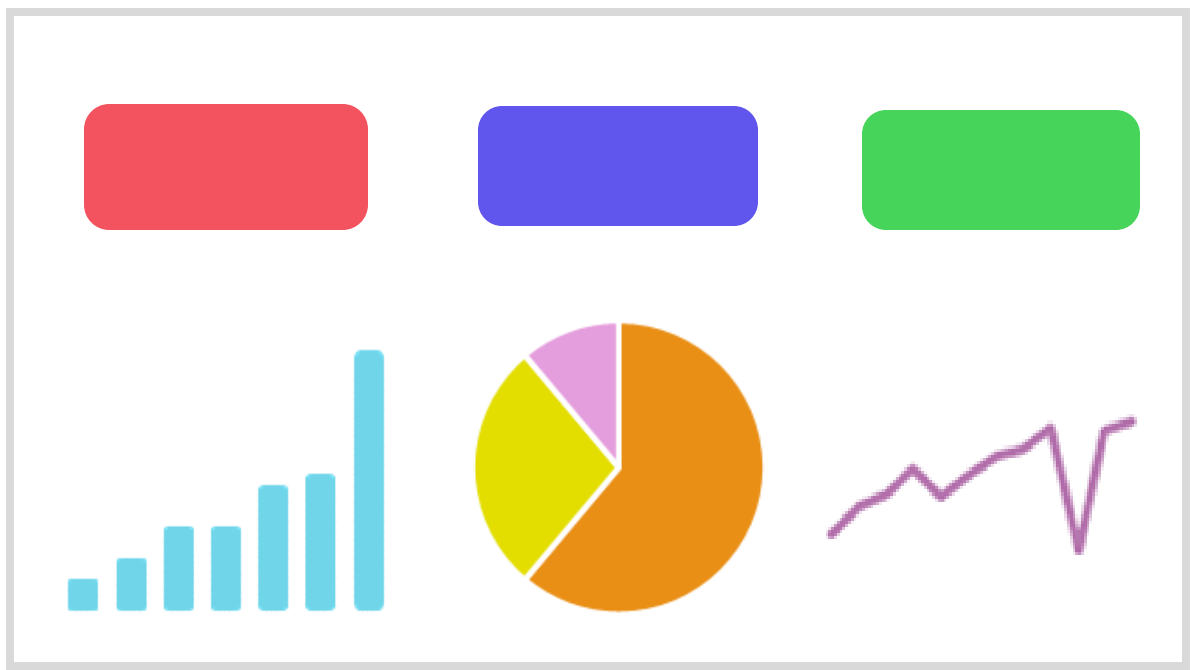
Effective Use of Colors in Data Visualization

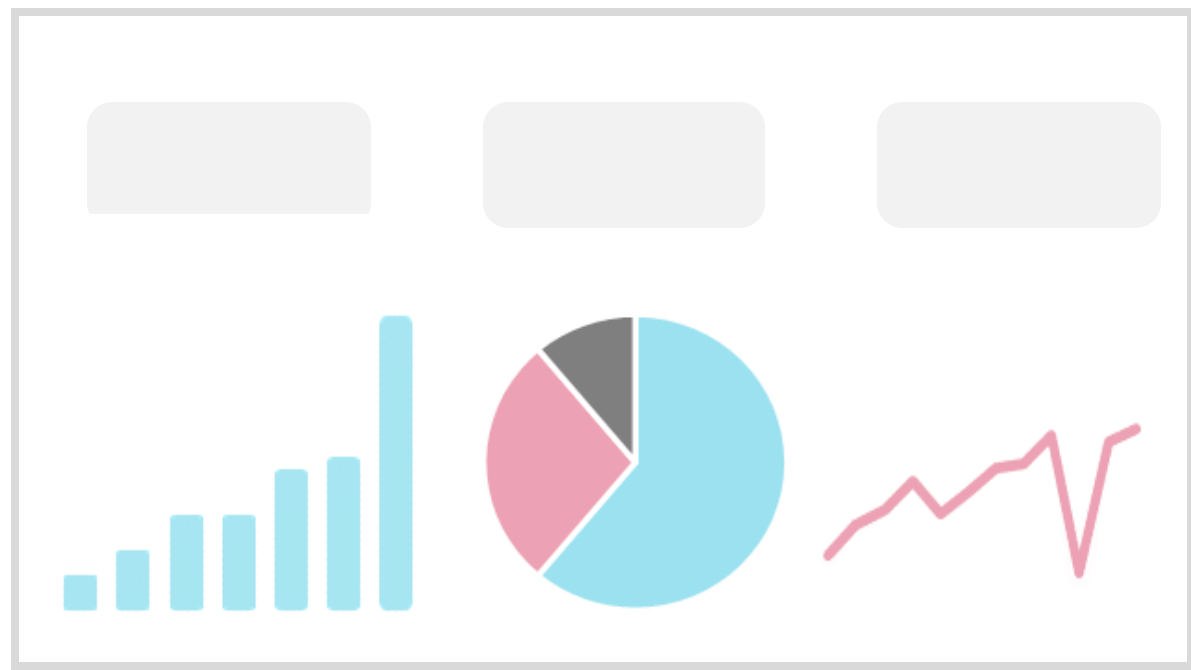
Use a limited color palette

Avoid using too many colors. A limited palette helps to maintain clarity and prevents the visualization from becoming overwhelming.

Too many colors



Limited Color Palette



Choose contrasting colors

Ensure there is enough contrast between colors to make different elements easily distinguishable, especially for text and background combinations.

✗ Text is blending into the background

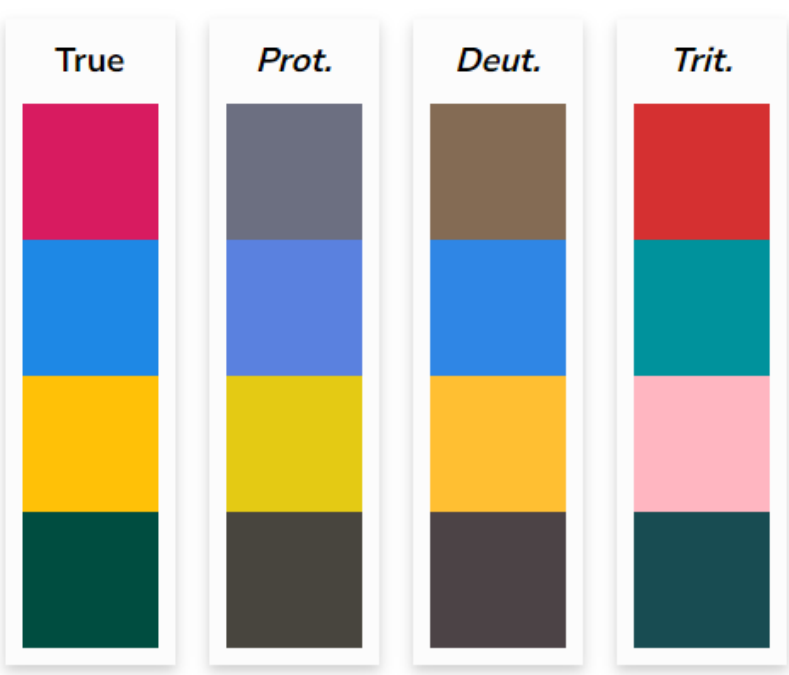
This is difficult to read, because the text blends into the background

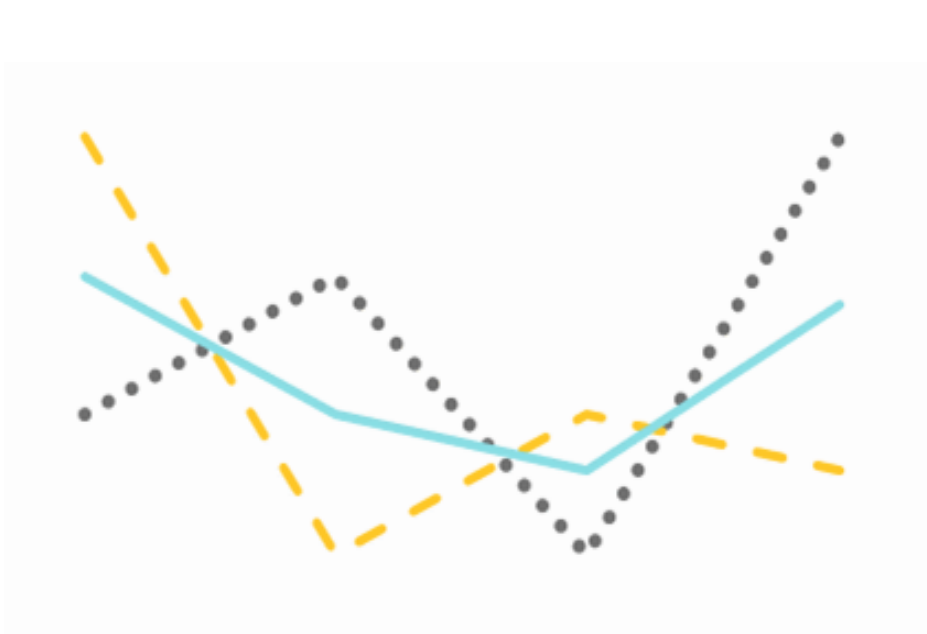
✓ Text is easily distinguishable from the background

This is easier to read, because the text and background are distinguishable

Consider color vision deficiencies

Use color palettes that are accessible for those with color vision deficiencies. Consider using icons & shapes as indicators, patterns & dashes in charts, to convey the message.





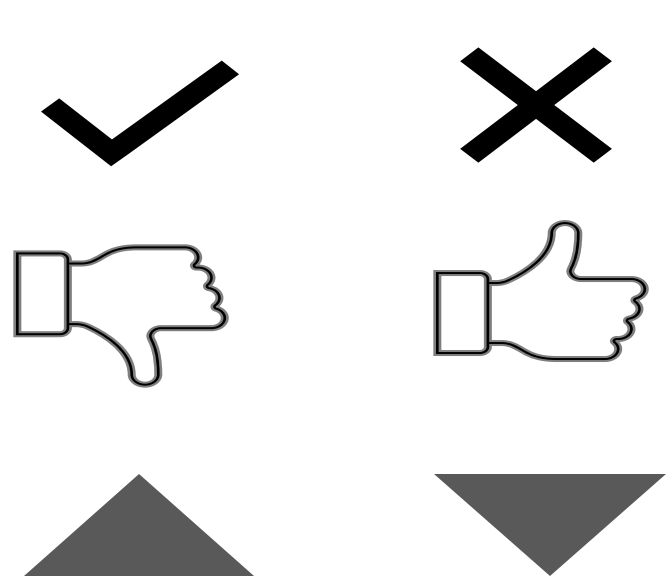
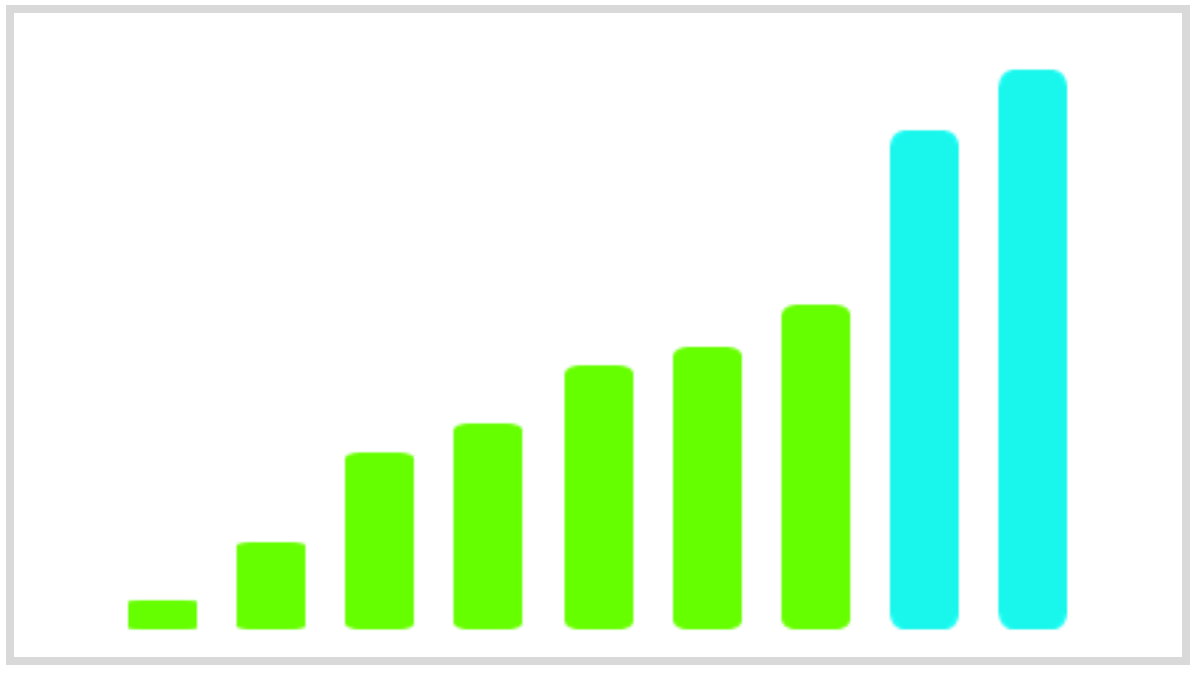


Image Source:
https://davidmathlogic.com/colorblind/#%23D81B60-%231E88E5-%23FFC107-%23004D40

Avoid excessive use of bright colors

Bright or neon colors can be harsh on the eyes; opt for more subdued tones for a professional look.

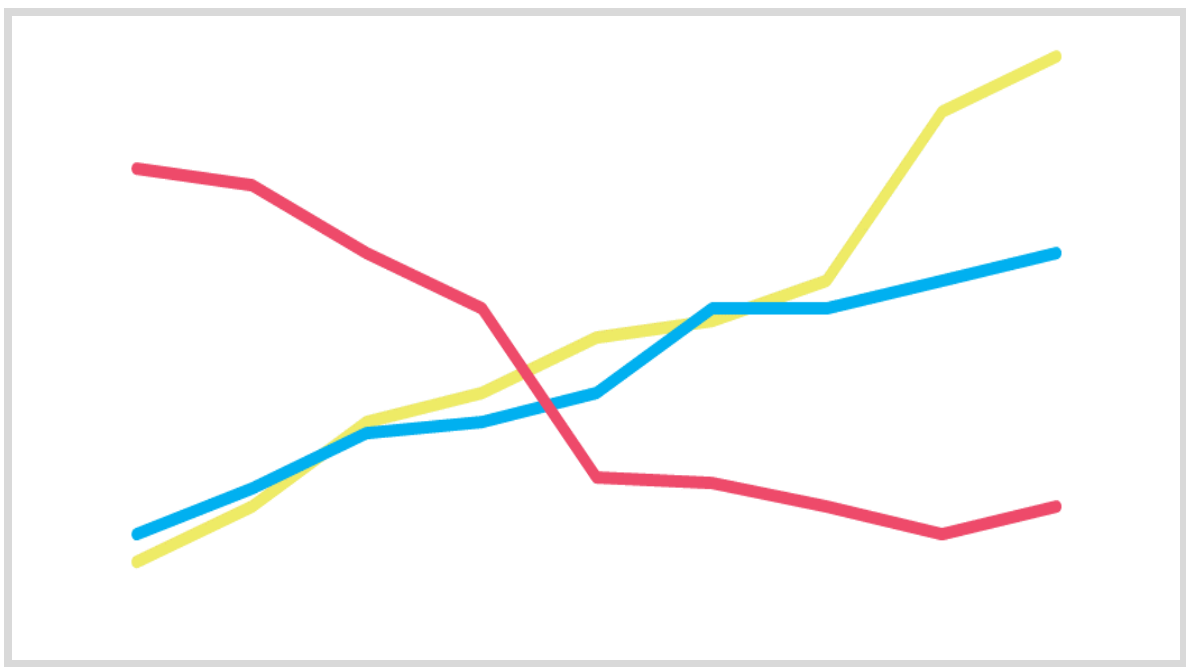
✗ **Avoid bright colors**

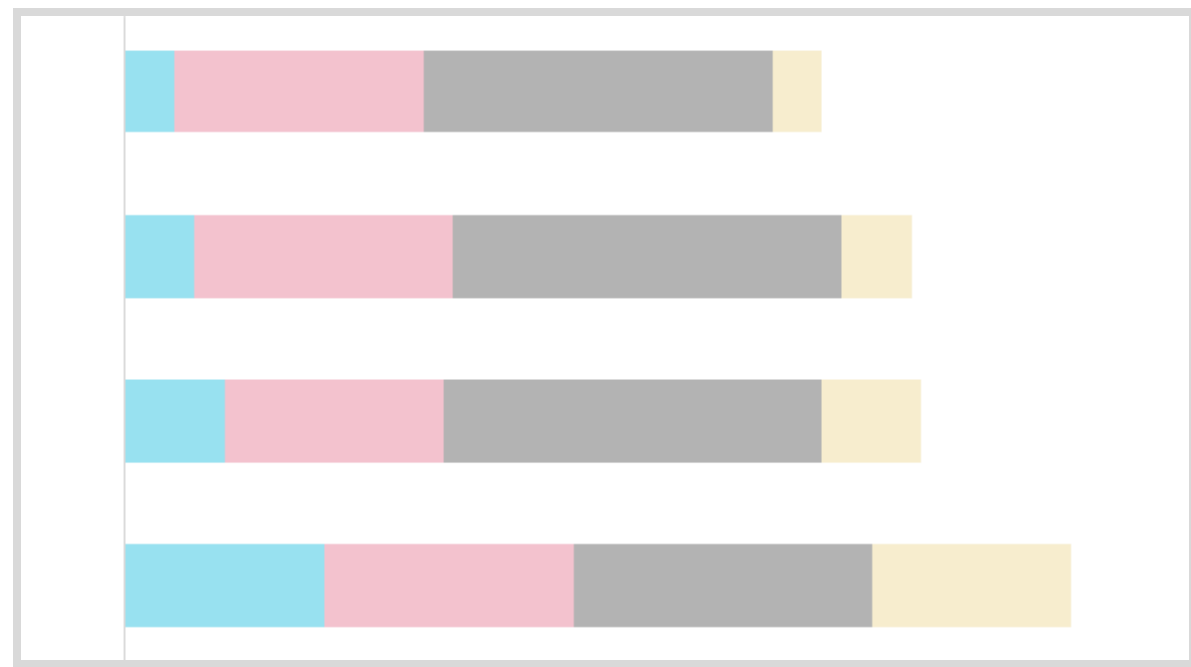


✓ **Use subdued/muted tones**

Use *Qualitative* palettes for categorical data

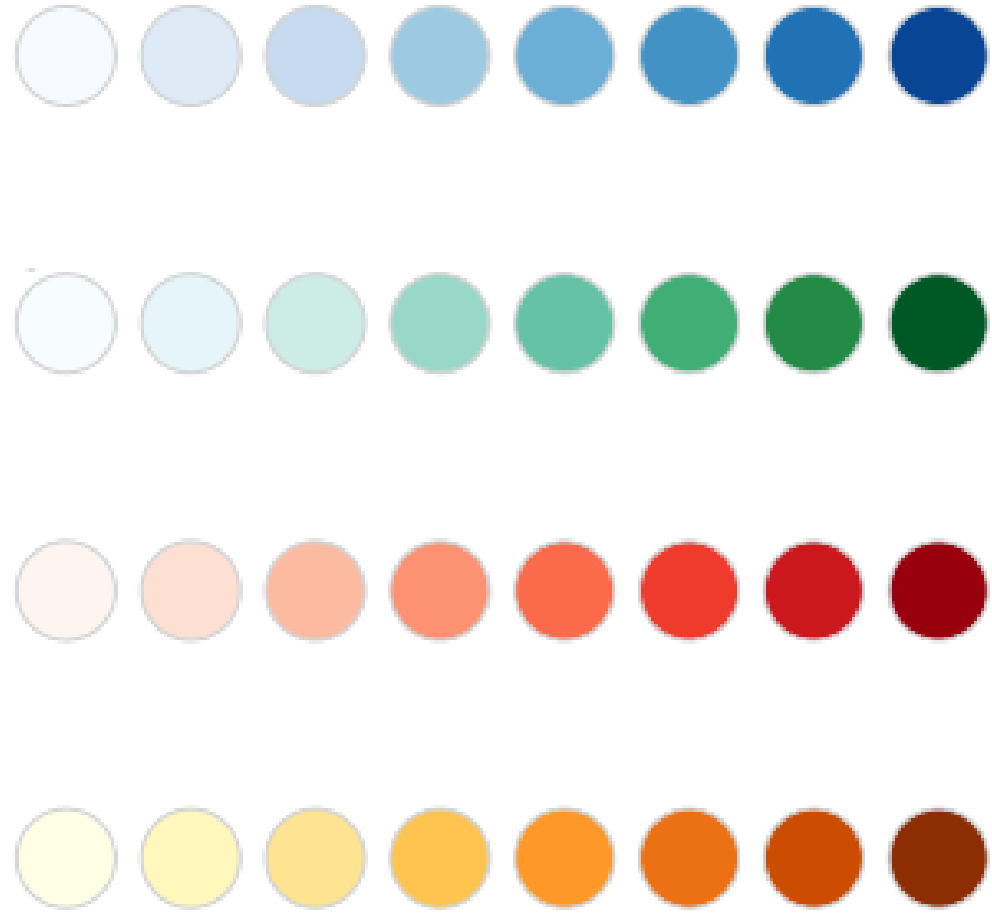
Use different colors to differentiate between distinct groups or categories. Ensure the colors are clearly distinct to make it easy for viewers to tell the categories apart without suggesting any numerical order or magnitude.





Use *Sequential* palettes for ordered data

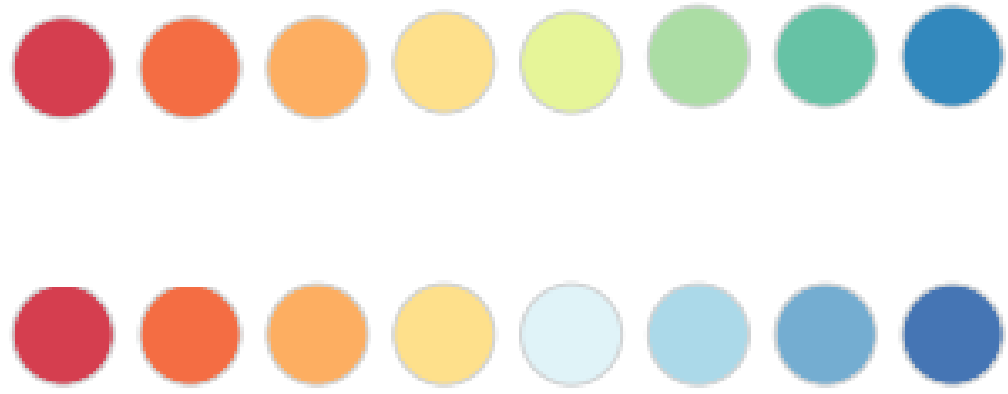
Use color gradients that follow natural order (light to dark) for sequential data to represent different quantities or magnitudes.

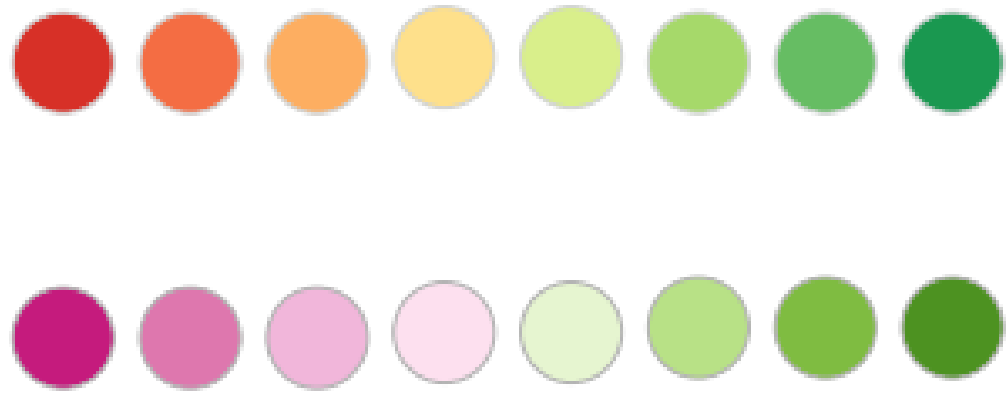


E.g. Light shades indicate low values, while dark shades indicate high values.

Use *Diverging* palettes for polar data

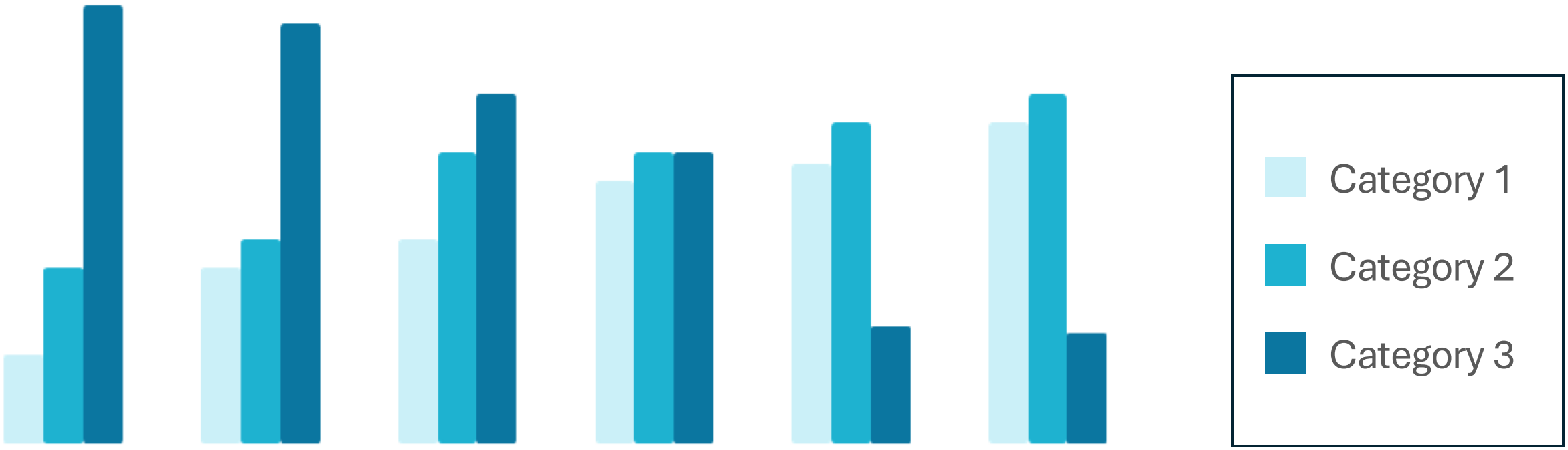
Use diverging color schemes to highlight deviations from a midpoint, with two contrasting colors showing differences on either side.





Include a color key or legend

Always provide a legend or color key to explain what each color represents, ensuring clarity for the viewer.



Be mindful of cultural differences

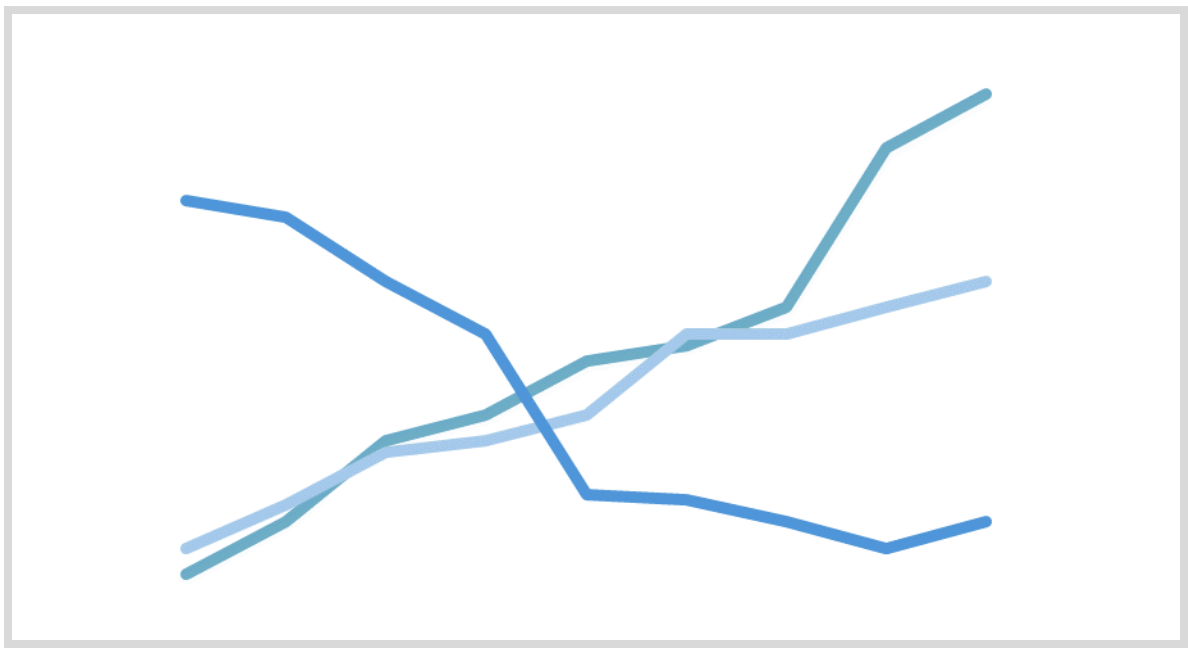
Be aware of the cultural connotations of colors, as these can vary widely and impact the interpretation of data.

Image Source: https://www.topwebdesignschools.org/colors/

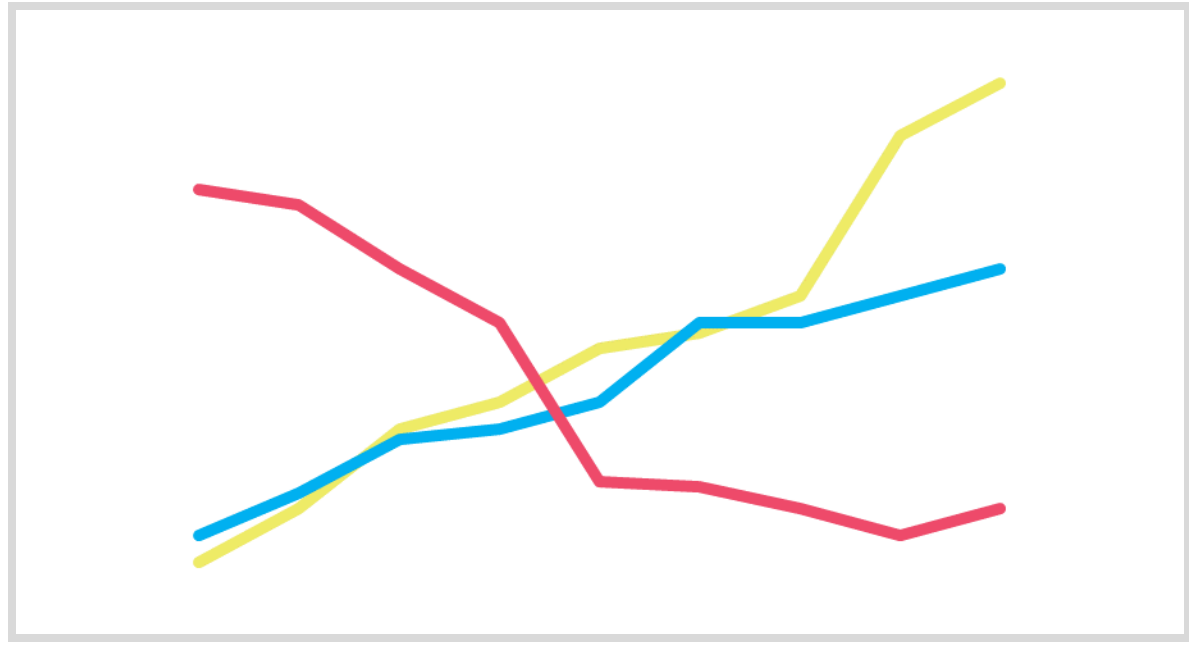
Avoid using colors that blend into each other

When several colors are used together, make sure they are visually distinct and don’t blend into each other.

✗ Colors blending into each other



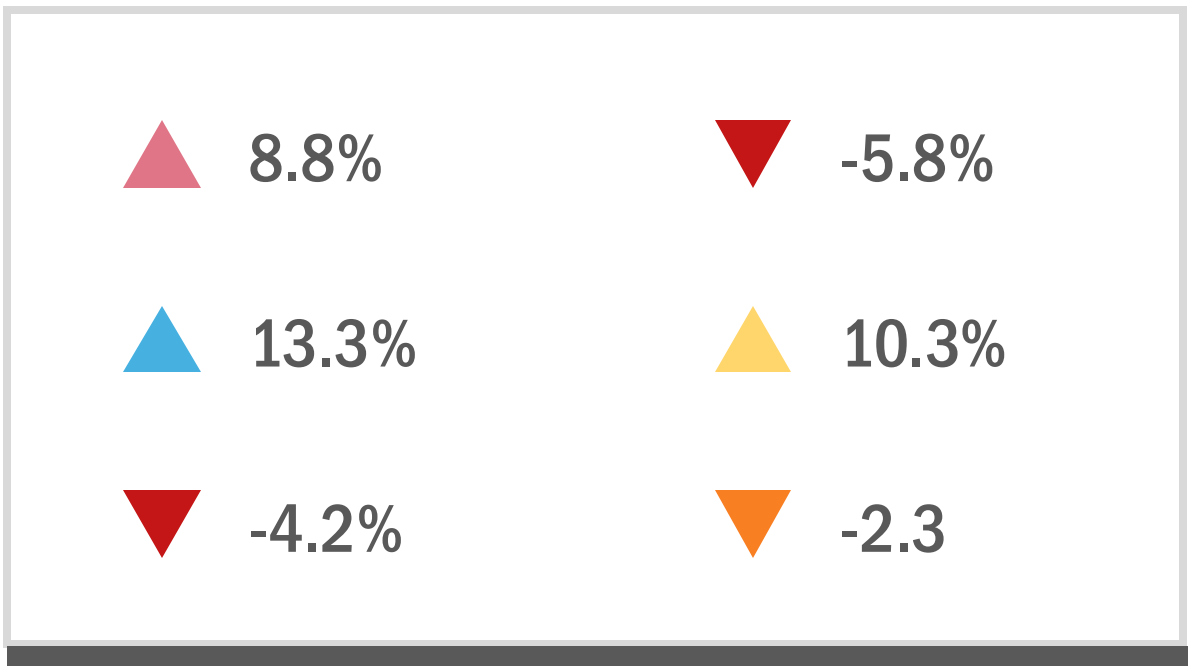
✓ Visually distinguishable colors



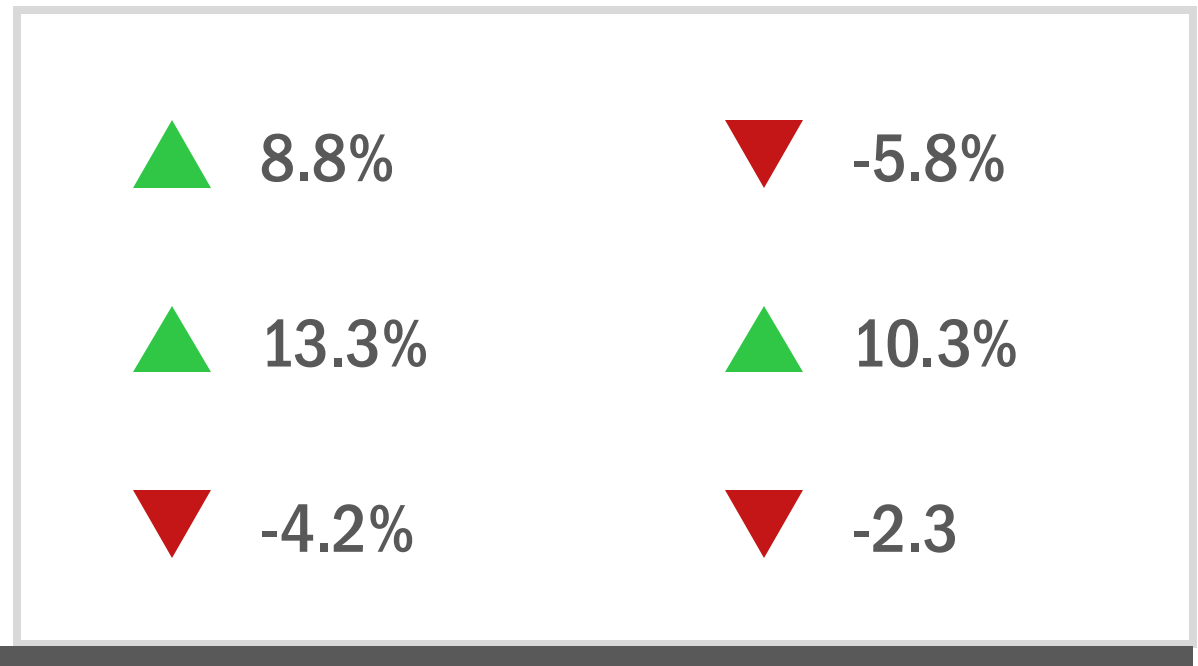
Maintain consistency across data categories

Use consistent colors throughout your visualizations for **similar data categories** to avoid confusion and enhance understanding.

✗ **Ambiguous use of colors can confuse the readers**



✓ **Fixed indicators to represent good vs. bad performance**

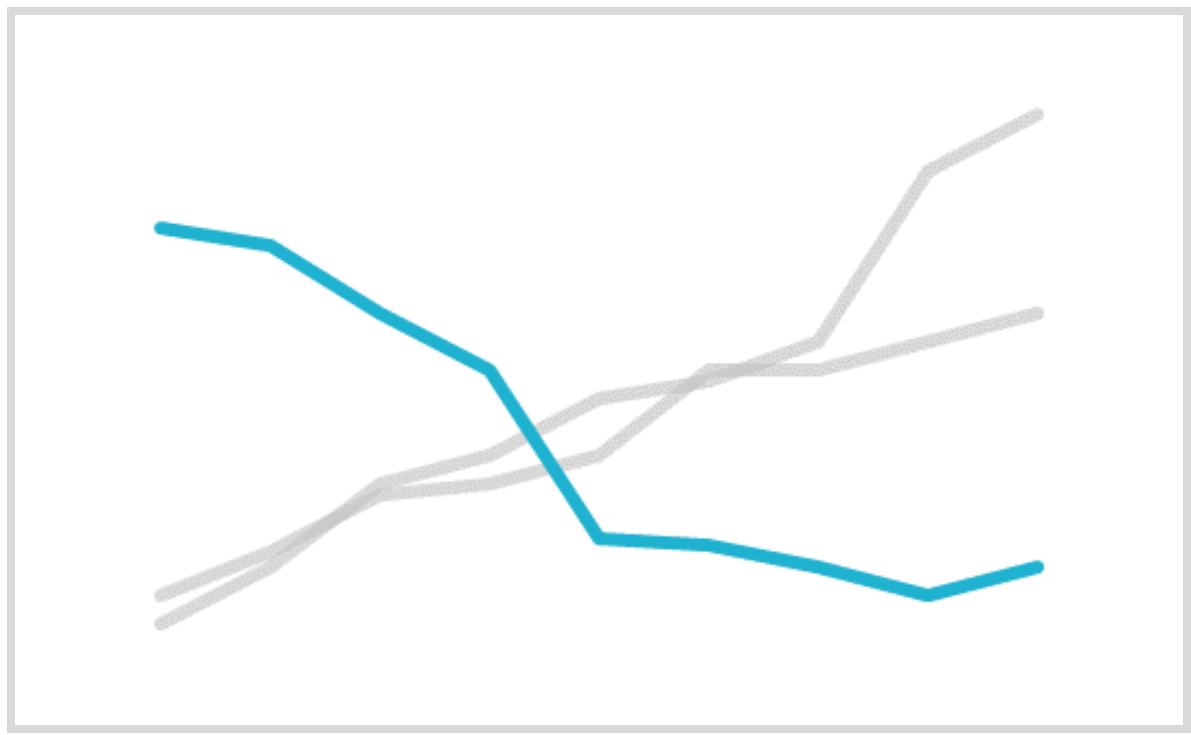


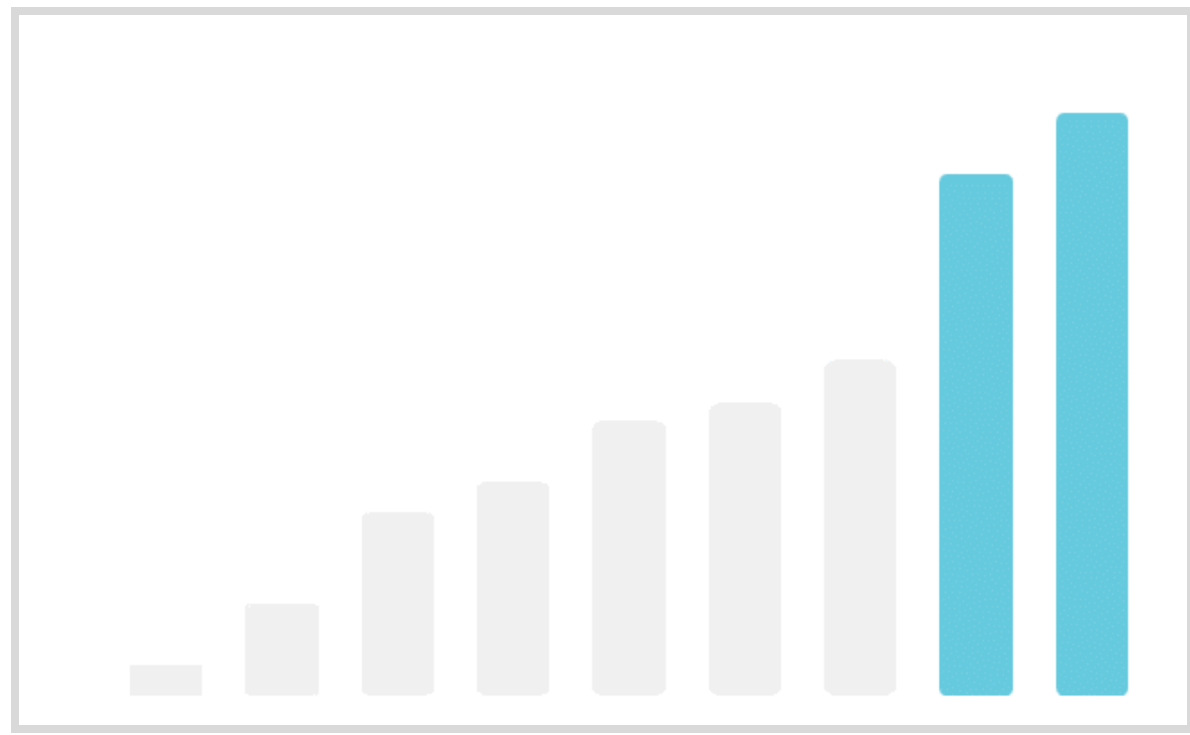
The above are based on common audience expectations. These colors will need to be adjusted for different situations, or for audiences with color vision deficiencies.

Highlight with contrasting colors

Use contrasting colors to draw attention to important data points.

Alternatively, you can use muted or grey colors to minimize the visual impact of other values and push less relevant datapoints to the background.

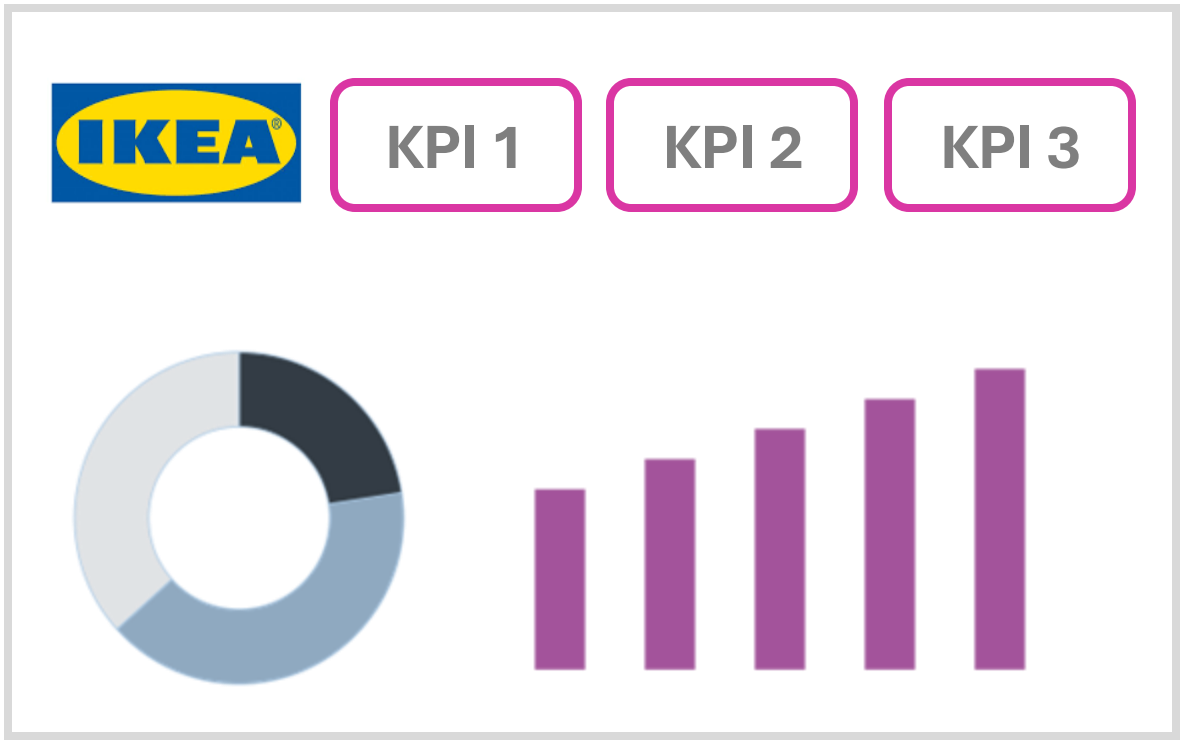




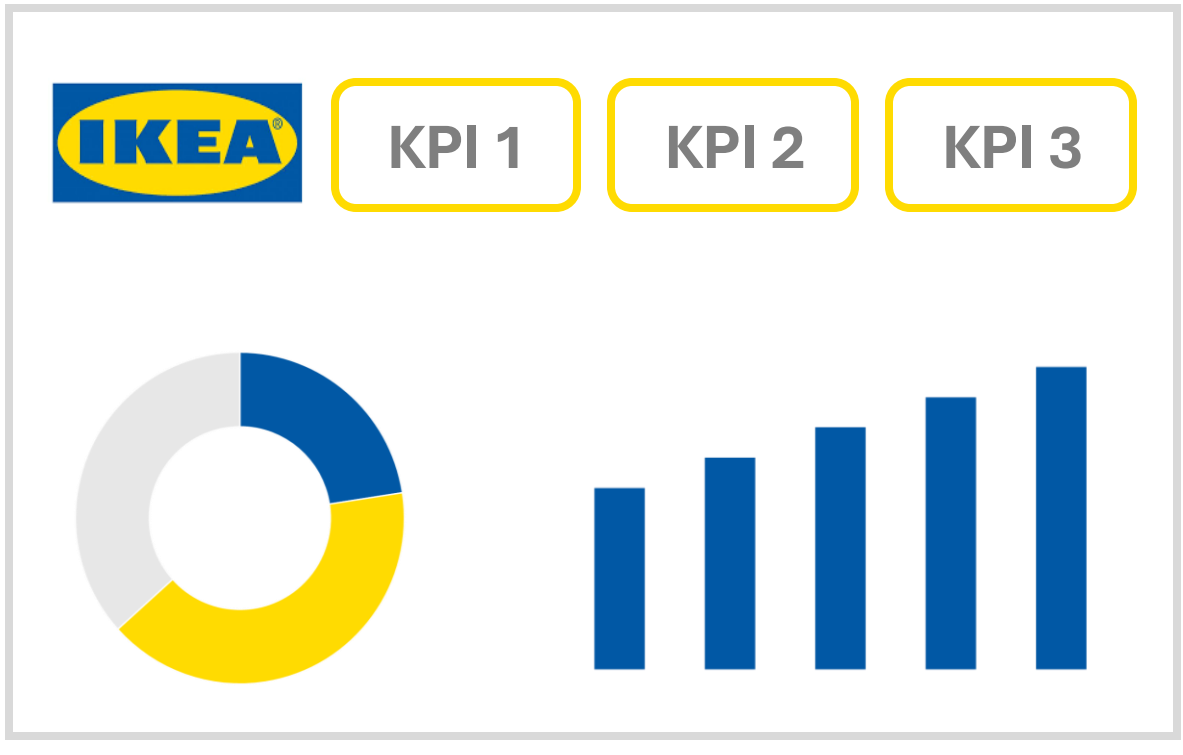
Align with brand guidelines

If applicable, align color choices with the organization's brand guidelines to maintain a cohesive and professional look.

Not aligned with brand colors



Colors aligned with brand identity



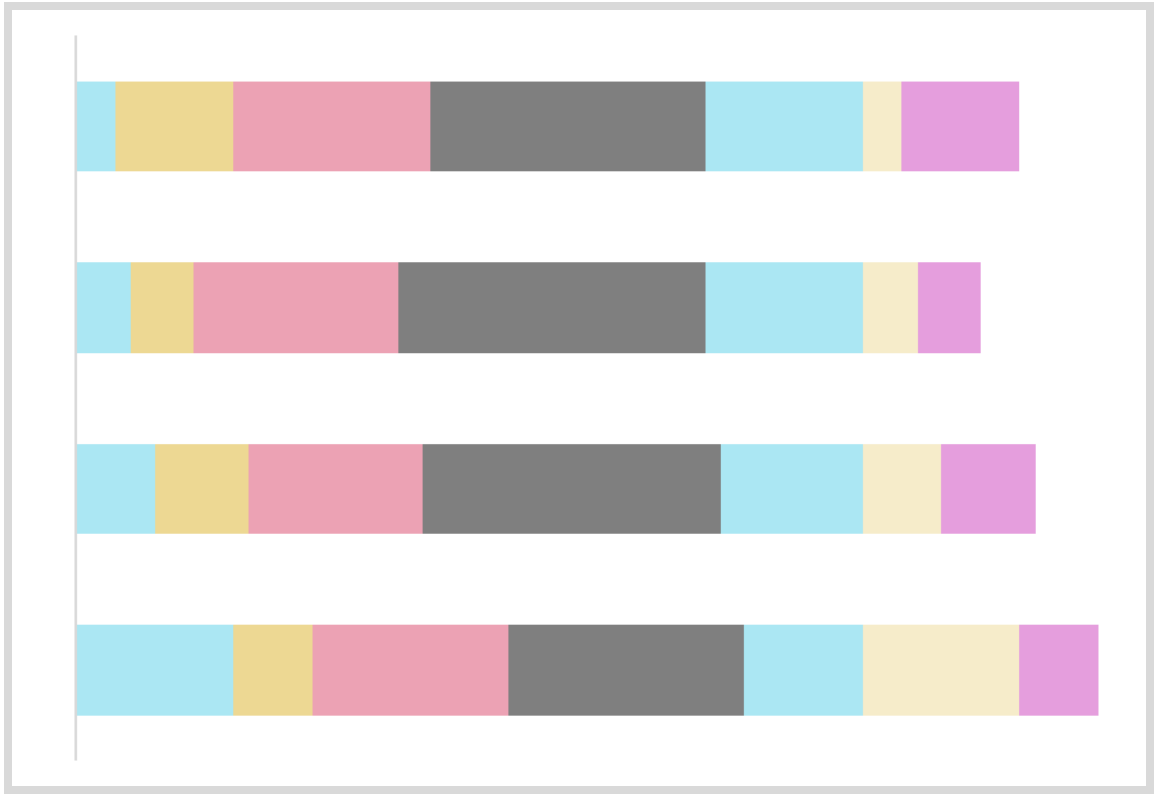
Employ neutral colors for backgrounds

Use neutral colors for backgrounds to ensure that your data stands out and is easy to read. However, if you're planning to use dark mode, then ensure that foreground elements stand out from the background

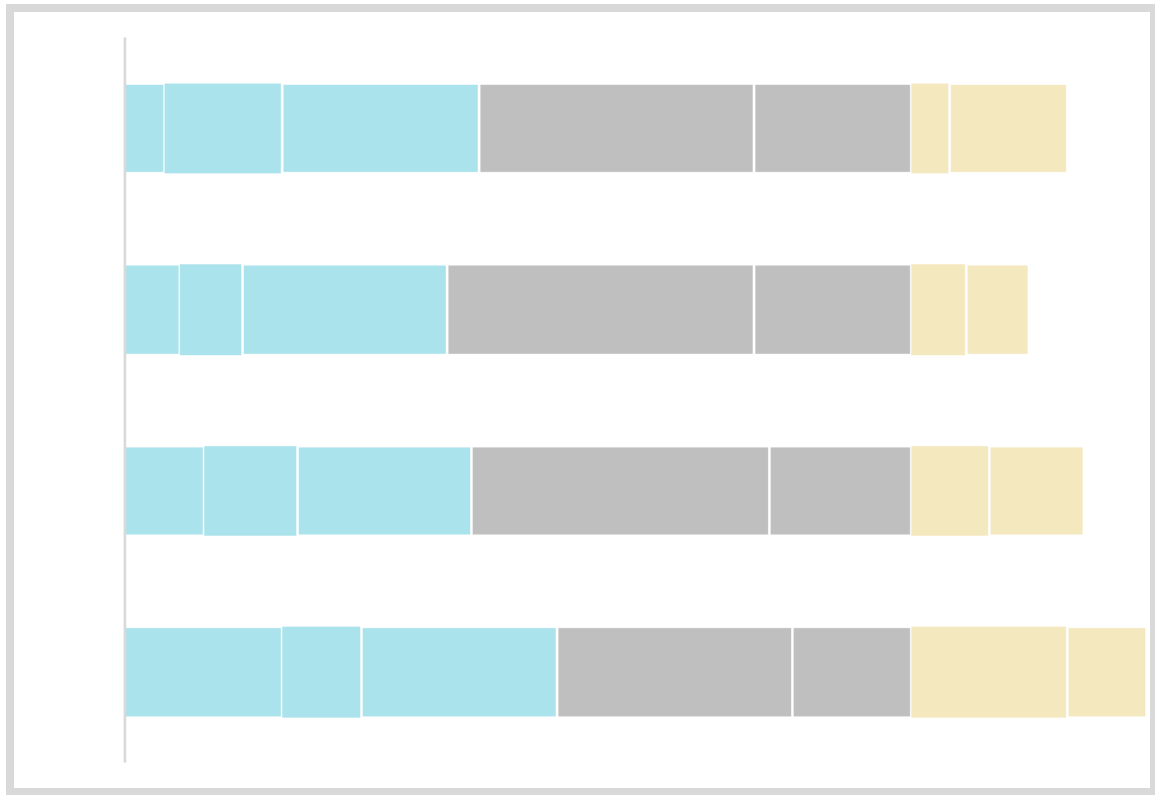
Use color to group related data

Use the same color to group related data points, making it easier to see connections and trends.

Individual data points colored

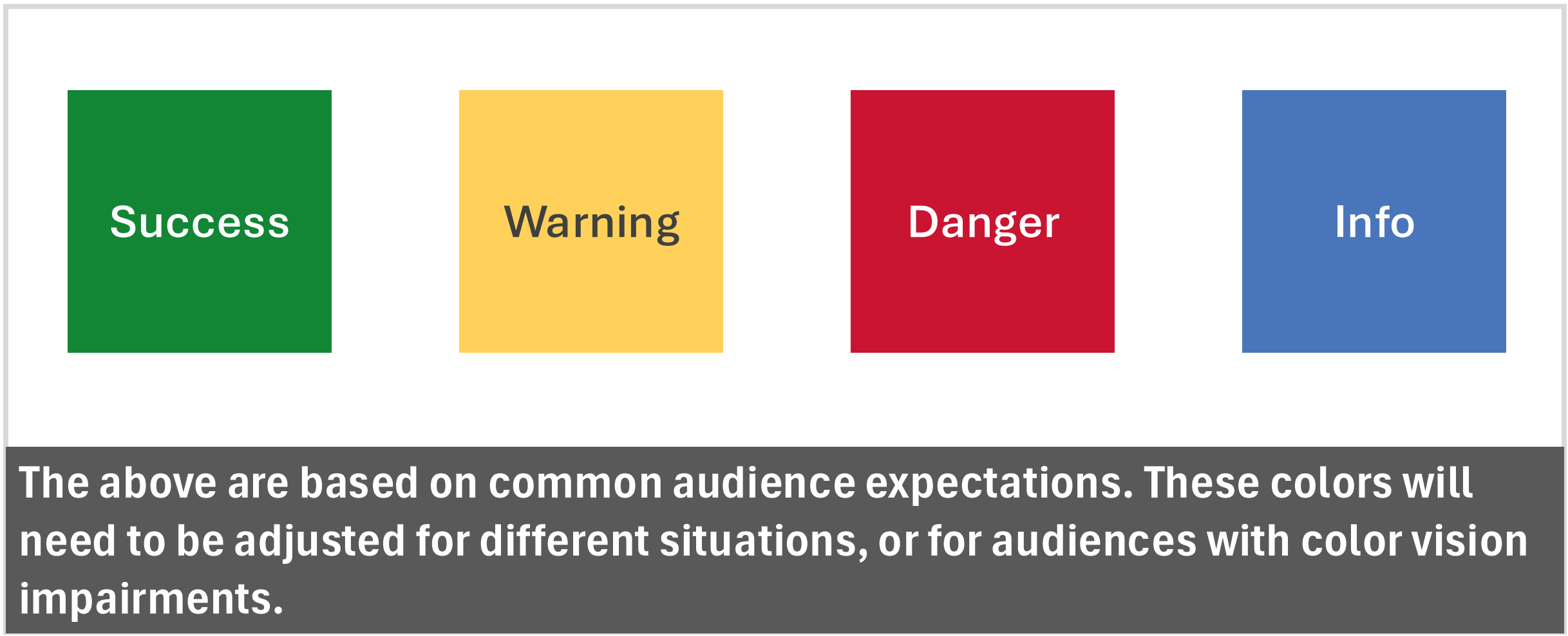


Group related datapoints



Follow established conventions

Stick to widely accepted color conventions to make your data communication intuitive.



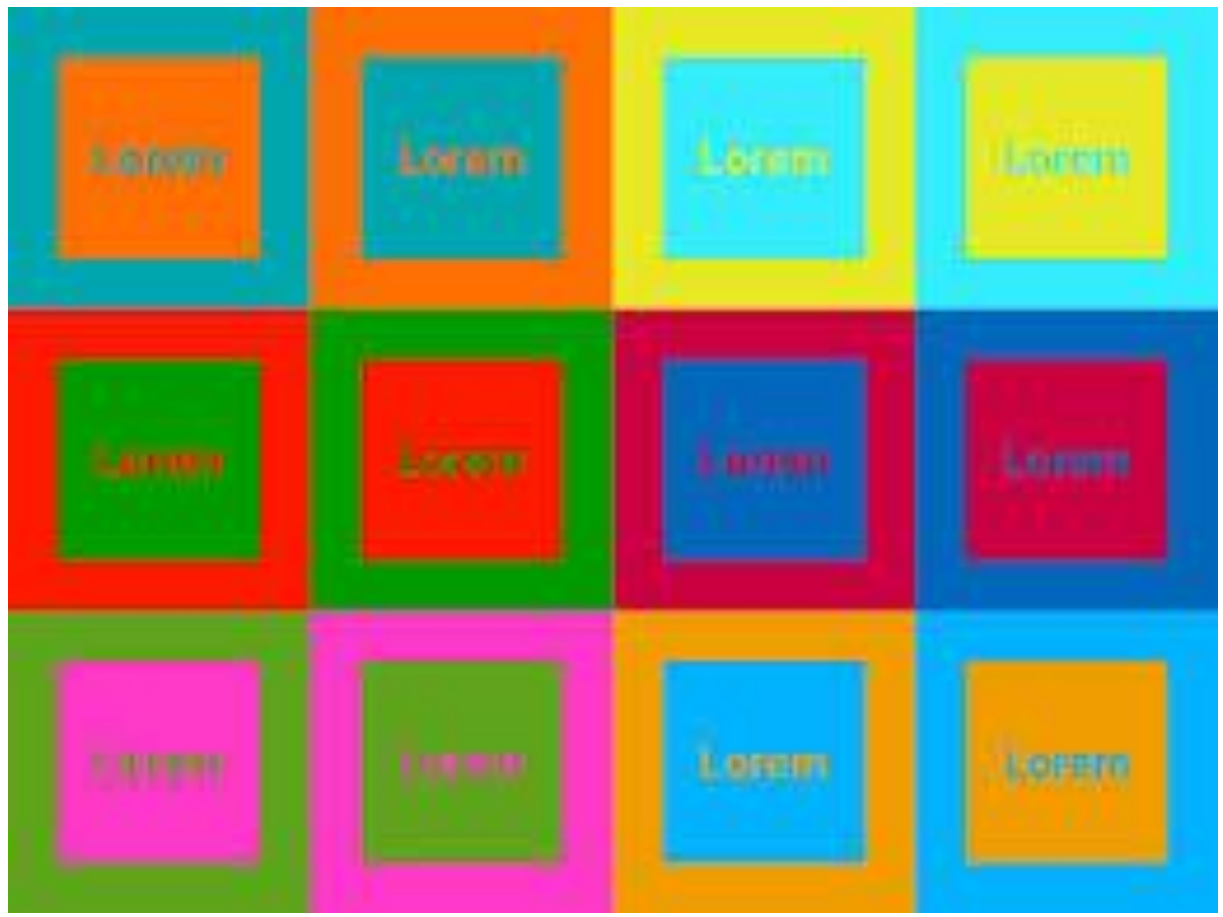
The above are based on common audience expectations. These colors will need to be adjusted for different situations, or for audiences with color vision impairments.

Image idea adopted from: https://designsystem.axa.com

Avoid color vibration

Color vibration occurs when adjacent colors with high contrast create a visual flickering effect.

Minimize color vibration to ensure clarity & readability, preventing viewer fatigue and misinterpretation of the data presented.



Stretch the color palette

If you're required to use ***only specific colors*** in your data visualizations, consider using variations of those colors in your graphics. Expand the color palette by incorporating darker and lighter shades of the same hue rather than using different hues.

Interested to learn more?

Come register for my June 2024 Masterclass

You can find course options & registration link in the comments section below.