

Map Design Guide

Best Practices Ensuring Accessibility/Usability

State of Minnesota
Interagency Map Accessibility Workgroup

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Introduction

“The good cartographer is both a scientist and an artist” – Erwin Josephus Raisz

As representatives of the State of Minnesota, making “good” maps matters. We must produce professional, high-quality documents that are usable and understandable by all people, to the greatest extent possible. This means making design choices that take into account users with different physical or mental situations, such as color vision deficiency and visual impairment or different cultural understanding.

Good map design varies widely by purpose and context and current laws and standards have few guidelines for map design (The Americans with Disabilities Act [ADA] and Section 508, and Web Content Accessibility Guidelines [WCAG]). While no one document can dictate how a design should look, this guide will help cartographers a start in the right direction. By incorporating guidance from accessibility laws and standards, general cartographic standards, and the State of Minnesota’s branding, this document is intended to give “Best Practices” for state employees to produce the most useful and understandable maps possible.

Why a Map?

These are some of the questions you should ask before starting your project:

- What is the story?
- Should this be a map? If yes, then how much information is absolutely necessary?
- Who is the audience?

Cartographic Standards

We are not bound to branding regulations for map elements. The State branding guidelines are meant for the publications that the maps may appear in, not for the maps and cartography themselves.

Content

Determine the absolute minimum information required to tell the story. Too much irrelevant data buries the important information. Less is more in this context. Direct your content around the question, what is the purpose of the map?

Your map should convey a “visual hierarchy”. The most important feature of your map should be observed first, next most important feature second, and so on. Supporting information should be “noticed, not announced” and fall to the background, visually.

Do not confuse your personal preferences for conventions! This can be difficult to combat but try to be cognizant of when you might be straying down that path.

Standard Map Elements

Required

- Title

Conditional

- North Arrow
- Scalebar
- Legend

Optional

- Neatline
- Logo(s)
- Aerial Imagery
- Inset Map/Key Map
- Disclaimers
- Data Sources
- Production Date
- Metadata (author, subject, tags, etc.)

Map Size and Scale

This refers to printed materials. The scale of the map should show your data in the most readable way. The font size and line width standards should fit the content in the map. You may need to increase or decrease paper size or create 2 maps instead of 1 to cover a large area.

Think about your end user. Will they print the map at home, where a larger format may not be available, or is it primarily web-based? Can you use a standard paper size (letter, legal, tabloid, ANSI C, ANSI D, etc.)? If the end user chooses to print the product differently than designed, this is out of your control.

Fonts and Annotation

Size

The very *minimum* font size for labels in print is 6 pt. Ideally, the label font size would be at least 8 pt. Font size should reflect the importance of features: the more important the feature, the bigger the font. Written/reading text in the document should be a minimum font size of 12 pt.

Font Typefaces

Use as few font typefaces as possible, two or three at the most. Too many fonts create more “work” for the brain of the reader.

Use simple, clear fonts. The State has approved the use of **Calibri** and **Brandon Grotesque**, which are good examples. In general, sans serif (non-flagged) fonts should be used, with the exception of the cartographic standard of labeling water. Historically, Times New Roman italic has been the “gold standard” for water labeling.

Cultural Features (Sans serif) Physical Features (Serif)

Styles

- Do not use underlined text, ever! This is difficult for low-vision users to read and also indicates a possible hyperlink.
- *Italics* should be used as little as possible, for water labels and short labels only.
- **Bolding** of fonts is a good way to call out features, but avoid it for continuous, readable text.
- Although ALL CAPS labels stand out, they are harder to read and should be used sparingly.
- E x p a n d e d (kerning) typefaces should be reserved for identifying large areas only but be careful the kerning doesn't get too much between letters, so your reader has to try to connect letters amongst other map elements.

Labels

Consider assigning labels to specific features before creating the map. Labels should be as consistent in appearance, orientation and placement as possible for the same features. For example, all road labels should appear on the same side of vertical roads (instead of swapping back and forth), and most city labels should be in the same relative place (like to the upper right of point). The user shouldn't have to "search" to match a feature with a label.

Labels should rarely go beyond the 90° angle. Upside down text is difficult to read!

Labels should never cover other labels. For readability, make sure there is enough "white space" between any labeled feature and another label.

Small halos can be used around labels sparingly. If there is not enough contrast between text and background, consider changing one of the colors instead. Halos are helpful when labels are positioned in front of linear features. In these cases, try to match the halo color with the background color. The figure shows examples of Brandon Grotesque and Calibri with different halo colors and widths.



Fonts and Annotations Resources

- [Guidelines for minimum size for text and symbols on maps](#)
- [American Printing House \(APH\) Guidelines for Print Document Design](#)
- [Typography & Dyslexia Literature Review](#)
- [Good Fonts for Dyslexics](#)

Color

Color is a powerful, but complex tool for the cartographer, and may be used in text, lines, fills, patterns, or background images. Here are some general rules of thumb in choosing colors.

Review the purpose and content of the map and decide what is most important. The hierarchy of your data should reflect that. The most important features should have the greatest contrast with the rest of the map. For example, on a park map, the points of interest could be red or black on a white background. Other less important information can be in color but not to distract from the data you are presenting. The data you want the reader to see should “pop” off the page.

Consider that some colors have implicit meanings. For example, blue often means water, red often is used for danger, or warnings. Use these implicit meanings if appropriate, but also remember that some people may not have the same cultural understanding of color. Colors can also influence your audience’s emotions.

Use a color filter/checker to test your color palette for color vision deficiency quality.

Transparent fills or strokes in your “background items” can be useful to pull back reference information.

When using aerial photography, or other imagery behind your maps, consider them very carefully. If using an image for your background, make sure it is pulled back with transparency and run your colored annotation and symbols through a colorblind checker.

Determine the paper type. Printing on coated paper vs. uncoated paper will greatly affect the color.

For accessible color templates, see the [Sample Accessible Color Schemes](#) at the end of this document.

Color Palette/Scheme Resources

- [Contrast Checker \(WebAIM\)](#)
- [Color Oracle App](#)
- [Color Contrast Analyser](#)
- [Color Brewer](#)
- [Picking a Colour Scale for Scientific Graphics](#)
- [Color Palettes for Color Blindness \(Krzywindki\)](#)
- [CARTOcolors](#)
- [Design Sensitivity: Understanding the Cultural Palette](#)

Map Objects

Avoid overlapping points or annotations, when possible. Try to place them offset from a line. There should be visible whitespace between symbols; touching symbols blend together for users with low-vision.

There should be a 2x size difference in levels of information. For example, if one circle in your data has a radius of 0.1”, the next circle size should be 0.2”, then 0.4” etc.



Symbology

Symbology is an image that communicates map data to the reader. It can boil down complex information into easy-to-read terms. Intuitive and familiar symbols are a requirement for an effective map. If it isn't possible to portray the data with an intuitive symbol, then clearly explain what the symbol represents by including it in the legend or labelling in the map.

Imitate the “real world” whenever possible. Choose colors and symbols that people associate with the item that you are depicting in order to make your map as intuitive as possible (e.g., airplane symbol = airport)

Always be consistent with symbols. Does your workplace use a standard symbol set? If so, use it!

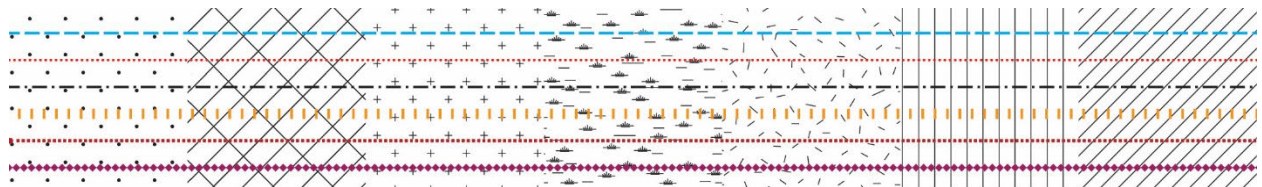
Symbology Resources

- [Making a Meaningful Map](#)

Patterns

Limit use of patterns to one or two non-hierarchical pieces of information in your document. They are visually distracting, so try instead a light colored or transparent fill.

Dashed lines should never be on top of fully opaque patterns. If a pattern must be used, make sure the line style doesn't interfere visually with the pattern. Solid lines on transparent patterns are recommended. The below shows an example of how difficult it is to see the various lines on the patterns.



Line Styles

Choose no more than 6 line-style types. More than that is too difficult for the reader to discern. Combinations of color and line style should be run through a color blindness checker to make sure there is enough contrast between the lines. If you have more than that, consider combining data, or creating more than one map for your purposes.

Line weights for varying items should be **at least** 1 pt. different when using for the same features using the same color (e.g., Major Roads, 3pt. – County Roads, 2pt. – Town/City Roads, 1pt.). If more lines are needed, a .5 pt. difference is acceptable with a 20% lighter version of the color.

Map Legend

In a map with more than a few items being shown, a legend or key is just as important as the title, scale bar and north arrow. It should be present on all maps. Without the legend, readers are missing vital context that may cause the map to be unreadable. As the map becomes more complex, the need for a legend increases. If symbols are missing from the legend, then they should be clearly labeled in the map.

Cartographers should put thought into how the legend is displayed. GIS software such as ArcPro and QGIS have helpful tools to generate a legend but can usually be improved to make the legend more concise and understandable, which in turn makes the map easier to comprehend and navigate. See the following for helpful tips in creating an effective legend for your map.

Title

Generally, don't use the title "legend". The contents of the legend speak for themselves. The title of "Legend" does little to inform the map reader.



Instead, use that space to add the map title/subtitle. Notice in the figure below how the legend provides more context when given a unique title.



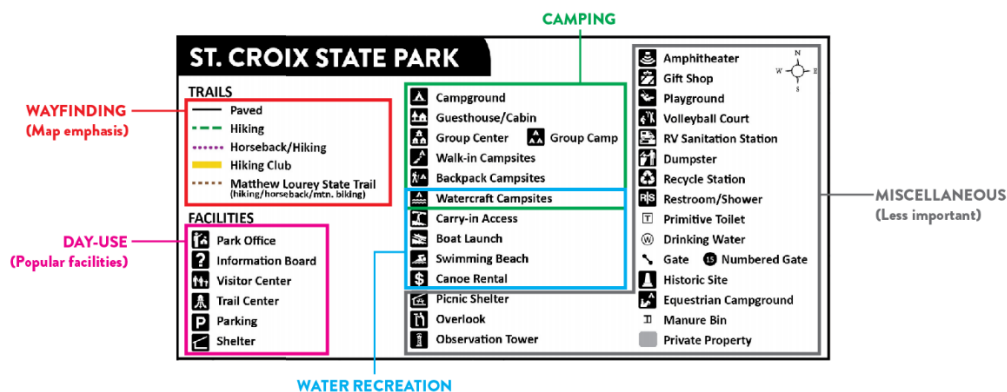
Legend Content

Symbology should be the same size as the element they represent on the map. If the symbol in the map is 0.2" x 0.2", then the symbol in the legend should be the same size. The same is true for line thickness. The reader may confuse the symbol for a different meaning if there is a difference in size.

Layout and Placement

Symbols should be arranged based on feature importance, symbol type (point, line, polygon) and likeness to other map features. For example, since DNR state park maps are a navigation tool, trails are listed first. Then facilities are grouped together based on importance and similarities: campground/day-

use features, water recreation features, and miscellaneous features. Following this principle will make the legend integrate better with the map, making it easier for the reader to find the symbol definition.



Other Helpful Tips

Consider grouping the north arrow and scale bar with the legend if there's enough room. It's helpful for all supplemental map items to be stored in a common space. It is not an absolute, but make sure these are placed in an area that is easily seen by the reader and not set amongst visually cluttered areas.

All map symbols should account for in the legend. It's easy to remove or add an object in the map and forget to adjust the legend accordingly. ArcPro has a helpful tool for accounting for this in the legend properties. Go into the properties and check "Only show classes that are visible in the current map extent." This will dynamically adjust the legend as you continue refining the map.

Some common map features such as roads and water bodies can be excluded from the legend if they are properly labeled, unless they are the focus of the map. Just because you can add everything to the legend, doesn't mean you need to or should.

Legend Resources








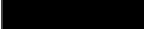
- [Tips for Legend Design](#)
- [Programmatic Accessibility Guidelines for National Park Service Interpretive Media](#)

Sample Accessible Color Schemes

Qualitative Data




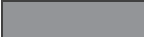




Jewel Tones

This color palette is vivid and bright, containing rich color tones that resemble gemstones. These colors have a high level of saturation and are very distinctive and dynamic.

Color	CMYK		
	0, 100, 70, 20	196, 16, 57	#C41039
	0, 18, 100, 0	255, 207, 1	#FFCF01
	100, 0, 0, 35	0, 125, 172	#007DAC
	64, 100, 0, 0	122, 42, 144	#7A2A90
	65, 10, 100, 0	104, 173, 69	#68AD45
	0, 0, 0, 60	128, 130, 133	#808285
	0, 80, 100, 7	224, 84, 32	#E05420
	100, 100, 100, 100	0, 0, 0	#000000


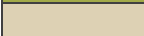

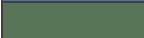


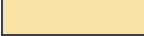

Muted

Muted colors are lower in saturation and have a soft quality. This color palette is opposite the more vibrant “Jewel Tones” and “Brights” palette and is useful when you want to create a “quiet” feeling.

Color	CMYK		
	40, 50, 15, 0	160, 133, 169	#A085A9
	3, 27, 88, 0	245, 188, 59	#F5BC3B
	22, 0, 0, 5	183, 220, 239	#B7DCEF
	0, 0, 0, 50	147, 149, 152	#939598
	35, 30, 60, 0	174, 165, 122	#AEA57A
	0, 32, 38, 50	146, 109, 90	#926D5A
	0, 9, 15, 3	245, 224, 205	#F5E0CD
	2, 9, 50, 0	251, 225, 147	#FBE193








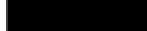
Earth Tones

This color palette is rich in tans and browns and reflects the natural colors found in soil, trees and rocks. These colors create a warm feeling and are closely aligned with nature.

Color			
	37, 18, 87, 6	162, 170, 73	#A2AA49
	3, 7, 24, 11	221, 209, 180	#DDD1B4
	30, 0, 0, 60	86, 116, 131	#567483
	41, 6, 53, 50	89, 117, 87	#597557
	0, 33, 100, 35	186, 134, 13	#BA860D
	3, 75, 100, 35	164, 69, 18	#A44512
	2, 9, 40, 0	250, 227, 166	#FAE3A6
	40, 70, 100, 60	83, 47, 9	#532F09









Brights

This palette is vibrant, colorful and fresh – a great choice when you need a color scheme that conveys energy.

Color			
	0, 0, 100, 0	255, 242, 0	#FFF200
	0, 40, 100, 0	250, 166, 26	#FAA61A
	0, 100, 100, 0	237, 29, 36	#ED1D24
	50, 0, 0, 0	109, 207, 246	#6DCFF6
	100, 100, 0, 20	38, 36, 123	#26247B
	30, 100, 0, 0	180, 30, 142	#B41E8E
	85, 10, 90, 15	0, 142, 77	#008E4D
	100, 100, 100, 100	0, 0, 0	#000000


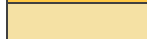

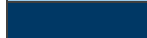




Optimized for Color Blindness

This color palette was designed for those with and without color blindness to reasonably identify colors, demonstrated in Nature's [Points of View: Color blindness](#) written by Bang Wong.

Color			
	100, 100, 100, 100	0, 0, 0	#000000
	0, 50, 100, 0	230, 159, 0	#E69F00
	80, 0, 0, 0	86, 180, 233	#56B4E9
	97, 0, 75, 0	0, 158, 115	#009E73
	10, 5, 90, 0	240, 228, 66	#ECDE38
	100, 50, 0, 0	0, 114, 178	#0072BC
	0, 80, 100, 0	213, 94, 0	#F15A22
	10, 70, 0, 0	204, 121, 167	#DA6FAB

Minnesota Brand Colors

Cartographers may want to create maps that use the State of Minnesota's brand colors. This palette can help to build a strong color relationship between maps and state websites and design pieces in which they might appear. This palette is not required for cartographic use.

Color			
	0, 19, 79, 0	255, 200, 69	#FFC845
	0, 4, 27, 0	245, 225, 164	#F5E1A4
	38, 4, 0, 0	155, 203, 235	#9BCBEB
	100, 60, 10, 53	0, 56, 101	#003865
	65, 0, 100, 0	120, 190, 33	#78BE21
	24, 4, 8, 13	164, 188, 194	#A4BCC2
	100, 0, 20, 0	0, 142, 170	#008EAA
	0, 78, 83, 55	141, 63, 43	#8D3F2B

Sequential Data

Colorblind Safe & Print Friendly

ColorBrewer¹ Green-Blue

Color			
	27, 0, 23, 0	186, 228, 188	#BAE4BC
	52, 0, 15, 0	123, 204, 196	#7BCCC4
	75, 12, 0, 0	67, 162, 202	#43A2CA
	100, 35, 0, 0	8, 104, 172	#0868AC

ColorBrewer¹ Yellow-Green

Color			
	24, 0, 39, 0	194, 230, 153	#C2E699
	53, 0, 53, 0	120, 198, 121	#78C679
	81, 0, 76, 0	49, 163, 84	#31A354
	100, 25, 90, 0	0, 104, 55	#006837

ColorBrewer¹ Yellow-Green-Blue, 4-Color

Color			
	37, 0, 25, 0	161, 218, 180	#A1DAB4
	75, 0, 10, 0	65, 182, 196	#41B6C4
	85, 27, 0, 0	44, 127, 184	#2C7FB8
	90, 70, 0, 0	37, 52, 148	#253494

ColorBrewer¹ Purple-Red

Color			
	15, 25, 0, 0	215, 181, 216	#D7B5D8
	10, 60, 0, 0	223, 101, 176	#DF65B0
	10, 90, 15, 0	221, 28, 119	#DD1C77
	40, 100, 47, 0	152, 0, 67	#980043

ColorBrewer¹ Red-Purple

Color			
	0, 30, 15, 0	251, 180, 185	#FBB4B9
	0, 60, 10, 0	247, 104, 161	#F768A1
	20, 90, 0, 0	197, 27, 138	#C51B8A
	50, 100, 0, 5	122, 1, 119	#7A0177

Colorblind Safe Only

ColorBrewer¹ Blue, 4-Color

Color			
	28, 7, 0, 0	189, 215, 231	#BDD7E7
	57, 14, 0, 0	107, 174, 214	#6BAED6
	82, 27, 0, 0	49, 130, 189	#3182BD
	100, 0, 7	8, 81, 156	#08519C

ColorBrewer¹ Blue, 9-Color

Color			
	3, 1, 0, 0	247, 251, 255	#F7FBFF
	13, 3, 0, 0	222, 235, 247	#DEEBF7
	24, 6, 0, 0	198, 219, 239	#C6DBEF
	38, 8, 0, 0	158, 202, 225	#9ECAE1
	57, 14, 0, 0	107, 174, 214	#6BAED6
	75, 22, 0, 0	66, 146, 198	#4292C6
	90, 34, 0, 0	33, 113, 181	#2171B5
	100, 45, 0, 7	8, 81, 156	#08519C
	100, 55, 0, 30	8, 48, 107	#08306B

ColorBrewer¹ Green

Color			
	27, 0, 27, 0	186, 228, 179	#BAE4B3
	55, 0, 55, 0	116, 196, 118	#74C476
	81, 0, 76, 0	49, 163, 84	#31A354
	100, 20, 100, 0	0, 109, 44	#006D2C

ColorBrewer¹ Grey, 4-Color

Color			
	0, 0, 0, 20	204, 204, 204	#CCCCCC
	0, 0, 0, 41	150, 150, 150	#969696
	0, 0, 0, 61	99, 99, 99	#636363
	0, 0, 0, 85	37, 37, 37	#252525





ColorBrewer¹ Grey, 9-Color

Color			
	0, 0, 0, 0	255, 255, 255	#FFFFFF
	0, 0, 0, 6	240, 240, 240	#F0F0F0
	0, 0, 0, 15	217, 217, 217	#D9D9D9
	0, 0, 0, 26	189, 189, 189	#BDBDBD
	0, 0, 0, 41	150, 150, 150	#969696
	0, 0, 0, 55	115, 115, 155	#737373
	0, 0, 0, 68	82, 82, 82	#525252
	0, 0, 0, 85	37, 37, 37	#252525
	0, 0, 0, 100	0, 0, 0	#000000





ColorBrewer¹ Orange

Color			
	0, 26, 40, 0	253, 190, 133	#FDBE85
	0, 45, 70, 0	253, 141, 60	#FD8D3C
	10, 65, 95, 0	230, 85, 13	#E6550D
	35, 75, 100, 0	166, 54, 3	#A63603





ColorBrewer¹ Purple

Color			
	20, 15, 0, 0	203, 201, 226	#CBC9E2
	38, 30, 0, 0	158, 154, 200	#9E9AC8
	55, 48, 0, 0	117, 107, 177	#756BB1
	70, 80, 0, 0	84, 39, 143	#54278F





ColorBrewer¹ Red

Color			
	0, 32, 32, 0	252, 174, 145	#FCAE91
	0, 59, 59, 0	251, 106, 74	#FB6A4A
	12, 82, 75, 0	222, 45, 38	#DE2D26
	35, 95, 85, 0	165, 15, 21	#A50F15

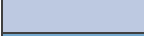



ColorBrewer¹ Blue-Green

Color			
	30, 0, 5, 0	178, 226, 226	#B2E2E2
	60, 0, 30, 0	102, 194, 164	#66C2A4
	83, 0, 70, 0	44, 162, 95	#2CA25F
	100, 20, 100, 0	0, 109, 44	#006D2C





ColorBrewer¹ Blue-Purple

Color			
	30, 10, 0, 0	179, 205, 227	#B3CDE3
	45, 30, 0, 0	140, 150, 198	#8C96C6
	47, 60, 0, 0	136, 86, 167	#8856A7
	47, 95, 0, 5	129, 15, 124	#810F7C



ColorBrewer¹ Purple-Blue

Color			
	26, 13, 0, 0	189, 201, 225	#BDC9E1
	55, 17, 0, 0	116, 169, 207	#74A9CF
	85, 20, 0, 0	43, 140, 190	#2B8CBE
	100, 30, 0, 20	4, 90, 141	#045A8D

ColorBrewer¹ Purple-Blue-Green

Color			
	26, 13, 0, 0	189, 201, 225	#BDC9E1
	60, 15, 0, 0	103, 169, 207	#67A9CF
	90, 12, 27, 0	28, 144, 153	#1C9099
	100, 25, 65, 0	1, 108, 89	#016C59

ColorBrewer¹ Yellow-Orange

Color			
	0, 15, 40, 0	254, 217, 142	#FED98E
	0, 40, 80, 0	254, 153, 41	#FE9929

Color			
	15, 60, 95, 0	217, 95, 14	#D95F0E
	40, 75, 100, 0	153, 52, 4	#993404

ColorBrewer¹ Yellow-Green-Blue, 9-Color

Color			
	0, 0, 15, 0	255, 255, 217	#FFFFD9
	7, 0, 30, 0	237, 248, 177	#EDF8B1
	22, 0, 27, 0	199, 233, 180	#C7E9B4
	50, 0, 20, 0	127, 205, 187	#7FCDBB
	75, 0, 10, 0	65, 182, 196	#41B6C4
	90, 15, 0, 0	29, 145, 192	#1D91C0
	90, 45, 0, 0	34, 94, 168	#225EA8
	90, 70, 0, 0	37, 52, 148	#253494
	100, 70, 0, 40	8, 29, 88	#081D58

ColorBrewer¹ Yellow-Orange-Red, 4-Color

Color			
	0, 20, 60, 0	254, 204, 92	#FECC5C
	0, 45, 70, 0	253, 141, 60	#FD8D3C
	5, 77, 80, 0	240, 59, 32	#F03B20
	25, 100, 70, 0	189, 0, 38	#BD0026

ColorBrewer¹ Yellow-Orange-Red, 9-Color

Color			
	0, 0, 20, 0	255, 255, 204	#FFFCC
	0, 7, 35, 0	255, 237, 160	#FFEDA0
	0, 15, 50, 0	254, 217, 118	#FED976
	0, 30, 65, 0	254, 178, 76	#FEB24C
	0, 45, 70, 0	253, 141, 60	#FD8D3C
	0, 70, 75, 0	252, 78, 42	#FC4E2A
	10, 90, 80, 0	227, 26, 28	#E31A1C
	25, 100, 70, 0	189, 0, 38	#BD0026
	50, 100, 70, 0	128, 0, 38	#800026

ColorBrewer¹ Orange-Red

Color			
	0, 20, 40, 0	253, 204, 138	#FDCC8A
	0, 45, 55, 0	252, 141, 89	#FC8D59
	10, 70, 70, 0	227, 74, 51	#E34A33
	30, 100, 100, 0	179, 0, 0	#B30000

Diverging Data

Colorblind Safe & Print Friendly

ColorBrewer¹ Red-Yellow-Blue, 6-Color

Color			
	15, 80, 75, 0	215, 48, 39	#D73027
	0, 45, 55, 0	252, 141, 89	#FC8D59
	0, 12, 40, 0	254, 224, 144	#FEE090
	12, 0, 0, 0	224, 243, 248	#E0F3F8
	43, 11, 0, 0	145, 191, 219	#91BFDB
	75, 37, 0, 0	69, 117, 180	#4575B4

ColorBrewer¹ Red-Blue, 6-Color

Color			
	30, 90, 70, 0	178, 24, 43	#B2182B
	5, 45, 50, 0	239, 138, 98	#EF8A62
	0, 14, 16, 0	253, 219, 199	#FDDBC7
	18, 4, 0, 0	209, 229, 240	#D1E5F0
	60, 15, 0, 0	103, 169, 207	#67A9CF
	90, 40, 0, 0	33, 102, 172	#2166AC

ColorBrewer¹ Brown-Blue-Green, 6-Color

Color			
	45, 60, 100, 0	140, 81, 10	#8C510A
	15, 25, 55, 0	216, 179, 101	#D8B365
	3, 8, 20, 0	246, 232, 195	#F6E8C3
	22, 0, 6, 0	199, 234, 229	#C7EAE5
	65, 5, 23, 0	90, 180, 172	#5AB4AC
	100, 30, 60, 0	1, 102, 94	#01665E

ColorBrewer¹ Purple-Green

Color			
	55, 80, 10, 0	118, 42, 131	#762A83
	31, 38, 0, 0	175, 141, 195	#AF8DC3
	9, 14, 0, 0	231, 212, 232	#E7D4E8
	15, 0, 15, 0	217, 240, 211	#D9F0D3
	50, 5, 50, 0	127, 191, 123	#7FBF7B
	90, 20, 90, 0	27, 120, 55	#1B7837

Colorblind Safe Only

ColorBrewer¹ Red-Yellow-Blue, 11-Color

Color			
	35, 100, 70, 0	165, 0, 38	#A50026
	15, 80, 75, 0	215, 48, 39	#D73027
	3, 57, 63, 0	244, 109, 67	#F46D43
	0, 35, 55, 0	253, 174, 97	#FDAE61
	0, 12, 40, 0	254, 224, 144	#FEE090
	0, 0, 25, 0	255, 255, 191	#FFFFBF
	12, 0, 0, 0	224, 243, 248	#E0F3F8
	33, 3, 0, 0	171, 217, 233	#ABD9E9
	55, 15, 0, 0	116, 173, 209	#74ADD1
	75, 37, 0, 0	69, 117, 180	#4575B4
	85, 70, 0, 0	49, 54, 149	#313695

ColorBrewer¹ Red-Blue, 11-Color

Color			
	60, 100, 75, 0	103, 0, 31	#67001F
	30, 90, 70, 0	178, 24, 43	#B2182B
	15, 60, 57, 0	214, 96, 77	#D6604D
	3, 35, 38, 0	244, 165, 130	#F4A582
	0, 14, 16, 0	253, 219, 199	#FDDBC7
	0, 0, 0, 3	247, 247, 247	#F7F7F7
	18, 4, 0, 0	209, 229, 240	#D1E5F0
	43, 8, 0, 0	146, 197, 222	#92C5DE
	75, 20, 0, 0	67, 147, 195	#4393C3
	90, 40, 0, 0	33, 102, 172	#2166AC
	100, 50, 0, 40	5, 48, 97	#053061

ColorBrewer¹ Purple-Orange

Color			
	50, 70, 100, 0	127, 59, 8	#7F3B08
	30, 60, 100, 0	179, 88, 6	#B35806
	12, 46, 92, 0	224, 130, 20	#E08214
	0, 28, 55, 0	253, 184, 99	#FDB863
	0, 12, 24, 0	254, 224, 182	#FEE0B6
	0, 0, 0, 3	247, 247, 247	#F7F7F7
	15, 10, 0, 0	216, 218, 235	#D8DAEB
	30, 25, 0, 0	178, 171, 210	#B2ABD2
	50, 45, 5, 0	128, 115, 172	#8073AC
	70, 80, 5, 0	84, 39, 136	#542788
	75, 100, 0, 40	45, 0, 75	#2D004B

ColorBrewer¹ Brown-Blue-Green, 11-Color

Color			
	45, 60, 100, 40	84, 48, 5	#534005
	45, 60, 100, 0	140, 81, 10	#8C510A
	25, 43, 80, 0	191, 129, 45	#BF812D
	12, 20, 45, 0	223, 194, 125	#DFC27D
	3, 8, 20, 0	246, 232, 195	#F6E8C3
	0, 0, 0, 5	245, 245, 245	#F5F5F5
	22, 0, 6, 0	199, 234, 229	#C7EAE5
	50, 0, 17, 0	128, 205, 193	#80CDC1
	80, 12, 35, 0	53, 151, 143	#35978F
	100, 30, 60, 0	1, 102, 94	#01665E
	100, 30, 70, 40	0, 60, 48	#003C30

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