Style Guide for Data Dashboards

Version 1

Washington State Department of Health

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Purpose

This guide provides recommendations for teams and dashboard developers at the Washington State Department of Health (DOH) to achieve consistent functionality, filtering, style, and color palates across agency data dashboards that are viewed by Local Health Jurisdictions (LHJs), Tribes, and the public. This consistency is important for LHJs, Tribes, and public audiences to easily navigate through all DOH dashboards to find information quickly. This guide is an important tool for developing dashboards with a standard look and function and implementing good design principles for all data dashboards regardless of the data visualization software used.

This guide is maintained by the Center for Data Science Data Visualization Section. Please send related questions and feedback to **CDS-Dashboards@doh.wa.gov**

Why is this guide important?

Style and design are important aspects of dashboard development for consistency, user ease, and accessibility in agency products. Currently, the Office of Public Affairs and Equity (OPAE) provides a Visual Style Guide to help ensure uniformity and accessibility of DOH publications. OPAE also provides guidance for data visualizations in the form of a checklist, a basic design fundamentals guide, and a data visualization SharePoint site. In addition, OPAE and other agency teams frequently promote resources to aid in color selection for visualizations, which helps address color readability and accessibility.

The Washington Tracking Network (WTN) similarly produces guidance for displaying health data in dashboards in addition to documentation for Tableau governance and Tableau tips which are important for dashboard creation. Documentation produced by the Office of Health and Science (OHS) in conjunction with the Office of Information Technology (OIT) is also available to determine which dashboard software fits the developer's needs best.

These documented DOH resources, in combination with this guide, will ensure proper agency design principles are applied to all data dashboard products.

Glossary

External Dashboards: These are public facing dashboards that are available to the world wide web (www) users.

Internal Dashboards: These are dashboards designed for the use of DOH and public health partners such as LHJs and Tribes. Internal dashboards require a security group that grants user access for those eligible to see the dashboard data under the agency data governance practices.

Style Considerations

Dashboard Backgrounds

Custom backgrounds can be created in PowerPoint and saved/imported into dashboard tools as a png or jpg. Agency dashboard backgrounds should follow a similar look and feel. Include the following elements:

- Grey background.
- White boxes transposed on top of grey to show contrast with visualizations.
- Navy blue (HEX: #07294C) header/title ribbon.
- (Optional) Secondary navy-blue ribbon to display DOH logo, WTN logo, and/or additional information.
    - Placement of ribbon either on footer or left-hand side of page.

See Appendices 1 and 2 for background examples.

Layout

When developing a dashboard layout, make sure that elements on a page are far enough apart to be visually distinguishable, but not so far apart to be distracting or look visually disjointed.

- See Appendix 3 for an example of a dashboard layout (created using COVID-19 Data Dashboard | Washington State Department of Health, a Power BI dashboard).
- See an example and details of an R-Shiny dashboard in this GitHub repository.

Dashboards should contain the following elements:

- Dashboard Title: White title text located in a navy-blue ribbon to identify the dashboard content.
- Descriptive Text: Text generally placed in white space on the dashboard to provide additional, general information about the page visualizations, data, and/or any important information the audience should know.
- Filters: A tool which provides an interactive way to drill down into the visualized data. If more than three filters are present on a page, consider including a "reset" button to clear all filter selections. Filters are generally located along the top or on the left side of the dashboard page in a column for the following reasons:
    - Flow: Our eyes read from left to right. Users can easily filter data to view specific results.
    - Common Use: Most dashboards that use filters place them on the left, so it is familiar to users and intuitive.
    - Visual Load: By placing the options on the left, you avoid adding clutter to the visualizations. This makes the page cleaner and visually appealing.
    - See Appendix 4 for an example.
- Technical notes (via Learn More): Text found on an additional dashboard page to provide more granular information about the page visualizations, data sources, and/or metric calculations displayed on the dashboard.
    - See Appendix 5 for an example.

- User Information: detailed information explaining helpful hints and tricks for using the dashboard to its full ability.
    - See Appendix 6 for an example.
- Downloadable Data: Downloadable data are important to include with dashboards for accessibility purposes. If you choose to include downloadable data, choose option one or option two below.
    1. An external file which is added to the dashboard via a URL.
        i. ***Note:** For this option the file must be separately hosted on the website where the dashboard will be published (best for external dashboards only).
        ii. When possible, external files should be provided in a format that is easy for analysis such as xlsx, csv, or json.
    2. Downloadable data can be a separate exportable table on the dashboard with instructions on how to export (best for internal dashboards).
- Summary Tables (*external only*):
    - On the website where a dashboard will be hosted, include summary tables as supplementary information, which summarizes the most recent date's data in an html format. These are important to include for accessibility purposes.
    - Summary tables are also necessary for dashboard viewers who may not have adequate technology to properly view the dashboard. (***Note:** These are only an option for external dashboards which are hosted on a website).
        - These tables give the audience an opportunity to see a high-level overview of what the dashboard is displaying.
    - See Appendix 7 for an example.
- Mobile View (*external only*):
    - All external dashboards should have both a "desktop" and "mobile" view to ensure compatibility of devices displaying the dashboard.
    - Mobile views show the same information in a long layout rather than a wide layout.
        - See Appendix 8 for an example.

Logos

All DOH data dashboards used by the public or public health partners, show the DOH logo in the navy-blue header/title ribbon or the footer/secondary navy-blue ribbon. The approved variations of this logo can be found here: Office of Public Affairs & Equity - Visual Style Guide - Logo (sharepoint.com)

- See Appendix 9 for examples.

All external dashboards hosted on WTN show two navy-blue ribbons, a header/title and footer/secondary. To comply with WTN logo requirements, add the WA DOH logo to the footer placed on the bottom left and the WTN logo on the bottom right. The WTN logo can be found here: O:\WTN\DataPartners

Colors

When selecting colors for dashboards, follow these guidelines to ensure visualization quality:

- The color scheme is intentional. Colors should represent brand or other intentional choices, not default color schemes. Use colors from the approved agency brand colors and the expanded agency colors for data visualizations also referenced below. If additional colors are needed, work with online tools (such as Adobe Color) to identify additional colors that are compatible with the expanded agency color palette and are colorblind accessible.
- Color is used to highlight key patterns. Colors promote action and they should guide the viewer to key parts of the display. Less important, supporting, or comparison data should be a muted color, like grey.
    - For example, incomplete data trends should be colored grey to demonstrate that metrics calculated in that time frame fall within the data lag period.
- Color is legible when printed in black and white. When printed or photocopied in black and white, the viewer should still be able to see patterns in the data. If printing a visualization in black and white, change the color saturation or opacity for sufficient contrast. You can use pattern or shape variations when colors do not sufficiently contrast.
- Color is legible for people with colorblindness. Use only the red-green or yellow-blue combinations recommended in the color palette below. These specific color combinations are approved for contrast and accessibility. Otherwise, avoid red-green and yellow-blue combinations when those colors touch one another. Avoid using red to mean "bad" and green to mean "good" in the same chart.
    - If questioning colorblindness accessibility, use resources such as Adobe Color Accessibility or Coblis Color Blindness Simulator to check colors in question.
    - See Appendix 10 and 11 for examples on correct and incorrect uses of color using the color list below.
- Text color sufficiently contrasts background. Black/very dark text against a white/transparent background is easiest to read. Use contrast tools such as Web AIM to test color contrast.

Expanded Agency Color Palette for Data Visualizations

Follow the Expanded Color Palette for Agency Data Visualizations for recommendations of which colors to use in combination when visualization requirements dictate displaying multiple colors on the same visualization, and for guidance on which colors to use when displaying data with a color gradient is necessary.

Color Combinations

Color Gradients

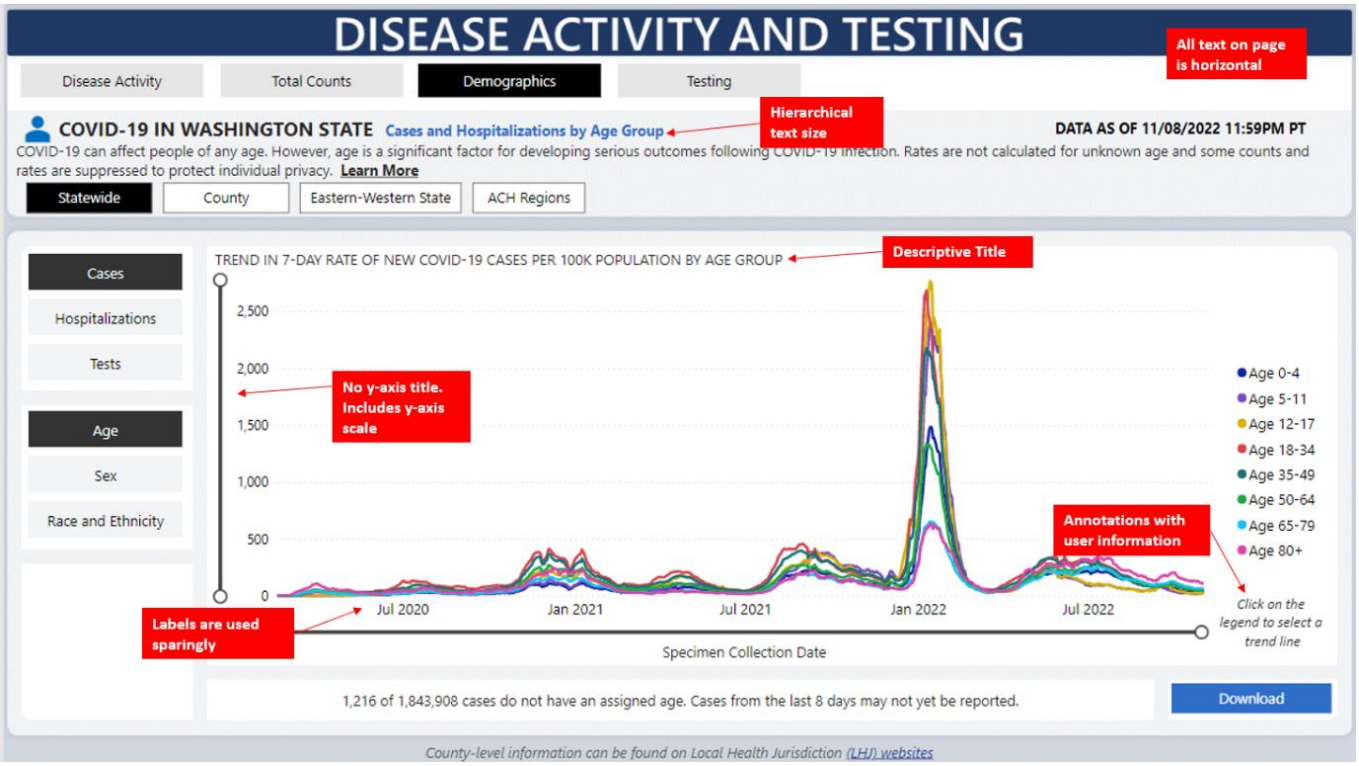
#932A6E	#942D24	#2399BB	#166931	#B06D18
#C62367	#C23A2E	#5FB4CC	#238D45	#EF9C33
#D6678C	#E14D3A	#71C1D8	#42AE65	#FFCC00
#EE6C9B	#ED8880	#95D1E2	#84CE9C	#F9E185
#DE979E	#E9AA9E	#C1D9E0	#B2DEC0	#F3E5AA
#E3BDB0	#F1CABD	#E8EBEC	#CCEDD7	#F6EDC5


#203864
#306982
#59125B
#0B1ACE
#070707
#3086C3
#469FA7
#833185
#4754EB
#595959
#4EA5D9
#6CB9B8
#985B9A
#7179E3
#666666
#68C0EA
#92C7C6
#AE8EAF
#848CEE
#808080
#A6D5ED
#BADCDB
#CEC2CE
#B3B7E9
#BBBBBB
#DAF0FB
#D1EBEA
#E6E3E7
#D5D7EC
#F5F5F5

Text

Removing clutter from the chart reduces "visual noise," and allows the audience to focus on the most important information needed for decision making. When determining text and text style for dashboards, follow these guidelines to ensure high quality visuals:

- Descriptive title is left-justified in upper left corner. Short titles enable readers to understand takeaway messages even while quickly skimming the graph. Rather than a generic phrase, use a descriptive sentence that summarizes the graph's finding or provides the answer to "so what?"
- Subtitles and/or annotations provide additional information. Subtitles and annotations (call-out text within the graph) can add explanatory and interpretive power to a graph. Use them to answer questions a viewer might have or to highlight specific data points.
- Text size is hierarchical and readable. Titles (largest) are in a larger size than subtitles or annotations, which are larger than labels, which are larger than axis labels, which are larger than source information (smallest).
- Text is positioned horizontally to make it easier to read information. Titles, subtitles, annotations, and data labels are horizontal (not vertical or diagonal). Line labels and axis labels are the exception to this rule and can be positioned differently if necessary. Always ensure the text reads well.
- Data are labeled directly. Position data labels near the data rather than in a separate legend. Do place data labels on top of or next to bars and next to lines. Eliminate legends when possible.
- Labels are used sparingly. Focus attention by removing repeating labels. For example, in line charts, label every other year on an axis. Do not overuse labels for points on the visual. Rather, use a y-axis scale.
- Use informative titles for your visualizations. A good chart title summarizes all the information the user needs to know in order to process the information presented. Avoid using y-axis titles. If you provide an informative title on the visualization that states whether the users are seeing rates, counts, or proportions, you do not need the y-axis title to repeat the same information. The more you reduce "visual noise" by removing repetition, the more effective your chart will be.

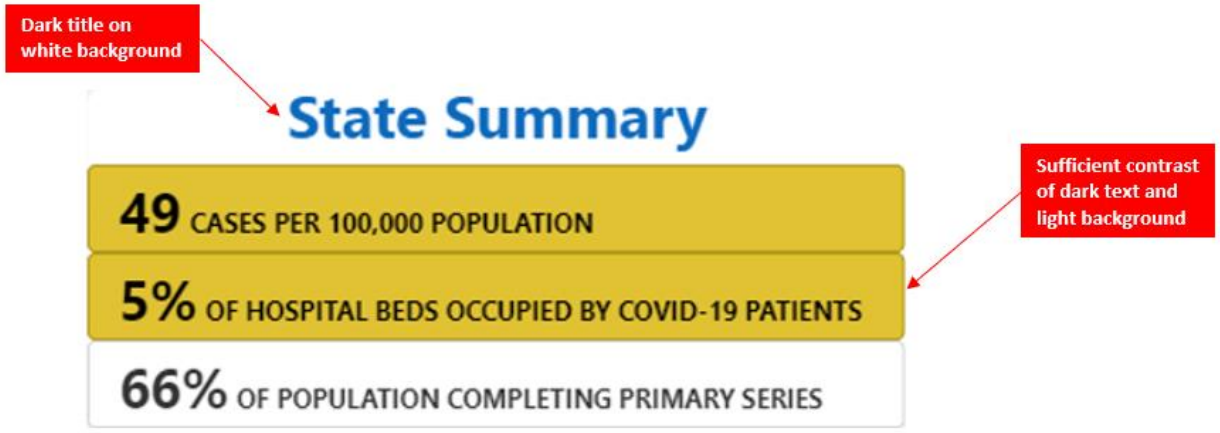


Font Style

- Use Segoe UI, Garamond, Georgia, or Calibri for all text on dashboard. Exceptions include visualization titles/text that should be bolded, in that case use **Bold option.**
- *Italics* are best when used for page annotations or user tips (i.e. "*Click on map for county data*"). These texts are the extra bits of information that provide directions on how to use the dashboard or are text which are overlain on a visual.
- Refrain from using any underlined text. Underlines are often associated with hyperlinks; the users might interpret any underlined text as broken hyperlinks.

Font/Text Color

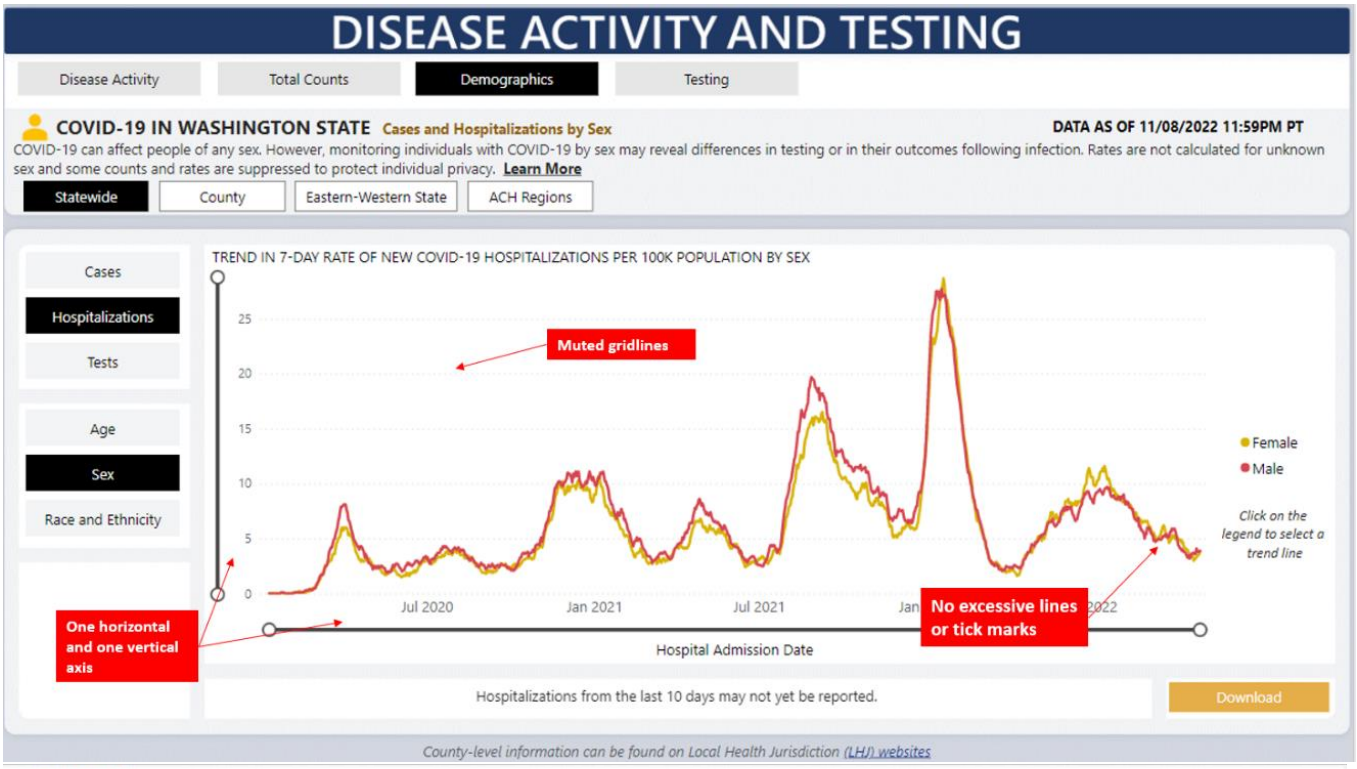
- Use black or a dark color on dashboard text with a visualization element on a **white or light-colored** background. This includes buttons, tooltips, slicers, titles, annotations, descriptive text, etc.
    - ***Note**: Make sure to check the default text color when starting a new visualization project. Not all software uses black as the default text color on a light background.
- Use white on all dashboard text with a visualization element on a **black or dark colored** background. This includes buttons, tooltips, slicers, titles, annotations, descriptive text, etc.

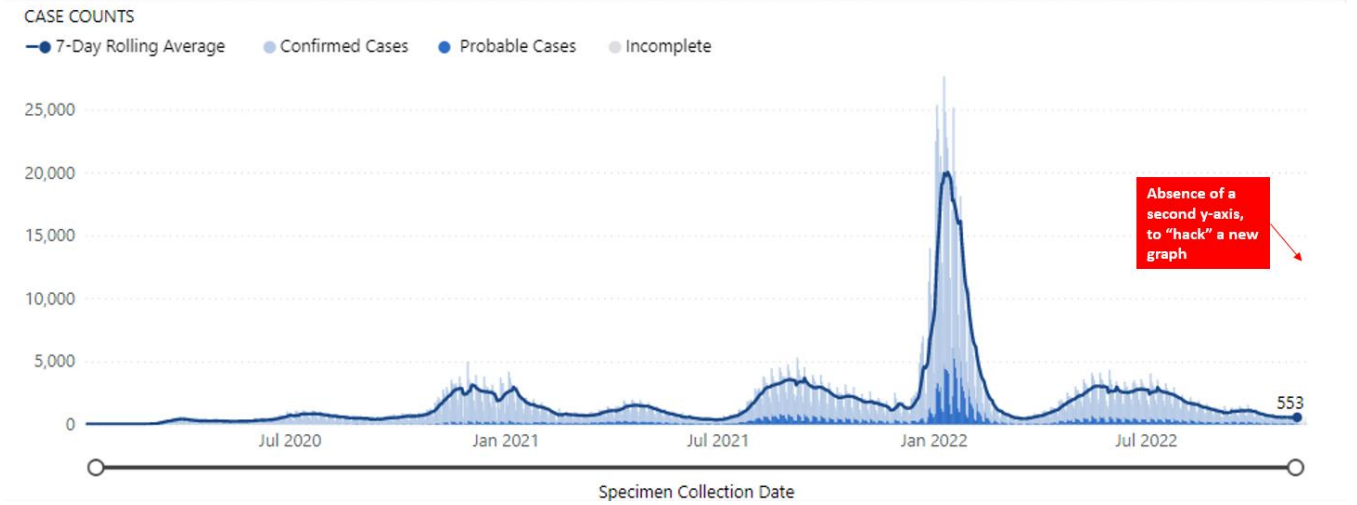


Lines

When including lines on dashboard visualizations, follow these guidelines to ensure high quality visuals:

- No excessive lines. Gridlines, borders, tick marks, and axes can add clutter or noise to a graph. Eliminate them whenever they aren't useful for interpreting the data.
- Gridlines, if present, are muted. The color should be faint gray, not black. It's best if no gridlines are used. Gridlines, even muted, should not be used when the graph includes numeric labels on each data point.
- Graph should bleed into the surrounding page or slide instead of being contained by a border, which helps reduce visual clutter.
- Graph has one horizontal and one vertical axis. Viewers can best interpret one x-axis and one y-axis. Don't add a second y-axis. (A secondary axis used to hack new graph types is ok, so long as viewers aren't being asked to interpret a second y-axis.)





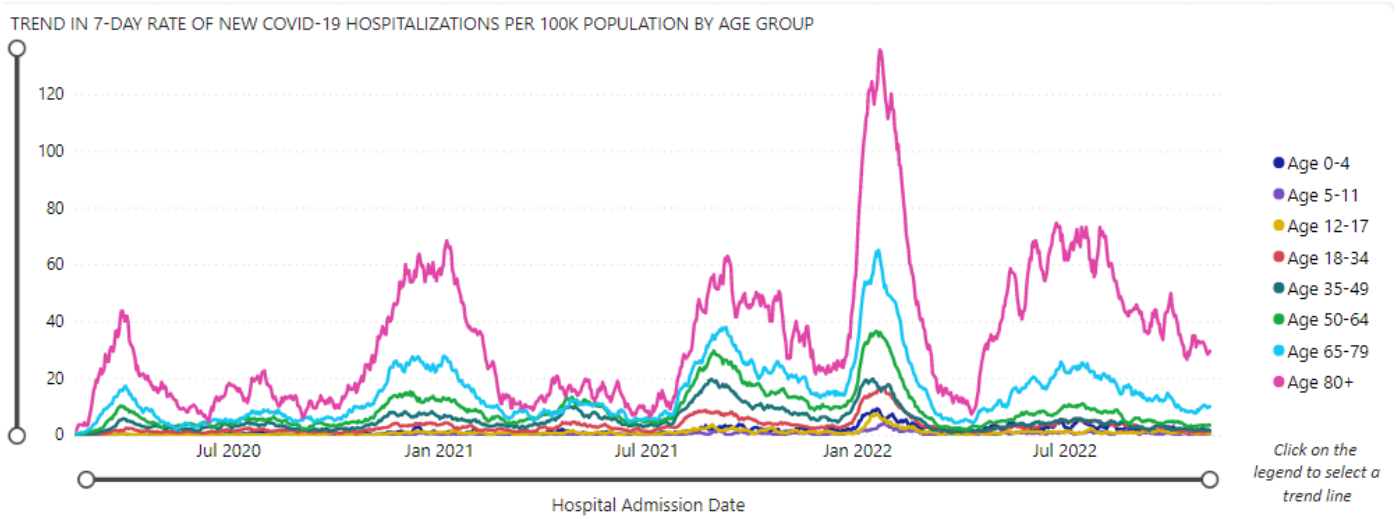
Visualization Types

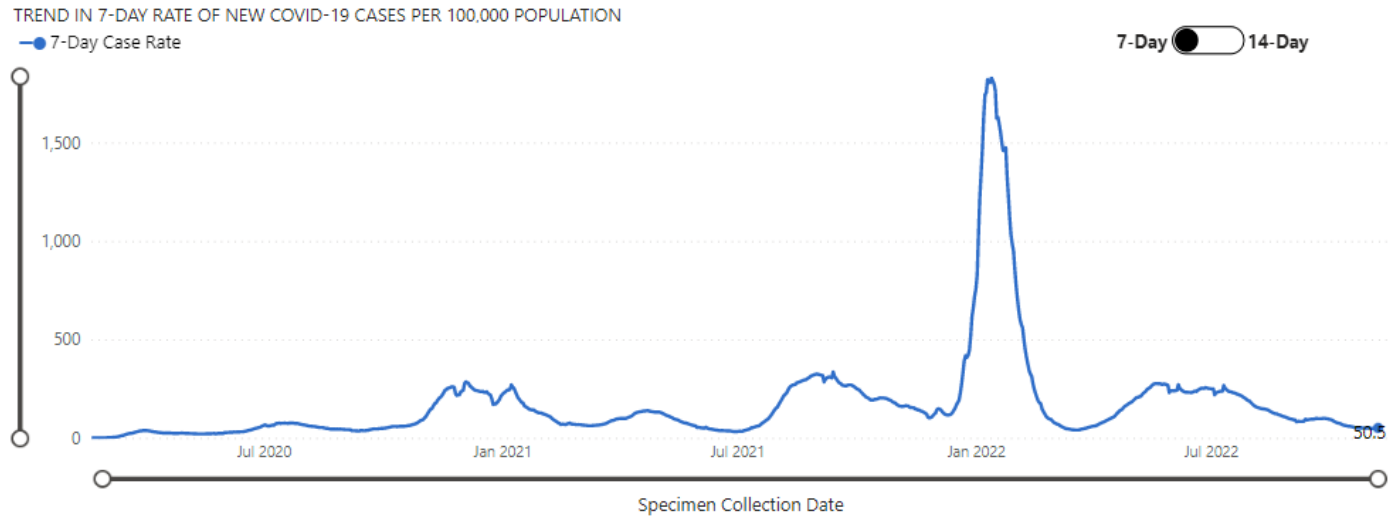
When choosing dashboard visualizations, make sure data are displayed using a graph type that is appropriate for the relationship within the data.

- Graphs catch a viewer's attention. Only visualize the data that needs attention. Too many graphics of unimportant information weaken the power of visualization.
- Graph has an appropriate level of precision. Use a level of precision that meets the needs of your audience. Few numeric labels need decimal places.
- Avoid using pie charts and donut charts on dashboards. Pie and donut charts are generally difficult to interpret and can mislead the audience. Consider using bar charts to display data instead.

Line Charts

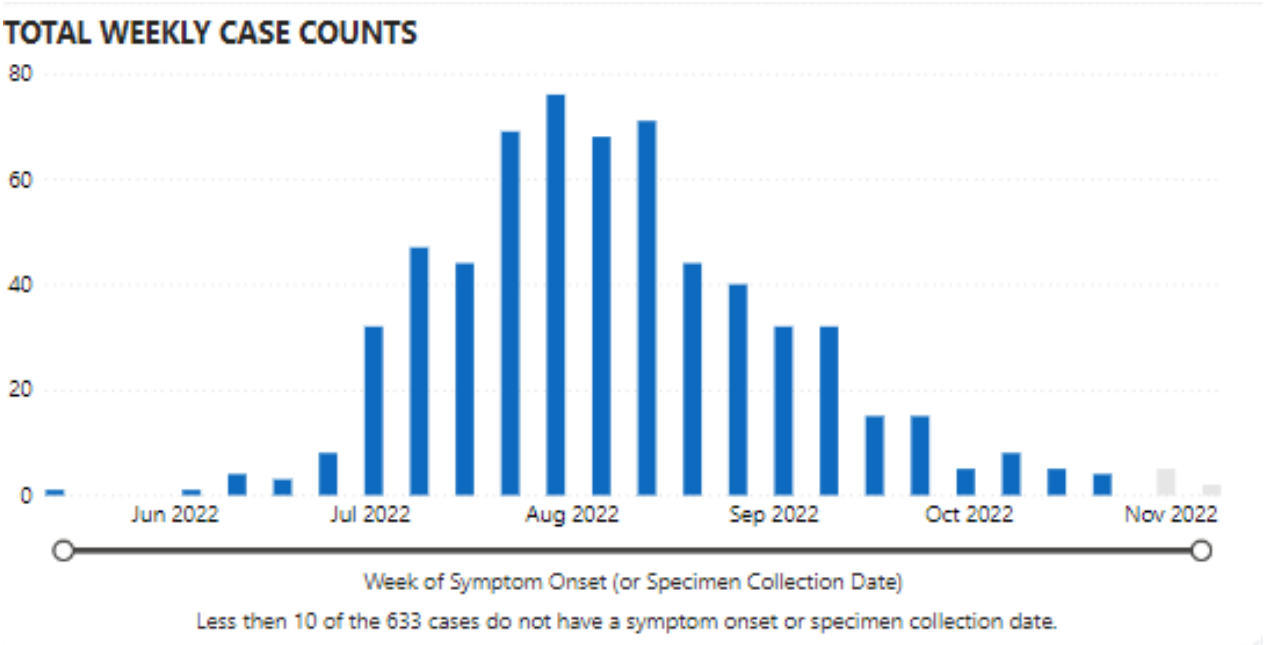
Use line charts to display trends over time and to show many different categories of data. Use a line chart to show one or multiple variables (with multiple lines) over time.

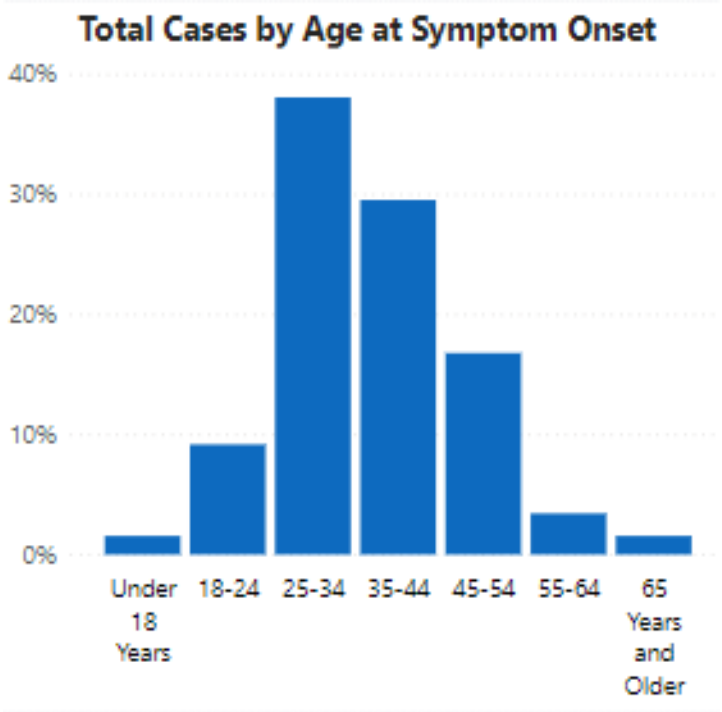




Bar Charts

Use bar charts to show a comparison between different items or items over time.





Tables/Matrices

Use tables to show graphical information in a tabular format. Tables are a good option for ensuring data are accessible as they are usually simple to interpret.

Total Cases by Race and Ethnicity

	Hispanic, Latino/a, Latinx	Non-Hispanic, Latino/a, Latinx	Unknown Ethnicity	Total
American Indian or Alaska Native	*	*	0	*
Asian	0	*	*	20
Black or African American	*	43	*	45
Multiracial or Other Race	44	*	*	63
Native Hawaiian or Pacific Islander	0	*	*	*
White	*	186	*	241
Unknown Race	47	98	68	213
Total	**148**	**374**	**73**	**595**

HOSPITALIZATIONS BY RACE AND ETHNICITY

	HOSPITALIZATIONS	% OF HOSPITALIZATIONS	TOTAL WA POPULATION (%)
Total Number	**75,102**	**100%**	
Unknown Race and Ethnicity (% of Total)	11,805	16%	NA
Total with Race and Ethnicity Available	**63,297**	**100%**	**100%**
American Indian or Alaska Native*	1,610	3%	1%
Asian*	3,241	5%	9%
Black*	3,394	5%	4%
Hispanic	7,747	12%	13%
Multiracial*	806	1%	4%
Native Hawaiian and Pacific Islander*	1,571	2%	1%
Other Race*	647	1%	NA
White*	44,281	70%	67%

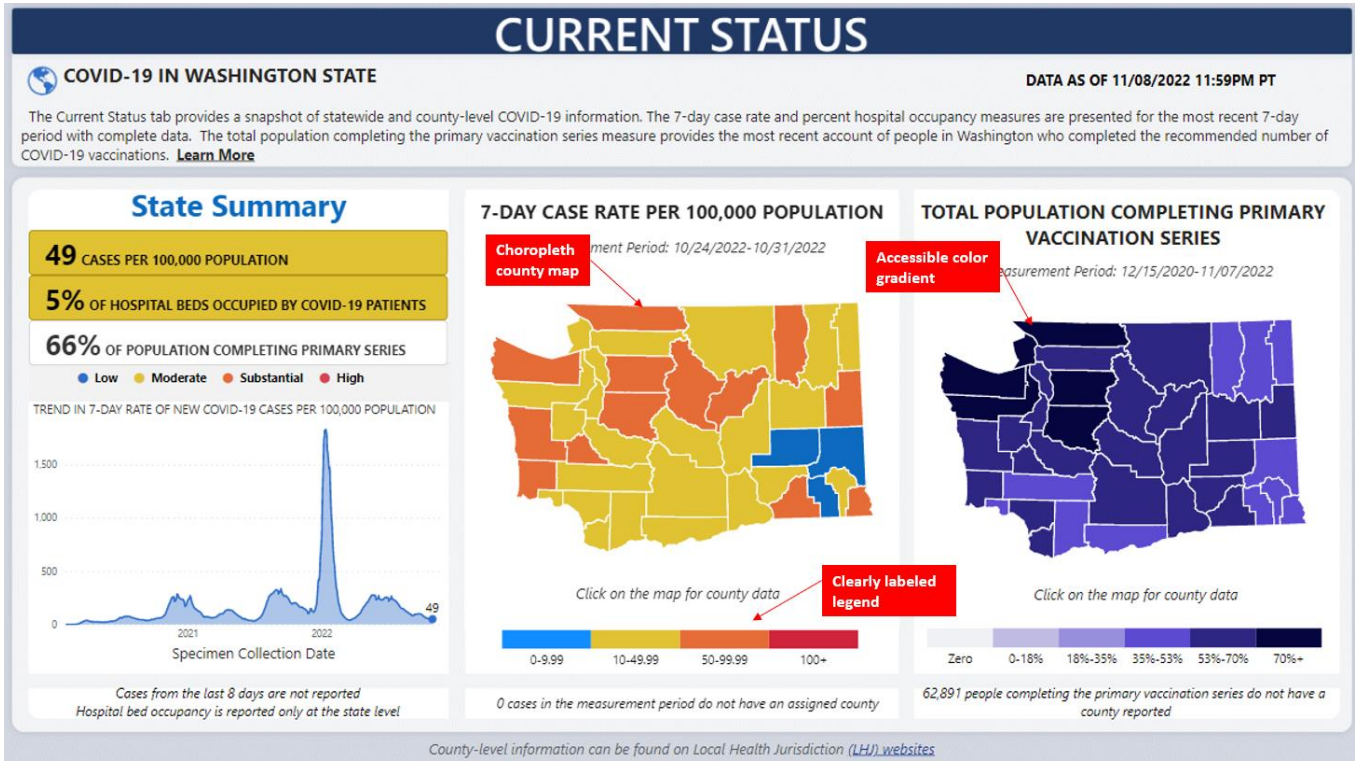
*Non-Hispanic

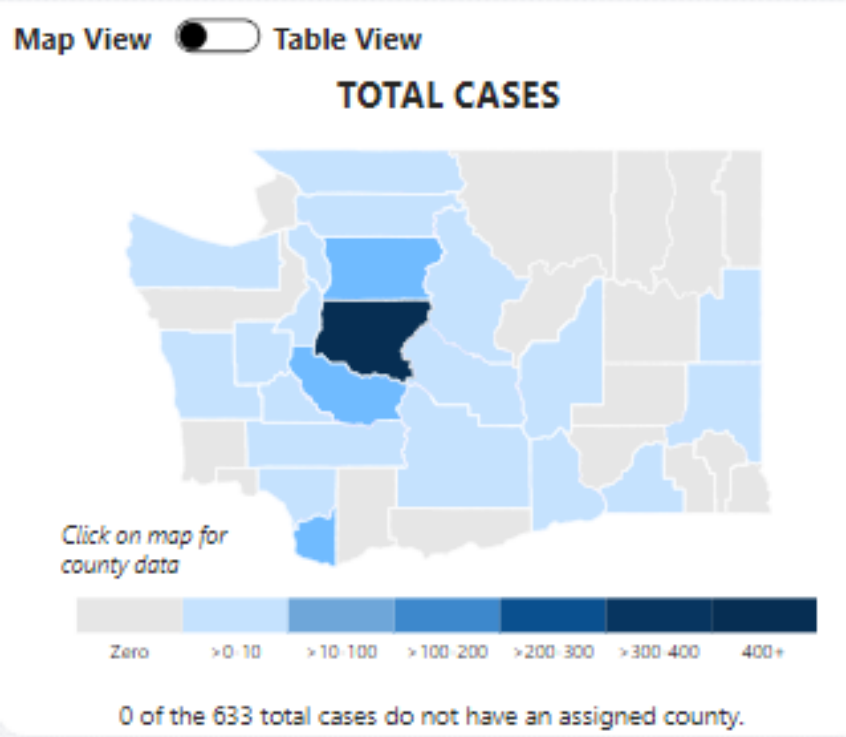
Maps

Use maps if the data shows a very clear geographic trend or if the location of a place or event matters. Consider using other graphic types when interesting data patterns are not geographic, or when the geographic data is more effective for analysis than for presentation.

Follow these guidelines for map visualizations:

- Use light colored base maps, either light grey or white, with minimal unnecessary geographic information (roads, city names, topography, etc.)
- Use choropleth maps to display comparison information geographically.
- When coloring a choropleth map, use conditional formatting options to assign rules or gradient fill based on measures. Conditional formatting options are available in most visualization software. See Appendix 12 for an example in Power BI.
- Fill maps using accessible colors or color gradients as seen in "Colors" section of this guide.
- To display point data on a map visualization, use coordinates (latitude and longitude) over addresses, if possible. Using street addresses as the Location field may yield results in erroneous locations. Geocoded coordinates for street addresses can be acquired by submitting a SC GIS service ticket.
- When applicable, include zoom buttons on the map visual for user ease. Make sure to set the default zoom to show the entire state, rather than a specific location.





Helpful Resources

[R-Shiny Git Hub Repo]

[DOH Logo Variations]

[DOH Brand Colors]

[Expanded Color Palette for Agency Data Visualizations]

[Color blind safe colors on color wheel | Adobe Color]

[Coblis — Color Blindness Simulator – Colblindor (color-blindness.com)]

[WebAIM: Contrast Checker]

[Website Design Guide for Color Blind (designmantic.com)]

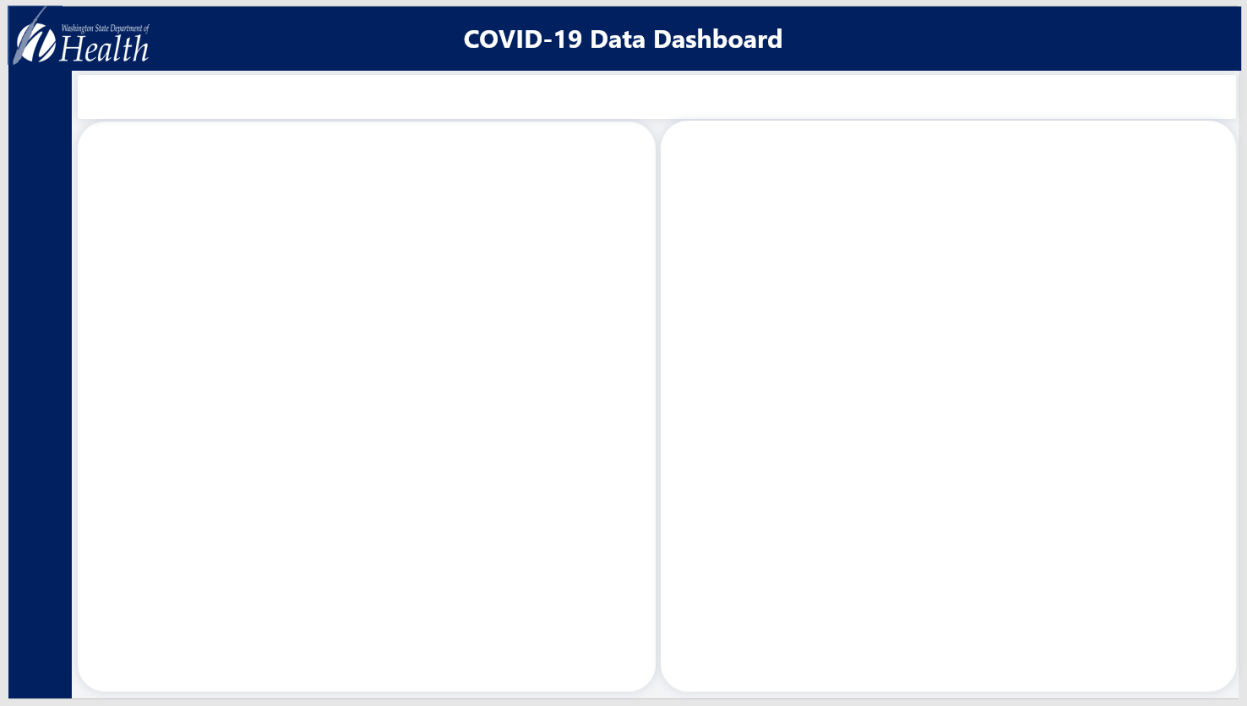
Appendices

Appendix 1

Background example with single navy-blue ribbon.

Appendix 2

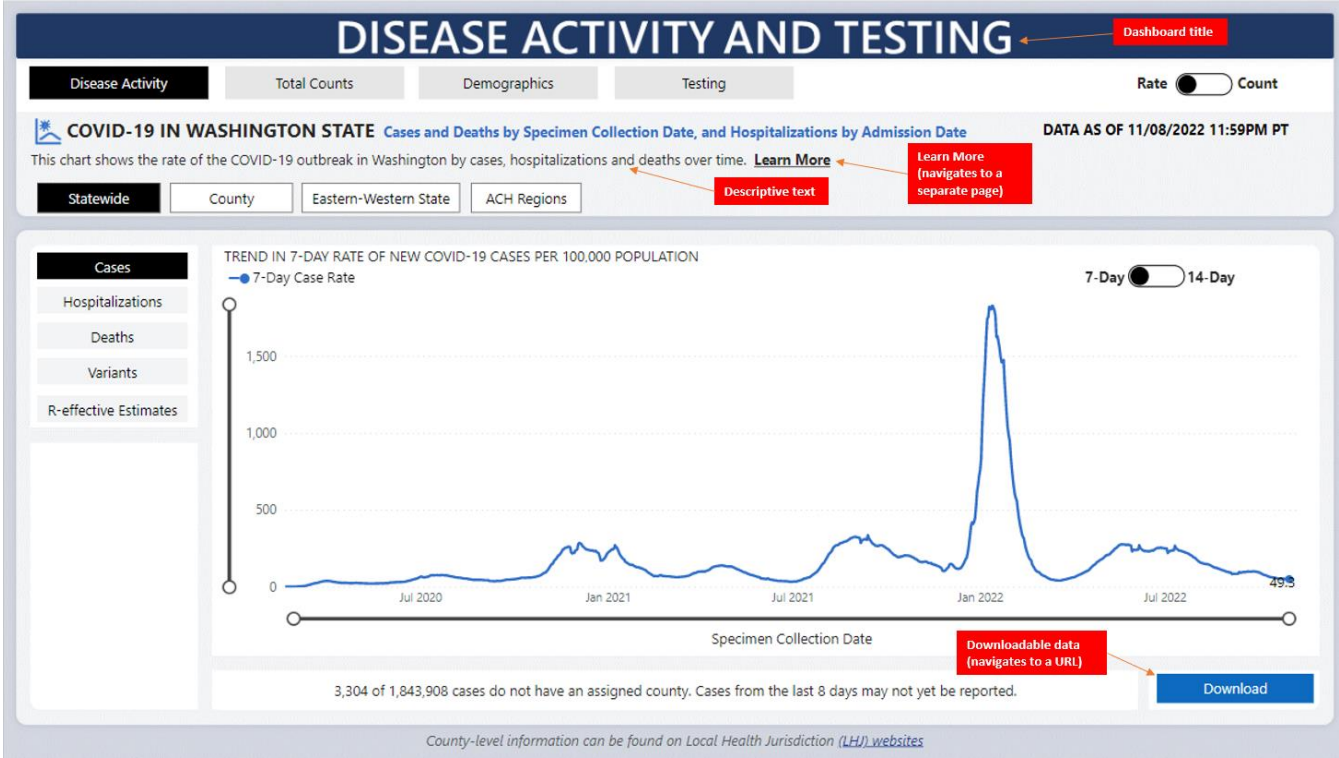
Background examples with optional secondary navy-blue ribbons.




COVID-19 Data Dashboard
Washington State Department of Health

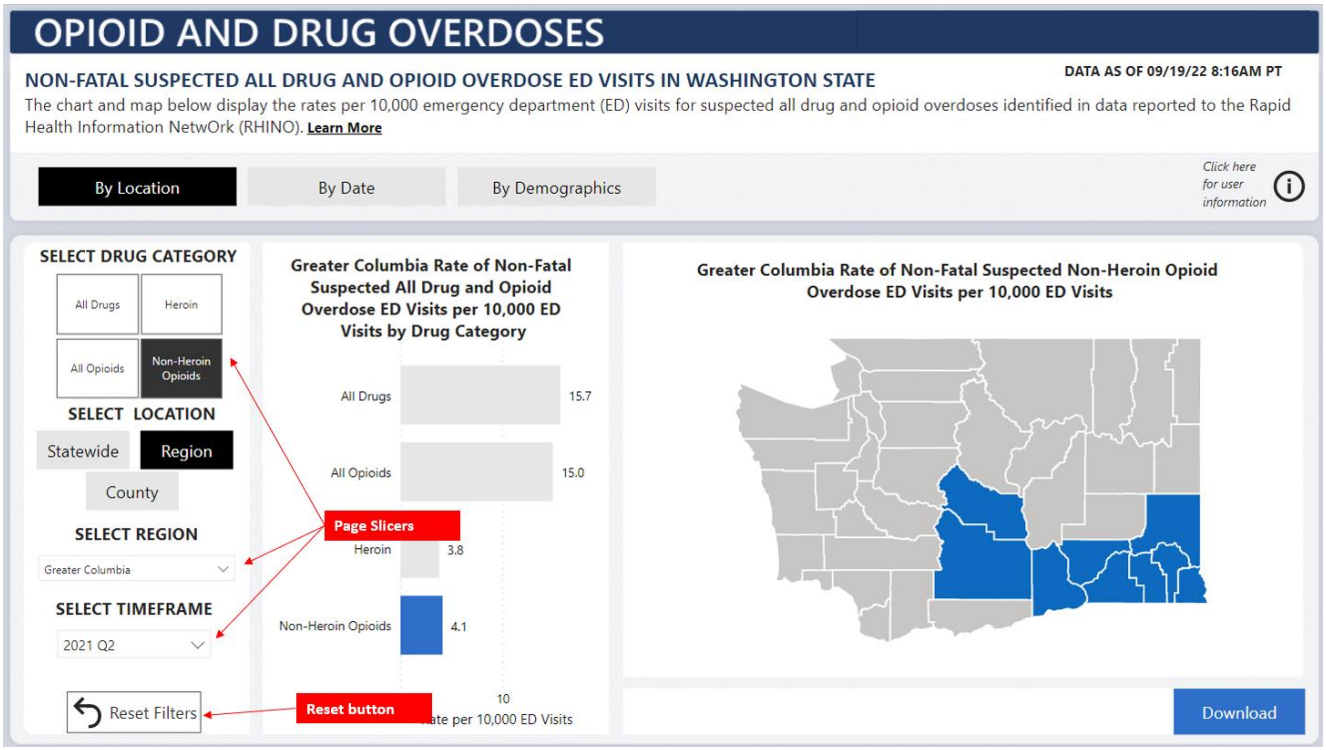
Appendix 3

Anatomy of a dashboard page.



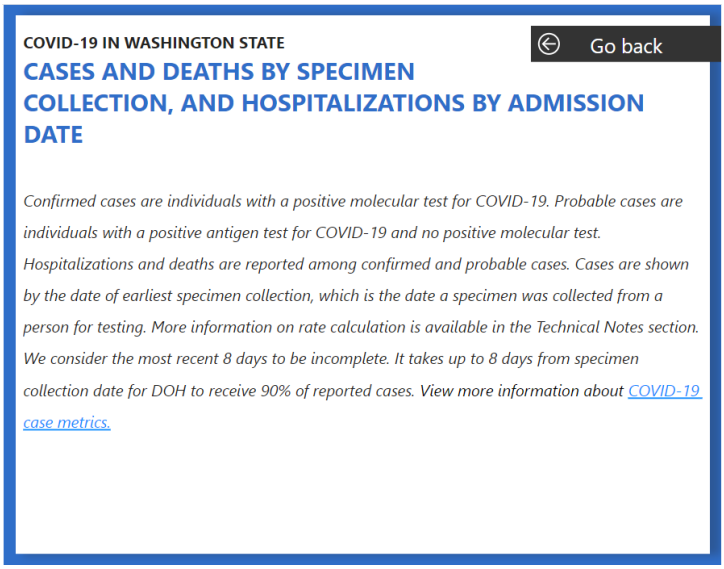
Appendix 4

Slicer examples



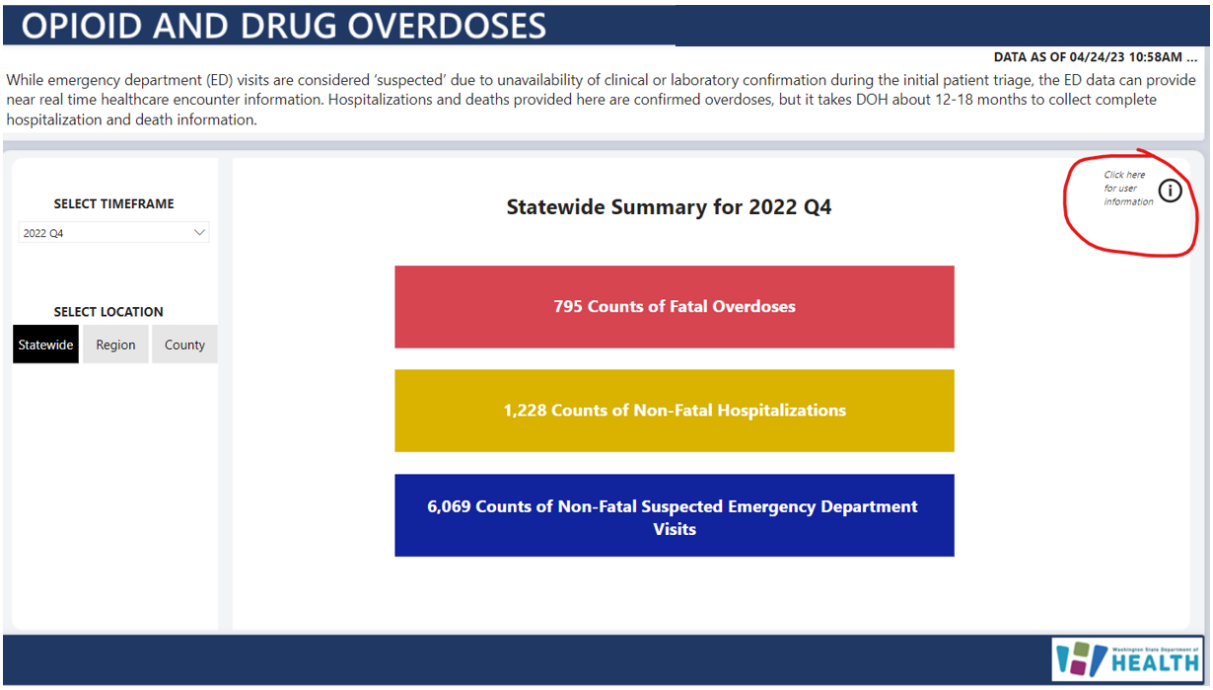
Appendix 5

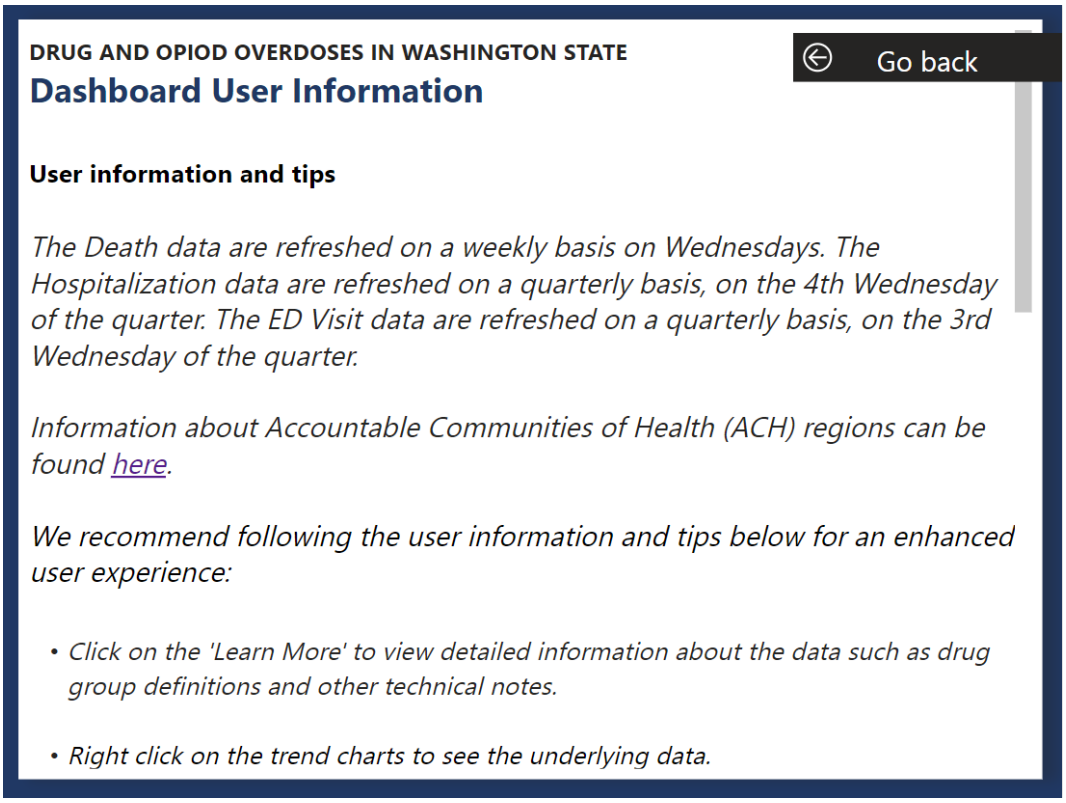
Learn More pop out/separate page navigation for technical notes.



Appendix 6

Example of user information icon on the dashboard and type of information that it contains.





Appendix 7

Example of summary tables (found here: [COVID-19 Data Dashboard | Washington State Department of Health](#)).

Summary Data Tables

Cumulative Cases, Hospitalizations and Deaths by County

Rates of Cases, Hospitalizations and Deaths by County

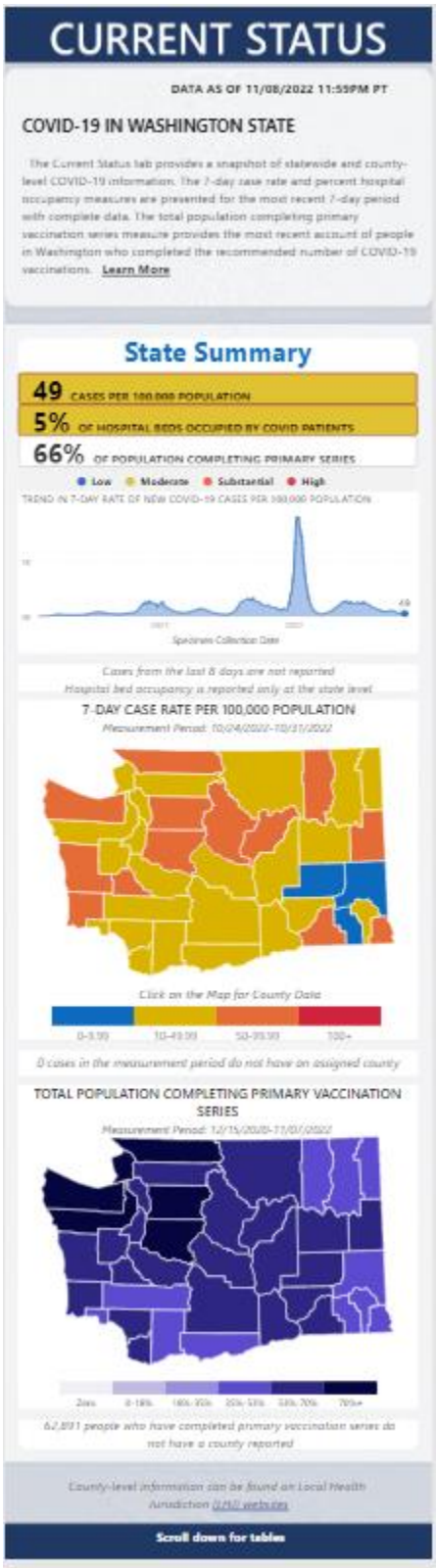
Rates of Cases, Hospitalizations and Testing by Age

Data shown below are the most recent complete data available.

Age Group	7-Day Case Rate	7-Day Hospitalization Rate	7-Day Testing Rate	7-Day Percent Positivity
Ages 0-4	41.4	2.2	1204.3	3.5
Ages 5-11	24.1	.	697	3.6
Ages 12-17	.	.	455.4	.
Ages 18-34	47.1	1	751.5	6.4
Ages 35-49	51.8	2	831.9	6.6
Ages 50-64	49.8	3.3	850.3	6.1
Ages 65-79	66.7	9.8	1106.1	6.1
Ages 80+	109.5	32.8	1818.5	6.6
Unknown Age	.	.	.	.

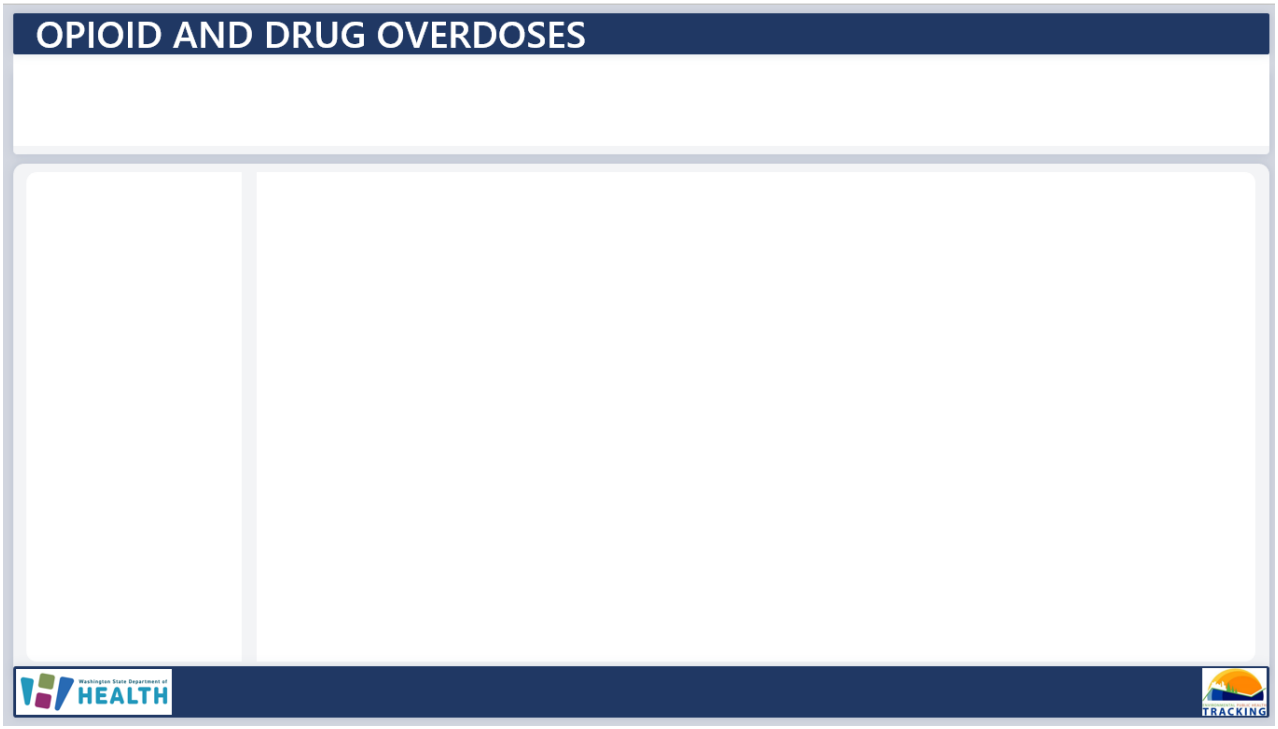
Appendix 8

Example of a mobile view.



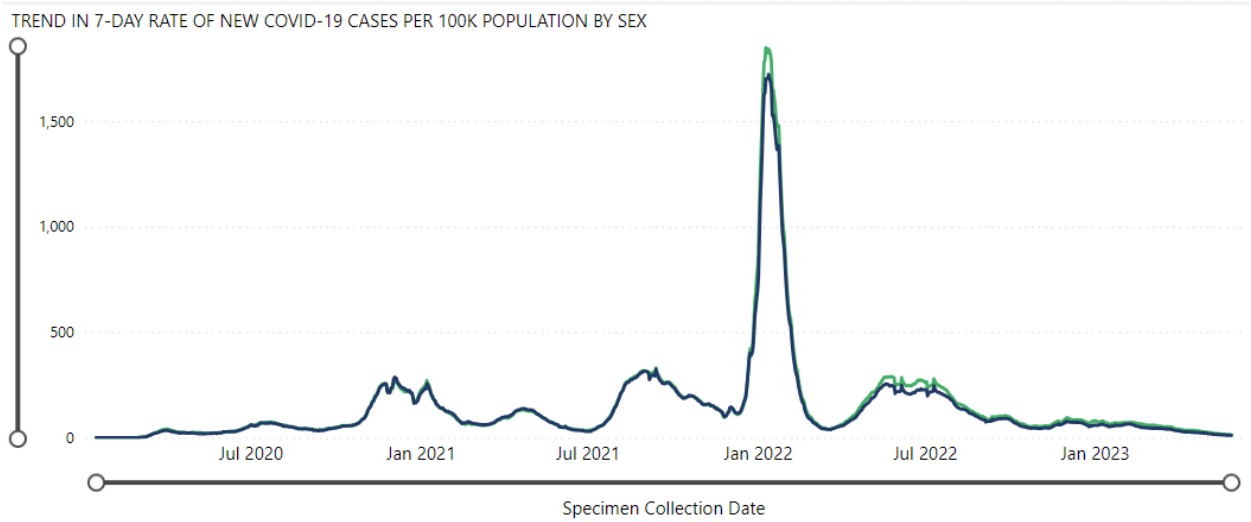
Appendix 9

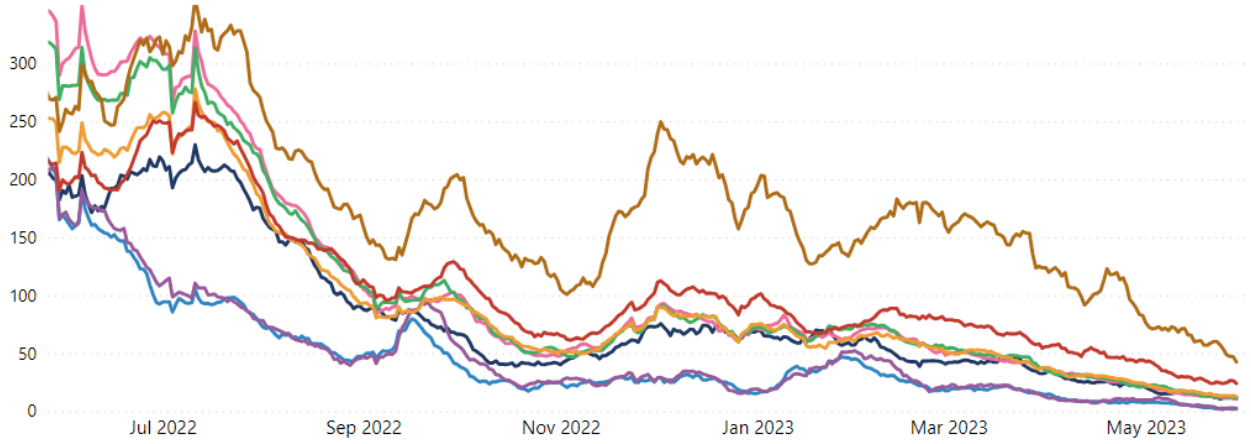
Background examples with proper logo placement.



Appendix 10

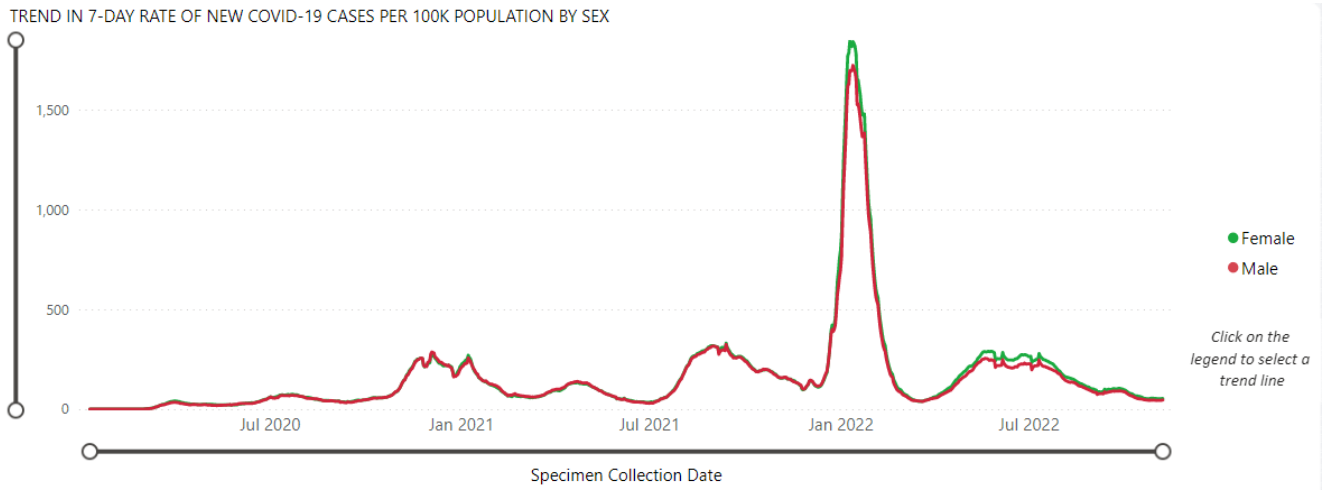
Examples of correct use of approved colors with attention to contrast. The colors chosen in the examples below will be visible as different shades of grey in a black and white view.

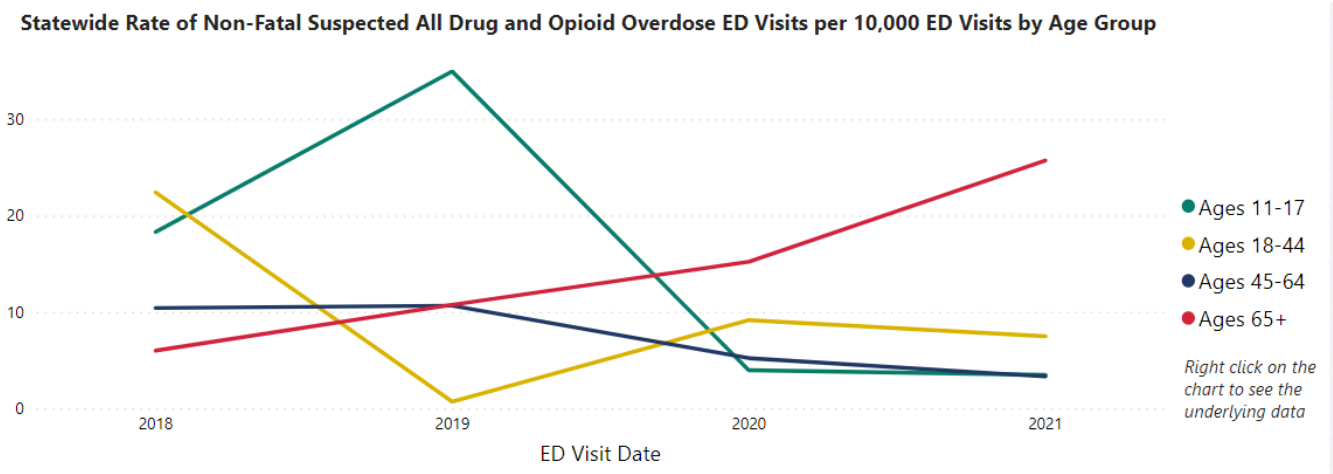




Appendix 11

Examples of Incorrect use of approved colors with minimal contrast. Remember red and green are difficult to distinguish from one another in a black and white view.





Appendix 12

Example of conditional formatting for a choropleth map.