involved to choose appropriate visualization technique and presents the data in a way that's easy to understand and interpret. Complex ideas are communicated with clarity and precision.

| 10(A+) | 9(A) | 8(A-) | 7(B+) | 6(B) | 5(B-) | 4(C+) | 3(C) | 2(C-) | 1(D) |
|---|---|---|---|
| • Intended message is communicated clearly
• Visualization tells a story with limited (or no) support from other poster elements
• Chart selected for the data is appropriate | • Visualization supports intended message, but requires information from other poster elements to be understandable
• Chart selected for the data is appropriate | • Data visualization does not clearly portray intended message
• More appropriate chart type could have been selected for the data | • No data visualization present
OR
• Data visualization is misleading and inconsistent with the rest of the poster |

Data visualization should tell a story and you, as an audience, should be able to understand this story during the time you spend with the visualization.

The story can be emphasized in many ways. One of the most popular techniques is to strategically use color to emphasize the story and focus attention of the audience (see example below). Speaking about color, too much color used in the visualization can disrupt clear communication of the visuals.
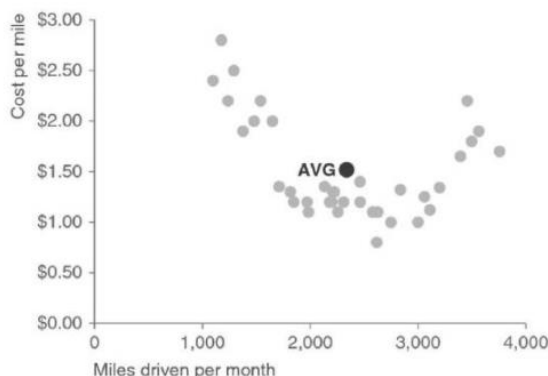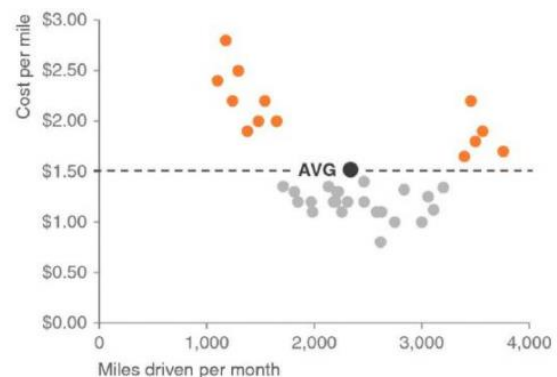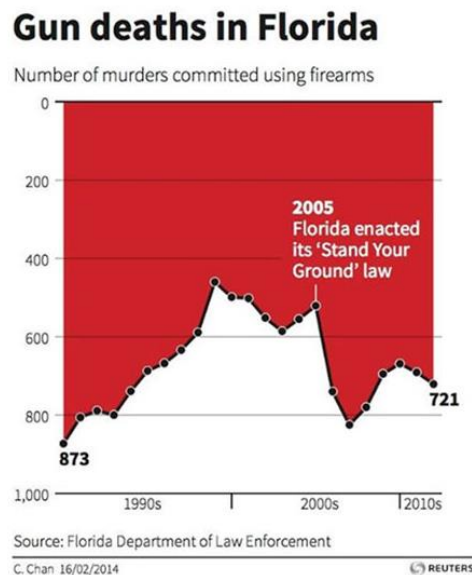
> The audience of data visualizations should be able to understand, interpret & reflect on the information represented and then infer new information based on the assessment.
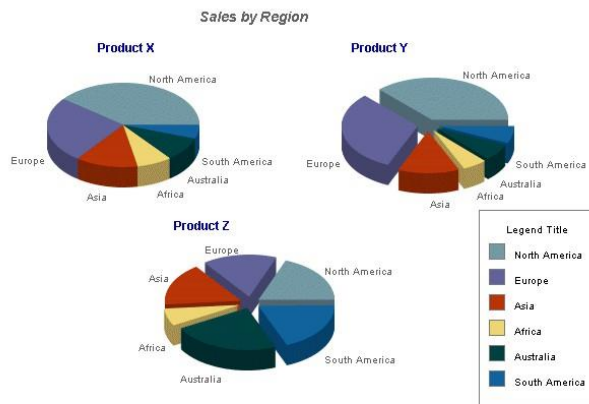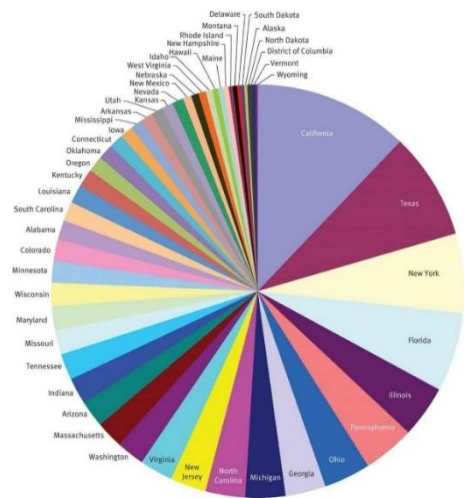>
> **It is generally not good if the visualization is making the audience work too hard!**

Factors contributing to decreased effectiveness of a visualization

- **Ignoring Conventions.** Violating standard practices of visualizations might result in less clarity and in some examples, misleading visualizations. Examples of conventions: pie charts should represent parts of the whole and timelines should progress from left to right. **Trying too hard to be original can be a problem too.** While the chart related to Gun deaths in Florida might seem like a great representation of data and theme, it violates certain conventions. The chance of misinterpreting data is greater in this case due to our reliance on these conventions.

Gun deaths in Florida
Number of murders committed using firearms

2005
Florida enacted its 'Stand Your Ground' law

721

873

1990s   2000s   2010s

Source: Florida Department of Law Enforcement
C. Chan 16/02/2014   REUTERS

- **Techniques not suitable for the data used to create visualizations.** Some examples of data visualization techniques that are not suitable for the data we are working with include pie charts with many categories visualized (more appropriate technique for comparing multiple categories is usually a bar chart), 3D charts distorting the view in such a way that comparison between the categories is difficult, like presented in the figures below.

Sales by Region

| 10(A+) | 9(A) | 8(A-) | 7(B+) | 6(B) | 5(B-) | 4(C+) | 3(C) | 2(C-) | 1(D) |

• Visualization inspires others to discuss and ask questions • Visualization is created with a creative and unique approach • Visualization clearly conveys its significance to research	• Visualization attempts to portray somewhat provocative, compelling, and memorable content, message, or design • Some creativity in data visualization design is apparent	• Visualization is not unique, shows little or no creativity and innovation • Data representation in this visualization is not original	• No data visualization present **OR** • Data visualization is misleading and inconsistent with the rest of the poster

"Creativity is the ability to make or bring something new into existence, whether it is a solution, a method, a device, or an art form."

Richard Foster, a lecturer in management at Yale SOM and emeritus director of McKinsey & Company says: "Creative solutions are insightful, they're novel, they're simple, they're elegant, and they're generative; when you find one creative idea, more often than not it triggers other ideas in the same fashion." A key to being creative, as Foster sees it, is the ability to find associations between different fields of knowledge, especially ones that appear radically different at first. You can read more about creativity in this article: [What Is Creativity? | Yale Insights](#)