

Data Visualizations Accessible Color Palettes

The following is information to use as a guide to incorporate accessible colors into your data visualizations (such as Tableau or Excel charts)

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Color Use Best Practice

- **Use colors meaningfully**
 - Using color to highlight important information
 - Limit the number of color hues to a maximum of seven (ideally, fewer).
 - If using color intensity, select a diverging palette only when a meaningful threshold exists.
 - If using color intensity, consider whether to use a continuous or stepped scale.
 - Color connotations.
- **Easy to look at and understand**
 - Use a neutral and consistent background, without gradients or variations.
 - When necessary, consider how best to implement a company or organizational color scheme.
 - Color Contrast:
 - Checkers:
 - [Web Accessibility Color Contrast Checker - Meet WCAG Conformance \(accessibleweb.com\)](https://www.accessibleweb.com/)
 - App
 - There exists a minimum contrast of 4.5:1 among elements.
- **Colorblind**
 - Different types
 - What would things look like (gray scale)
 - Consider color vision deficiency when selecting colors.
 - Use color-blind friendly palettes – test visualizations using [colorblind simulators](#)

Color-Blind Friendly Divergent Color Palettes (7-Color)

Diverging schemes put equal emphasis on mid-range critical values and extremes at both ends of the data range. The critical class or break in the middle of the legend is emphasized with light colors and low and high extremes are emphasized with dark colors that have contrasting hues.

#8c510a	#d8b365	#f6e8c3	#f5f5f5	#c7eae5	#5ab4ac	#01665e
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#b2182b	#ef8a62	#fddbc7	#f7f7f7	#d1e5f0	#67a9cf	#2166ac
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#762a83	#af8dc3	#e7d4e8	#f7f7f7	#d9f0d3	#7fbf7b	#1b7837
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Color-Blind Friendly Sequential Single-Hue Color Palettes (7-Color)

Sequential schemes are suited to ordered data that progress from low to high, like a bar chart.

#f7f7f7	#d9d9d9	#bdbdbd	#969696	#737373	#525252	#252525
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#eff3ff	#c6dbef	#9ecae1	#6baed6	#4292c6	#2171b5	#084594
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#feedde	#fdd0a2	#fdae6b	#fd8d3c	#f16913	#d94801	#8c2d04
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Accessible 30-Color Palette (3:1 ratio or higher)

If using color in a meaningful way, the following colors are suggested.

When you can use 3:1 ratio colors:

- **Line style charts:** Passes color contrast with white background
- **All other chart types (such as bar/pie) or areas on a map with no text overlay:** Passes color contrast without applying dark outline to each element.
- **Text overlay:** Passes color contrast if white text is **at least** 18 point/24px regular or **at least** 14 point/18.5px bold. (large text)
 - Sample 18 point/24px regular font
 - Sample 14 point/18.5px bold font

Dark red #8b0000	Crimson #dc143c	Medium Violet Red #c71585	Soft Pink #dd5fb3	Deep Pink #ff1493
Maroon #b03060	Sienna #a0522d	Dark Goldenrod #b8860b	Chocolate #d2691e	Orange Soda #fa5b3d
Mahogany #c04000	Olive #808000	Seagreen #2e8b57	Green #008000	Teal #008080
Dark Olive Green #556b2f	Medium Blue #0000cd	Royal Blue #4169e1	Bice Blue #465DAA	Dark Blue #00008b
Dark Slate Blue #483d8b	Steel Blue #4682b4	Rebecca Purple #663399	Dark Magenta #8b008b	Medium Purple #9370db
Purple #a020f0	Dark Orchid #9932cc	Dim Gray #696969	Dark Slate Gray #2f4f4f	Taupe Gray #8B8D8B

Accessible 20-Color Palette (4.5:1 ratio or higher)

If using color in a meaningful way, the following colors are suggested.

When to use 4.5:1 ratio colors

- **Text overlay:** Use colors from this palette if text is *less than* 18 points/24px regular or *less than* 14 points/18.5px bold on a white background.

Dark red #8b0000	Crimson #dc143c	Medium Violet Red #c71585		
Maroon #b03060	Sienna #a0522d			
Mahogany #c04000			Green #008000	Teal #008080
Dark Olive Green #556b2f	Medium Blue #0000cd	Royal Blue #4169e1	Bice Blue #465DAA	Dark Blue #00008b
Dark Slate Blue #483d8b		Rebecca Purple #663399	Dark Magenta #8b008b	
Purple #a020f0	Dark Orchid #9932cc	Dim Gray #696969	Dark Slate Gray #2f4f4f	

Using colors with less than 3:1 color contrast ratio

- **Line style charts:** Compliance fails if line color is less than 3:1 ratio
- **All other chart types (such as bar/pie) and areas on a map with no text overlay:**
 - Passes color contrast if you outline each chart element or map area with a dark outline
 - Fails compliance if you do not outline each element with a dark outline

Resources:

- [Color Contrast Analyser](#) - Free desktop tool to test color contrast
- [Color Brewer](#)