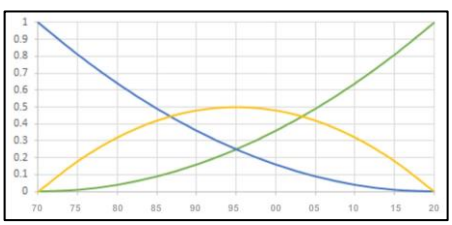
Job Aid: Identify Appropriate Visual Types

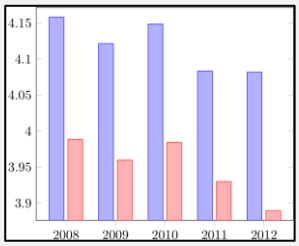
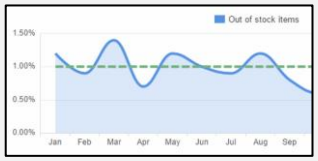
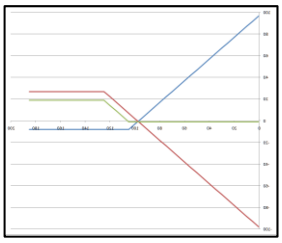
Overview: This job aid will walk you through identifying visual types for a data visualization, ensuring that the visuals match the data story you want to tell.

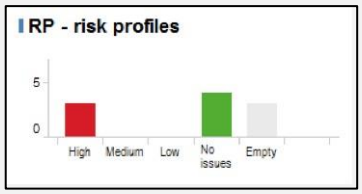
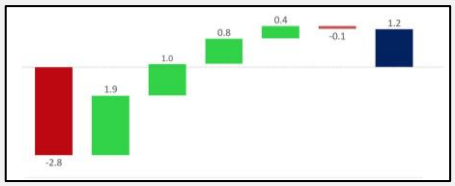
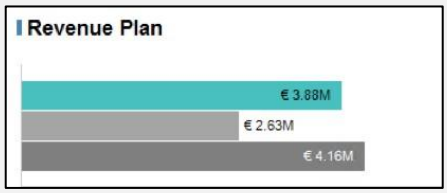
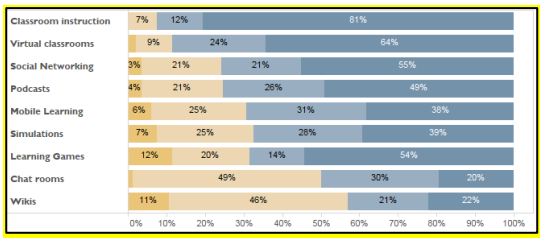
There will always be more than one way to represent a type of data. For optimal success, ensure that the visual types you choose considers both the context, audience and goal of the data visualization.

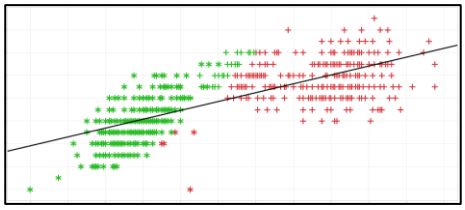
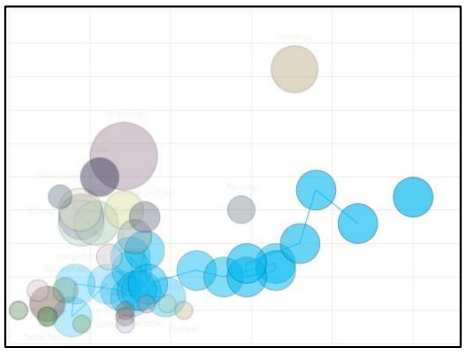
Directions: Below are the general tips for identifying appropriate visual types for a data visualization. You should use this checklist while you work through the scenario practice. As you go through each step, check the box to the right to show it has been completed. You may take down any notes/comments you find helpful under the comments section. You can also print this job aid for your convenience.

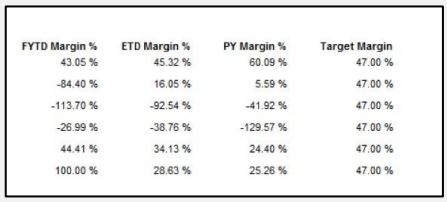
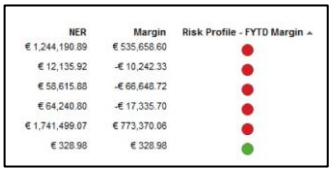
Sr. No.	Tips		Check	Comments
1	Ask yourself what visual types are appropriate for the audience and the data by going through the following steps.		☐	
2	If there is only a number or two to convey to the audience, use the **numbers/text** directly instead of a graphic.		☐	
2.1	Describe the numbers/text with a few words to make the point (ask yourself, “Why is this text important to the audience?” and write your answer to describe the number you are displaying). **Health** Curr: **$2.1M** Prior: $2.0M		☐	
2.2	Use formatting such as font size, bold/italic, capitalization and font color (refer to the graphic given in 2.1) to convey the relative importance of the number/text to direct the audience to focus on particular areas, when using numbers/text directly. (However, be sure to keep formatting styles consistent throughout your visualization, and make sure you do not overuse styles, as too much formatting will distract the audience. We will review this in *Lesson 4: Review the Data Visualization*.)		☐	

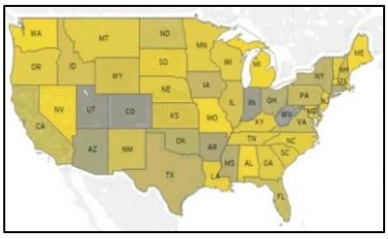
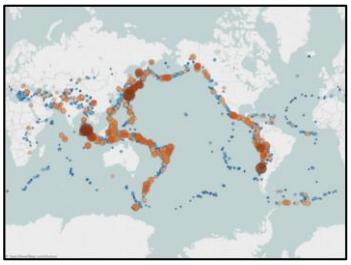
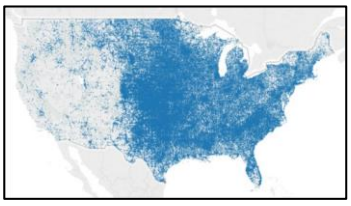
Sr. No.	Tips		Check	Comments
3	If you are using a table format and there is a ranking to the numbers in the table, a heatmap is a good choice to provide quick visual cues to your audience that will help direct their attention to important points.		☐	
3.1	Add a **legend** to the heatmap (spectrum of colors from lowest to highest) to assist your audience in interpreting the data. 		☐	
4	If there is a need to show changes tracked over short and long periods of time or to compare changes over the same period of time for more than one group, use a **line graph**.		☐	
4.1	If you want to show changes over short and long periods of time when smaller changes exist or if you are comparing changes over the same period of time for more than one group, it is better to use line graphs than bar graphs.		☐	
4.2	If you want to show changes over time in a line graph, then check that the data is plotted in consistent intervals to ensure that you do not misrepresent the data. 		☐	

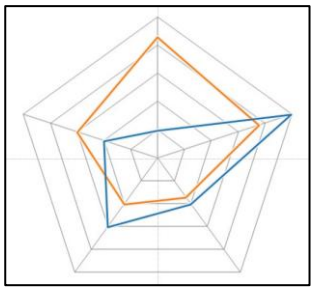
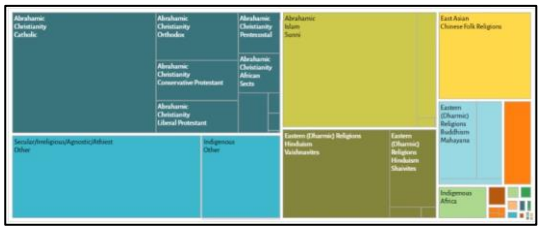
Sr. No.	Tips		Check	Comments
5	If you need to present time series data and there is a need to emphasize a change in magnitude, a vertical bar could be an effective alternative to a line graph. 		☐	
6	If you need to show **volumetric magnitudes** next to a **trend in time**, then use an **Area Graph**, otherwise avoid **area graphs** as they are difficult to estimate. 		☐	
7	If you need to compare two groups across the same dimension OR two time periods to quickly show relative increases and decreases or differences across various categories between the two data points, you can use a **slope graph**.		☐	
7.1	If a **slope graph** shows multiple intersections, ensure that color is used to avoid confusion. 		☐	

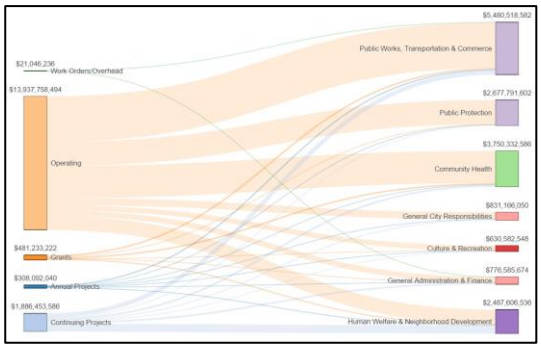
Sr. No.	Tips		Check	Comments
8	If there is a need to compare values between different groups, use **bar charts.** 		☐	
9	If there is a need to pull apart the pieces of a stacked bar chart to focus on one part at a time or to show a starting point, increases, decreases and the resulting ending point, use a **waterfall chart**. 		☐	
10	If there is a need to show the totals across different categories but also give a sense of the subcomponent pieces, use a **stacked-horizontal bar chart.** 		☐	
10.1	If there is a need to show the subcomponent piece as a percentage of total, then use a **100% stacked-horizontal bar chart**. 		☐	

Sr. No.	Tips		Check	Comments
11	If there is a lot of data and there is a need to show a distribution or relationship between two variables, use a **scatter or bubble chart.** This is particularly useful in identifying areas for prioritization using data visualization.		☐	
11.1	If you need to compare only two variables, you can use a **scatter chart**. You can also use the color or shape for each individual plots to represent a third categorical dimension. (Again remember that the use of too much color is distracting.) 		☐	
11.2	If there are three variables, then use a **bubble chart**, where the diameter of the "bubble" can be used to demonstrate the distribution or relationship among the variables. As with scatter plots, bubble charts can also use different color or shape for each individual plot to show additional categorical dimensions. 		☐	

Sr. No.	Tips		Check	Comments
12	Use a **table** when there is a lot of data, but only if precise measures, such as drill down, are needed.  		☐	
12.1	Use a table as a support to a graph if you need to convey additional data.		☐	
12.2	Use a table if the audience specifically wants to see something in number format.		☐	
12.3	Use a table with quantitative comparisons with many values (besides seeing a trend, you can also see specific and detailed data).		☐	
12.4	Consider adding color or shape indicators to draw the audience attention to particular rows, when using a table (e.g., an underperforming outlier, downward trends, etc.).  		☐	
13	If there is a need to display data over geographical locations, consider using **geographical maps**. This is a great way to visualize spatial patterns.		☐	
13.1	Determine the appropriate geographical level you want to visualize your data over (e.g., country, state, city, suburb, etc.). Mixing the levels on the same map is NOT recommended. If the data is heavily concentrated over pockets of small geographical locations, it may be difficult to visually distinguish the data points.		☐	

Sr. No.	Tips		Check	Comments
13.2	Determine the appropriate visualization to convey the data points over the map. • **Filled area (Choropleth) map,** also known as geographical heatmap, shows the geographical boundaries of each area (e.g., state boundaries). You can use color to compare data across different areas.  • **Proportional symbol map** shows the individual location of each data point. The size of each point is used to show the relative proportion or magnitude of that point.  • **Point distribution map** shows the individual location of each data point. The density of the data points allows the audience to identify visual clusters of data. 		☐	
14	If you are an advanced user of charts and analytics, you can consider using a radar charts, tree diagram or Sankey diagram.		☐	

Sr. No.	Tips		Check	Comments
14.1	**Radar chart** is useful for comparing the relative performance of several dimensions. It is particularly useful when the overall shape is more important than comparing one dimension to another (otherwise a simple bar or line chart can be used to represent the same information). 		☐	
14.2	**Treemap diagram** is useful for displaying the hierarchical structure of data while also displaying quantities for each category via area size. A treemap diagram can be a more compact and space-efficient option for displaying hierarchies and giving a quick overview of the structure. It is also good for comparing the proportions between categories via their size. 		☐	

Sr. No.	Tips		Check	Comments
14.3	**Sankey diagram** is useful in representing the many-to-many relationship between two data points and the relative proportion of each connection. It is also useful in showing the multiple paths through a set of stages (e.g., web page traffic flows from a page to other pages). 		☐	
15	Avoid the following graphics: pie charts, donut charts, 3D and gauges.		☐	
15.1	Pie charts are difficult for people to read accurately. The pie slice sizes can be misleading. Instead of a pie chart, use a horizontal bar chart.		☐	
15.2	Donut charts require people/audience to compare arc lengths, which is difficult as our eyes cannot accurately ascribe quantitative value to the various arc lengths.		☐	
15.3	3D perspectives can be misleading. It skews the visual perception of numbers and can be distracting.		☐	
15.4	Gauges do not communicate as much information as they should and take up a lot of data-ink that could be used for other important information.		☐	
16	Determine if the graphic visualization will get the target message across to the specific audience it is being presented to. (Ask yourself: Who is my audience and what do I need them to know or do?)		☐	
17	Ensure to select the visual type most suited for the intended audience.			

Sr. No.	Tips		Check	Comments
17.1	Take extra care in making the visuals accessible and understandable by explaining the graphics and what they mean, OR		☐	
17.2	Select a graphic that the audience will understand with minimal explanation that will still get your message across.		☐	

