OMNI Data Visualization Philosophy

# About this Document

This document is meant to be a central resource that outlines the OMNI Data Viz Best Practice Team's (BPT) approach to when, how, and why we use data visualizuation in our work at OMNI. In addition, a checklist to use when creating visuals is provided. This is meant to guide individuals working on visuals in applying best practices. Both the philosophy and checklist are not rules that must be followed in all data visualization scenarios, but rather the overarching principles that should be kept in mind when creating and utilizing data visualizations. We expect this document to change over time as our expertise and experience in data visualization continues to evolve.

# Guiding Principles

**We know that when findings are communicated well, they facilitate better insights and opportunities for action. We view data visualization as a tool to tell stories and communicate ideas clearly. Visualizing data well is also an opportunity to demonstrate OMNI's core value of excellence by strengthening the quality of the work we deliver to clients.**

In applied research and evaluation, our goal is to make data useful for the people with whom we work. Quality visuals make data more interpretable and more accessible to multiple audiences. We rely on data visualization in the service of equity: clearly and simply communicating data provides an opportunity for stakeholders of all backgrounds to be informed and have an understanding of data without having academic training or skills in statistical interpretation.

Through data visualization, we support clients in making decisions and examining their own work. We recognize that data visualization is a tool to do this, but is not the only way, and may not be appropriate in all situations.

We recommend you review the following checklist throughout the visualization process. More information is provided on each of these considerations in the remainder of this document.

1. I know that my client is receptive to data visualization and I have discussed this approach with my client.
2. I can articulate the story that I intend to tell with the data, and the associated key takeaways.
3. Through data visualization, I have moved beyond showing the results and have helped the reader interepret the results.
4. I have maintained the integrity and accuracy of the data and have not made changes to the meaning of the data in the interest of "beauty".
5. I have planned for data visualization with my client, team, and in my project budget, including time in my workplan for feedback and iteration.
6. I have considered all the visuals in my document collectively and made strategic choices about consistency vs. variety in the types of visual and where and how each visual fits on the page in relationship to other content in the document.
7. I have reviewed best practices on the Data Viz BPT Trello board and am confident that I have followed best practice and have aligned my visualizations with OMNI's data visualization checklist and OMNI's style guide.

# Communicating with Data

**Know your audience and consider whether visualization is the right approach.**

* There are some clients who will want and prefer more traditional or academic-esque reports. Visualization of data is a good opportunity to have a conversation about the data, goals, and end product. Don't assume that visualization of data is always the preferred medium.
* When possible, build time, money, and explicit processes into the contract for the client to provide the feedback to guide these decisions.
* When working on visuals, keep in mind who the audience is and what they want/need to get from the document.

**What is the story you are trying to tell? Identify key points first and use visualization for emphasis.**

* Emphasize key messages when there are a lot of data to share. .
* You will need to do the work of interpreting and understanding the key findings and their implications in the context of the project before identifying what you will convey to others in the deliverable. What does that mean in practice? Spend time identifying what the key findings are in order to identify the best visual method.
* Apply an equity-focused lens: who is represented in your data? How does the story change, depending on how you visualize the data? Have you emphasized strengths or deficits?
* Less is more. Focusing on the key points and not visualizing everything will help readers latch on to the important takeaways.
* This may mean you don't need to display every single survey question or item analyzed. Pick the meaningful ones (for your audience) and then include the rest of the data in an appendix or supplemental document if needed.

**Use visualization to *interpret,* not just show results.**

* Illustrate findings and draw conclusions from data. There are several ways to do this, including emphasizing items with color and writing descriptive titles with interpretation language.
* Provide context that helps the reader interpret results. Examples of context that can be included in visualization are target lines, national comparisons, and change over time.
* Using an equity-focused lens, consider what systemic or structural factors may contribute to outcomes and consider how you might incorporate related information into your visual.
* There are also instances when the reader should have the opportunity to make their own interpretations. Visualization shouldn't go so far as to take away the opportunity for people to dig deeper into the data themselves, and draw new or different conclusions. Synthesize information, but be careful not to oversimplify or hide secondary results that are relevant to the conversation.

**Prioritize accuracy and meaning over beauty.**

* We aren't graphic designers, and our main alliance should be to the meaning of the data. If changing something to look more beautiful means that meaning is lost or an incorrect interpretation is possible, don't do it.
* Does the visualization help with understanding of the document? Is the takeaway clear to your audience? If not, then avoid using it.
* Whenever possible, avoid using human images that have implicit representations or perpetuate stereotypes, for example, stick figures that look like an able-bodied man for general things. Using non-human images can help avoid challenges in this area (e.g., a heart symbol to represent a couple, rather than a man and woman figure).

# Chart Best Practices

**The development of effective visuals is a creative process that requires planning, time, thought, and iteration.**

* Identify your main message first and then use chart choosers (examples [here](https://depictdatastudio.com/charts/) and [here](https://www.dropbox.com/s/uwpznckk9dlpj6w/ChartChooser_StephanieEvergreen_2017.pdf?dl=0)) or the Data Viz BPT Trello board to help you pick an appropriate visual to convey that message.
* Think strategically about whether a chart, icon, table, or no visual at all is most appropriate.
* Many people find it helpful to plan visuals by drawing them first. This is a quick way to envision a single visual and how multiple visuals with come together in the layout of a page.
* Use multiple rounds of development and ask for other opinions on how to improve visuals. Just getting something down, no matter what it looks like, is an important first step.
* Project leads should budget time and hours for iteration if data visualization is part of the project. Plan to provide both formal and informal feedback at various points in the process.
* Getting feedback from a colleague who is not familiar with the project is a helpful way to check assumptions about clarity and whether the key message is being conveyed as intended. Posting on the #data\_viz Slack channel is a great way to solicit feedback for this purpose.

**Be strategic about the layout and look of visuals within a page and across a document.**

* Be strategic about the types of visuals you are using. Sometimes it works well to use similar types of visuals on the same page or within the same report. Other times it is better to diversify the visuals to keep things interesting.
* Balance visuals, text, and white space for a clean look. On any given page, ask yourself: is there too much white space? Is it too busy?
* Group together information that is meaningful together (not just what looks good), and use white space to separate information, conveying to the reader that their brain is processing something different. Simple features that enhance organization, including divider lines and boxes to separate different sections, are useful to organize information displayed on a page.
* Avoid overusing icons within a page or a report. Try to use them only when needed to organize findings or enhance understanding of the information presented.
* Define a system for using colors consistently throughout the document. For example, one color may be assigned to a specific group that is described in the report and always used when showing data for that group. Another way to use color is to emphasize statistically significant findings. You are not likely to need all six of the OMNI colors at once; typically one or two colors and a light gray suffice to convey meaning effectively.
* Be consistent when presenting similar information in a document. For example, if you are using multiple charts to display items that are all based on a 4-point scale, all graphs should have the same axis range of 1-4 and be scaled to the same size to avoid misinterpretation across graphs.

# Data Visualization Checklist

Utilize this checklist to implement best practices and maximize clarity and effectiveness of your visuals. Refer to the Data Viz BPT philosophy document and other resources for more thorough details on chart types, components, and best practices.

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| --- | --- | --- |
|  | **Guideline** | **Explanation** |
| **✓** | **Message** | |
|  | There is a a message/important finding communicated. | If an important message is not apparent, consider not visualizing the information, or make adjustments to the chart type and/or layout so that it conveys the message. E.g., limit information or collapse categories to focus on the key findings. |
|  | An appropriate chart type is used for the data and message. | Don't forget that tables are also visuals and there are ways to add emphasis to tables to convey key points that are very effective. Pie/donut charts are usually only appropriate if you have two categories. For more than two categories, other visuals are more easily interpreted. |
|  | Graph title is descriptive. Subtitles or additional annotation are provided as needed. | Lead with the takeaway; readers shouldn't have to do any interpreting. Use graph titles, subtitles, annotations, and whatever else you need to communicate takeaways and tell the reader exactly what they are seeing. |
| **✓** | **Data** | |
|  | Decimal points are not included unless absolutely necessary. | Most data can be rounded to whole numbers without losing important detail. Include one or two decimal places only if that level of precision is needed. |
|  | Data labels required for interpretation are included. Extraneous ones are deleted. | Focus attention by removing redundancy. For example, in line charts, label every other year on an axis. In some line graphs, you may only need to label the first and last point to convey the message. In a donut graph, you usually only need to label the emphasized segment, not both. |
|  | Data are labeled directly (no legend). | Position data labels near the data rather than in a separate legend (e.g., on top of or next to bars and next to lines). |
|  | Data are ordered intentionally. | Chart variables should be ordered meaningfully. For some data, this means sorting so the values are arranged largest to smallest. In instances where the variables have ordinal meaning (e.g., age, months in a year, or income ranges), use the logical order. |
|  | Graph axis ranges is appropriately sized and labeled if needed. | There are no hard rules here, but axes should have a maximum that do not exaggerate or minimize differences in the data. Set the axis maximum to capture all data and not inflate small differences. For example, graphs of scale responses usually contain the whole scale (e.g., 1 to 5). Percentage data does not always have to have an axis maximum of 100, but the axis range should not be so small as to make the differences between items look larger than they actually are. |
|  | The relative size of graphs with similar data are aligned. | If similar graphs contain data that will be compared, try to make their relative size on the page similar and use the same axis ranges. |
| **✓** | **Text** | |
|  | Text size is hierarchical and consistent throughout document. | Titles should be bigger than subtitles, which should be larger than data labels. Data labels should be larger than axis labels. |
|  | Text is horizontal (not vertical or diagonal). | Adjust spacing or length of label text if needed to prevent Excel from automatically slanting. |
| **✓** | **Color** | |
|  | Color is used to highlight key information. | Action colors should guide the viewer to key parts of the display. Graph titles or corresponding text is colored to match emphasis to help readers interpret the information. Less important, supporting, or comparison data should be a muted color, like gray. |
|  | Only OMNI's brand colors are used. | Unless you are branding a report with the client's color scheme, always use the official OMNI colors. |
|  | Color is used consistently and sparingly throughout the visuals in a document. | Most documents do not need to use all of OMNI's colors. Select a couple colors that will meet your needs to emphasize key findings. Use colors consistently so that the reader doesn't have to re-learn the color scheme in each visual (e.g., always have the highlighted value in teal and the other values in gray). |
|  | Color differences are visible when printed in black and white. | Ensure that you can distinguish between colors when printed in black and white. |
|  | Text sufficiently contrasts with background. | Utilize black or white text for data labels to ensure they are visible against colors. |
|  | Colors are legible for people with colorblindness. | Avoid red-green and yellow-blue combinations when those colors touch one another. |
| **✓** | **Lines** | |
|  | Remove gridlines. | Unless needed for interpretation, gridlines should be removed. Use a light gray if gridlines are needed. |
|  | Remove the chart border. | An outline to separate visuals from text is not needed with sufficient surrounding white space. |
|  | Remove axis lines and axis tick marks. | Tick marks can be useful in line graphs (to demarcate each point in time along the y-axis) but are unnecessary in most other graph types. Remove axis lines whenever possible. |