



Seattle Office of
Inspector General

Seattle Police Department Dashboard Assessment

August 7, 2026

Introduction

In December 2023, the City of Seattle Office of Inspector General (OIG) reviewed the usability and accessibility of the Seattle Police Department's (SPD) public data dashboards.¹ This memo has three goals. First, it provides an update on the implementation of revisions suggested in 2023. Second, it describes additional opportunities to improve usability and accessibility. Third, it proposes a new template for dashboard design in line with City of Seattle's style guides.

SPD has nine dashboards:

- [Arrest Dashboard](#)
- [Bias and Hate Crime Dashboard](#)
- [Computer-Assisted Dispatch \(CAD\) Dashboard](#)
- [Crime Dashboard](#)
- [Crisis Contact Dashboard](#)
- [Officer-Involved Shootings Dashboard](#)
- [Terry Stops Dashboard](#)
- [Trust and Safety Dashboard](#)
- [Use of Force Dashboard](#)

OIG evaluated SPD's dashboards using criteria based on:

1. The Nielsen Norman Usability Heuristic Evaluation;²
2. Documentation on Visual Analysis Best Practices by Tableau;³ and
3. Web Content Accessibility Guidelines (WCAG) 2.1.⁴

OIG organized suggestions into five categories:

1. **Understandable Wording:** Can community members understand the information?
2. **Clean Data:** Is data free of typos and organized so that users can draw meaningful insights?
3. **Clear Questions:** Do dashboards clearly answer one to three targeted questions?
4. **Support of User Goals:** Can a user find what they are looking for when using dashboards?
5. **Accessibility Standards:** Can people with disabilities, such as impairments to vision or movement, easily use dashboards?

1 SPD Dashboard Usability Assessment 2023 can be found in Appendix B.

2 Nielsen Norman is a nationally recognized user experience (UX) research firm. User experience researchers study how people interact with computers and ways to simplify those interactions.

3 Tableau is a leading data visualization software company. The City of Seattle uses Tableau's software to create dashboards.

4 18F, the digital content creation branch of the U.S. General Services Administration, refers to WCAG 2.1 as "the gold standard" of web accessibility guidelines.



Background

SPD's dashboards are web pages that summarize policing outcomes such as arrest rates, uses of force, and crisis intervention practices. Their interactivity lets users compare policing outcomes across locations and subject demographics like race, gender, and age.

In December 2023, OIG systematically reviewed SPD's data dashboards. OIG sought to assist SPD in implementing an order the U.S. District Court of Western Washington issued in September 2023. The court order required SPD to:

Develop a data transparency, usability, and accessibility plan that addresses how to (1) improve the collection of data on race in stops, detentions, and use of force; (2) incorporate this data in reporting; and (3) provide public access to these reports and any other data that [the Community Police Commission] and OIG identify as being critical to transparency.

OIG's 2023 review suggested opportunities for improvement, along with actionable steps for implementation.

OIG performed a follow-up review of SPD's dashboards in February 2026. OIG found SPD implemented a substantial number of the suggested improvements.

Implemented Suggestions

Understandable Wording

In the prior review, OIG identified nine opportunities for SPD to improve the understandability of its dashboards. They centered on four themes:

- Using language appropriate for general audiences, not policing subject matter experts;
- Removing statistical jargon;
- Defining variables; and
- Using plain language to explain concepts.

As of February 2026, SPD has implemented five of OIG's nine suggestions to improve understandability of wording. Table 1 provides the status of each suggestion. OIG categorized suggestions as resolved, revised, or unchanged:

- **Resolved:** SPD implemented the suggestion.
- **Revised:** SPD made changes in response to the suggestion, but further improvements are possible.
- **Unchanged:** SPD has not made changes in response to the suggestion.



Table 1. Understandable Wording, Status Update

Dashboard	Description	Status
Arrest	The Arrest dashboard provides the “number of arrests” and “number of unique individuals arrested” but does not clarify the difference.	Resolved. The Arrest dashboard now distinguishes “number of arrests” and “number of subjects.”
Arrest	The Arrest dashboard shows how many times an individual has been arrested but does not specify timespan (e.g., per year, individual’s lifetime).	Resolved. The Arrest dashboard no longer shows how many times an individual has been arrested.
Crime	The Crime dashboard includes obscure terms such as “SeaStat Category” and “SeaStat Offense.”	Revised. The Crime dashboard has renamed these terms “Offense Category” and “Offense Subcategory.” However, these terms could be further clarified.
Crime	The Crime dashboard uses the term “MCPP” (Micro Community Policing Plan), even though the geographic divisions are synonymous with city neighborhoods.	Resolved. In the Crime dashboard, “MCPP” was replaced with “Neighborhood.”
Crime	The Crime dashboard’s explanation of crime rate calculations under the “Crime Rates” tab is too complex for general audiences.	Unchanged. The explanation of crime rate calculations has not been simplified.
Crime	In the “Shooting & Shots Fired” tab, one graph’s y-axis (vertical axis) is labeled “Distinct Count of Report Number.”	Revised. No y-axis label is present. A y-axis label would help users identify how shootings and shots fired are defined and/or counted.
CAD	The CAD dashboard categorizes dispatches as “Dispatch” and “Onview,” terms that general audiences may not recognize.	Revised. The terms “Dispatch” and “Onview” have been replaced with “Community-Generated” and “Officer-Generated,” respectively. However, users may not understand what “officer-generated” events are.
Terry Stops	The Terry Stops dashboard refers to the number of people within a subgroup as n . n is a statistical term that general audiences may not understand.	Unchanged. Subgroup sizes are still defined using n .
Use of Force	The Use of Force dashboard includes a regression equation as well as R-squared and p -values, information that lay users may not be able to understand.	Unchanged. The Use of Force dashboard still displays this information with no accompanying explanation.

Clean Data

Data cleaning involves checking data for errors and organizing it to aid analysis and presentation. Improper data cleaning can lead to quality control problems, including:

- Miscalculations of key metrics;
- Overcounts resulting from entries appearing multiple times when they should only appear once; and
- Redundant categories that make drawing conclusions more difficult.

Previously, OIG identified two data cleanliness issues in the Crime and Bias Crime dashboards (Table 2):

1. One of the Crime dashboard's menus had redundant options for missing data (e.g., "Null" and "<Null>"). As of February 2026, these options have been consolidated.
2. The Bias Crime dashboard contains redundant categories to describe types of biases (Figure 1).

Figure 1. Redundant Categories in SPD Bias Crime Dashboard

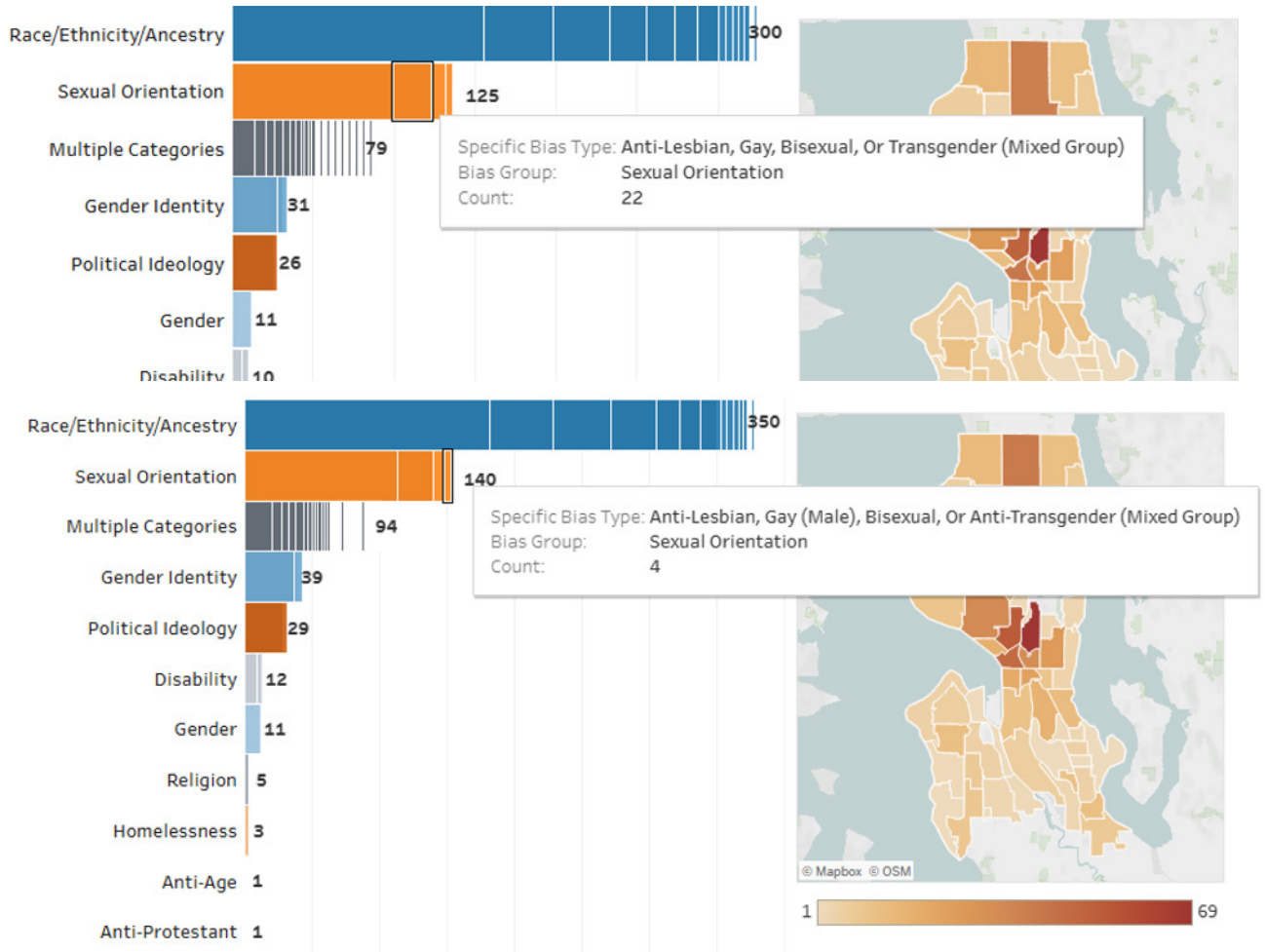
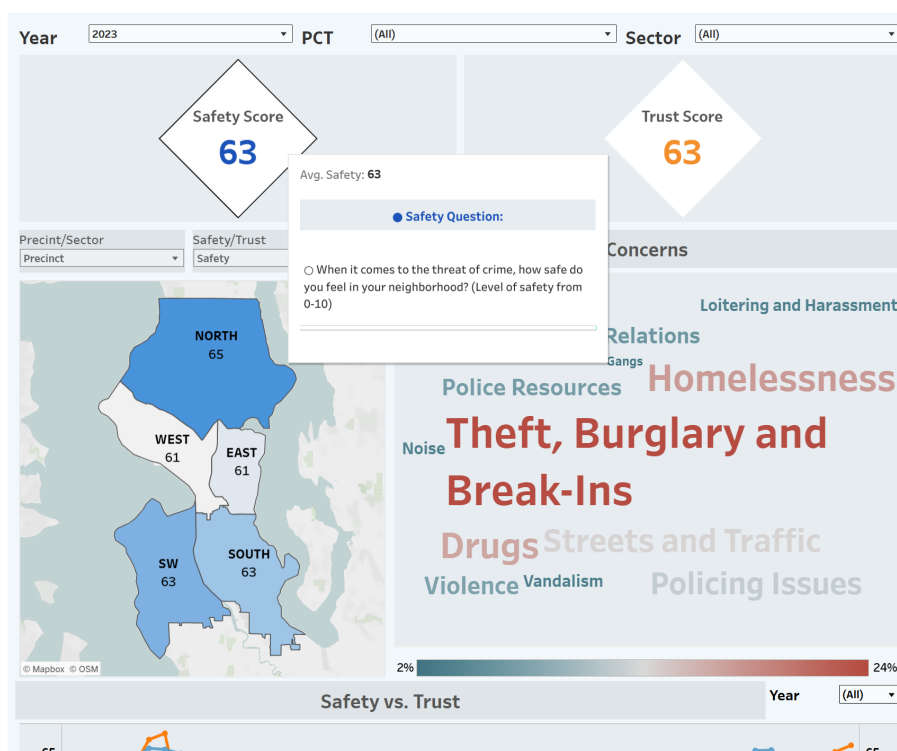


Table 2. Clean Data, Status Update

Dashboard	Description	Status
Bias Crime	Because the Bias Crime dashboard contains redundant categories, counting the number of bias crimes by type is challenging.	Revised. Some redundant categories (e.g., “Anti-Lesbian” and “Anti-Lesbian (Female)”) have been combined, but other redundant categories remain (Figure 1).
Crime	The Crime dashboard has redundant indicators of unknown precincts.	Resolved. The Crime dashboard has a single “Null” category.

Clear Questions

Figure 2. Hidden Definitions in the Trust and Safety Dashboard



Dashboards should answer a set of clear, articulated questions (Table 3). In December 2023, OIG found that the [Trust and Safety Dashboard](#) did not demonstrate these criteria (Figure 2). Specifically, this dashboard lacked:

- Definitions for trust and safety;
- A clear ranking of residents’ concerns, both citywide and within individual precincts; and
- An intuitive color scheme for the word cloud.

OIG suggested SPD create a bar chart to rank residents’ concerns more clearly. SPD has not implemented any changes to the Trust and Safety dashboard; however, a major update to this dashboard is forthcoming.⁵

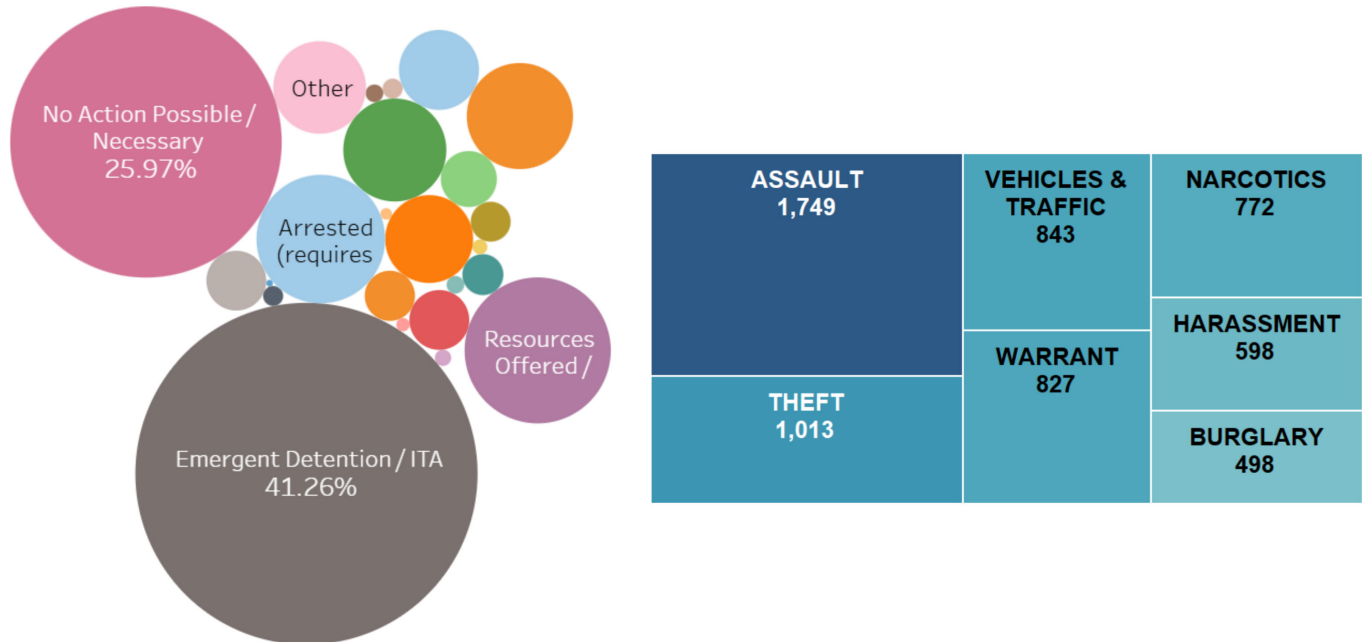
⁵ The Trust and Safety dashboard indicates a revision is coming Summer 2025. As of February 2026, this revision has not occurred.



OIG also suggested SPD replace treemaps and packed bubble charts (Figures 3a and 3b, respectively) with bar charts. Bar charts offer two advantages over treemaps and packed bubble charts:

1. Bar charts visualize differences between items more effectively than treemaps, word clouds, or packed bubble charts.
2. Treemaps and packed bubble charts shorten or hide labels of rare outcomes. For example, in the packed bubble chart in Figure 3a, “Resources Offered/Declined” is shortened to “Resources Offered,” and labels of smaller circles are hidden entirely.

Figures 3a-b: Packed Bubble Chart and Treemap Examples



Note: Figure 3a (left) shows a packed bubble chart from the Crisis Contact dashboard. This bubble chart shows outcomes for individuals who encounter SPD during behavioral health crises. Figure 3b (right) is a treemap from the Arrest dashboard that shows the most common crimes associated with arrests.

Table 3. Clear Questions, Status Update

Dashboard	Description	Status
Arrest	Replace the Arrest dashboard’s treemap with a bar chart.	Unchanged.
Crisis Contact	Replace the Crisis Contact dashboard’s packed bubble chart with a bar chart.	Unchanged.
Trust and Safety	Define “trust” and “safety” in the Trust and Safety dashboard.	N/A. This dashboard is slated for “major upgrades.”
Trust and Safety	Replace the word cloud in the Trust and Safety dashboard with a bar chart.	N/A. This dashboard is slated for “major upgrades.”

Support of User Goals

Dashboards should anticipate the questions users are most likely to ask and answer them as clearly as possible. For example, racial disparities in policing are of significant interest to Seattle residents, particularly in uses of force and Terry stops.⁶

In December 2023, OIG identified that both the Use of Force and Terry Stops dashboards displayed race as a subset of gender (Figure 4). OIG suggested SPD display Terry stop counts by race only.

Figure 4: Demographics of Terry Stop Subjects

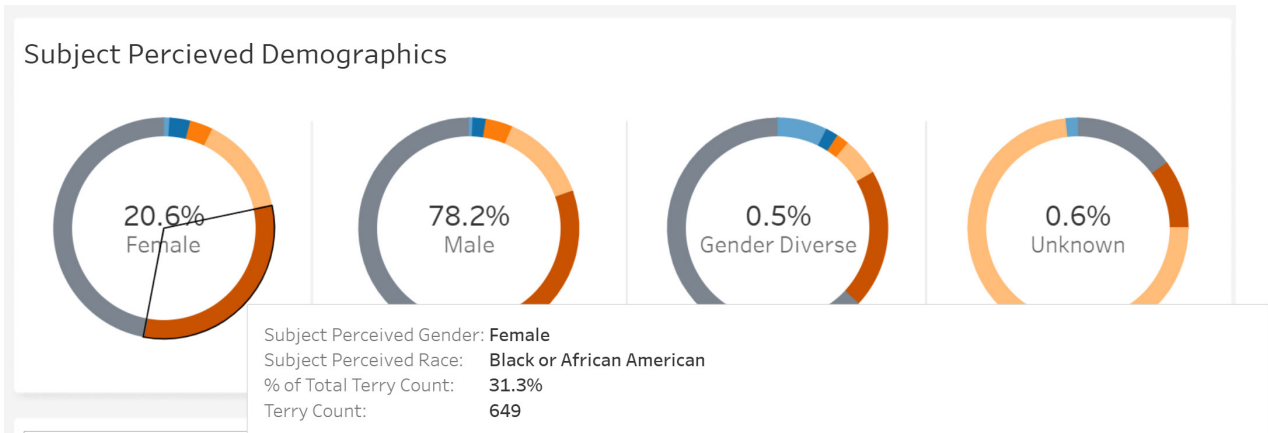


Table 4: Support of User Goals, Status Update

Dashboard	Description	Status
Terry Stops	Display the count of Terry stops as a function of subject race.	Unchanged. Subject race is still displayed as a subset of subject gender.
Use of Force	Display use of force counts as a function of subject race.	Unchanged. Subject race is still displayed as a subset of subject gender.

Accessibility Standards

The City of Seattle must comply with federal regulations governing web accessibility standards.⁷ These federal regulations cite Web Content Accessibility Guidelines (WCAG) 2.1. WCAG 2.1 promotes web accessibility standards to aid mobile users and people with low vision.⁸ It requires contrast ratios between text and background colors of at least 4.5.⁹ Contrast between graphical elements, such as two lines on a graph, should be at least 3:1.

Table 5 presents various contrast ratios between text and background colors. Each line contains the same text (“The quick brown fox jumps over the lazy dog”) with varying levels of contrast against the background color. Combinations with lower contrast ratios are more difficult to read.

6 [ACLU-WA statement on end of federal consent decree for the Seattle Police Department](#). ACLU of Washington. (2025, September 3).

7 [Web and Mobile Accessibility](#), 28 C.F.R. § 35 (2024).

8 SPD informed OIG that they have adopted the WCAG 2.2 AA standards and are in the process of reviewing their dashboards for compliance. WCAG 2.2 includes all elements of WCAG 2.1 and expands requirements with additional accommodations.

9 Accessibility Guidelines Working Group (AG WG) Participants. (2026, June 1). [Understanding SC 1.4.3 contrast \(minimum\) \(level AA\)](#). W3C Web Accessibility Initiative (WAI).

Table 5: Example Contrast Ratios Between Text and Background Colors

Contrast Ratio	Pass/Fail	Text
21:1	Pass	The quick brown fox jumps over the lazy dog.
10:1	Pass	The quick brown fox jumps over the lazy dog.
5:1	Pass	The quick brown fox jumps over the lazy dog.
2.5:1	Fail	The quick brown fox jumps over the lazy dog.
1.5:1	Fail	The quick brown fox jumps over the lazy dog.

SPD has improved the accessibility of its dashboards. Some dashboards now include an option to “toggle visual accessibility.” Selecting this option changes the color scheme to aid users with color vision deficiencies.

Additional Opportunities for Improvement

In February 2026, OIG found additional opportunities for improvement within each of the five categories.

Arrest Dashboard

Understandable Wording

The [Arrest Dashboard](#) has several undefined terms and abbreviations in its header of dropdown menus (Figure 5a). The terms “PCT” and “Beat” are not defined. The abbreviation “pct” refers to precinct but could be confused with “percent.” The header also contains a dropdown menu to filter by arrest types. Options include “CBO-not booked,” “LEAD Diversion,” and “Order Violation-Booked.” General audiences may not be familiar with these terms.

Options in the “Offense Type” dropdown are too specific (Figure 5b). The separate Offense Type Group dropdown provides enough information for most users. Users who need more specific information can be directed to download the raw data files hosted on SPD’s website.



Figures 5a-b: Arrest Type and Offense Type Options in the Arrest Dashboard

Data Update Time: 8/7/2026 7:25:14 AM

Year: 2026 PCT: (Mul... Beat: (All) Arrest Type: (All) Offense Type Group: (All) Offense Type: (All) Court Jurisdiction: (All) Cad Initial Call Type: (All)

Drug Possession & Public Use
☒ (All)
☐ Public Drug Use
☐ Other

Boundaries
 PRECINCT

Year: 2026

Number of Arrests

Number of Subjects

Offense Type by Group: 2026

Arrest Type

- ☒ (All)
- ☒ Arrest - Declined at Jail
- ☒ CBO-not booked
- ☒ CSC/CDF (Crisis Solution Center /Crisis Diversion Facility)
- ☒ Follow Up Arrest-Booked
- ☒ Identify and Release-Not Booked
- ☒ LEAD Diversion

Offense Type

- ☒ (All)
- ☒ DOC Detainer
- ☒ King County
- ☒ RCW - 9.68A.050 | DEALING IN DEPICTIONS OF MINOR ENGAGED IN SEXUALLY EXPLICIT CONDUCT 1ST
- ☒ RCW - 9.68A.090.2 | COMM W/MINOR IMMORAL PURPOSES | ELECTRONIC COMMUNICATION
- ☒ RCW - 9.86.030.1 | FLAG PUBLIC DESECRATION

Note: Figure 5a (above) shows options in the “Arrest Type” dropdown menu of the Arrest dashboard. Figure 5b (below) shows options in the Arrest dashboard’s “Offense Type” dropdown menu.

Clean Data

The “Court Jurisdiction” dropdown contains names of both state laws (i.e., the Revised Code of Washington, or RCW) and jurisdiction names (e.g., King County). Whether these options refer to jurisdictions or violations associated with specialized court programs is unclear.

OIG found naming conventions were inconsistent across dashboards. For instance, in the Arrest dashboard (Figure 6), precincts are given full names (e.g., “North,” “East”). In the Crime dashboard, they are given abbreviated letters (e.g., “N,” “E”).

Figure 6: Options for Precinct (“PCT”) in the Arrest Dashboard

Arrest Dashboard

Data Update Time: 8/7/2026 7:25:14 AM

Year: 2026 PCT: (Mul... Beat: (All) Arrest Type: (All) Offense Type Group: (All) Offense Type: (All) Court Jurisdiction: (All) Cad Initial Call Type: (All)

Drug Possession & Public Use
☒ (All)
☐ Public Drug Use
☐ Other

Boundaries
 PRECINCT

Year: 2026

Number of Arrests

Number of Subjects

Offense Type

- ☐ (All)
- ☒ -
- ☒ East
- ☒ North
- ☒ OOJ
- ☒ South
- ☒ SouthWest
- ☒ Unknown
- ☒ West

Cancel Apply

VEHICLES & TRAFFIC
845

NARCOTICS
777

7,172

5,502

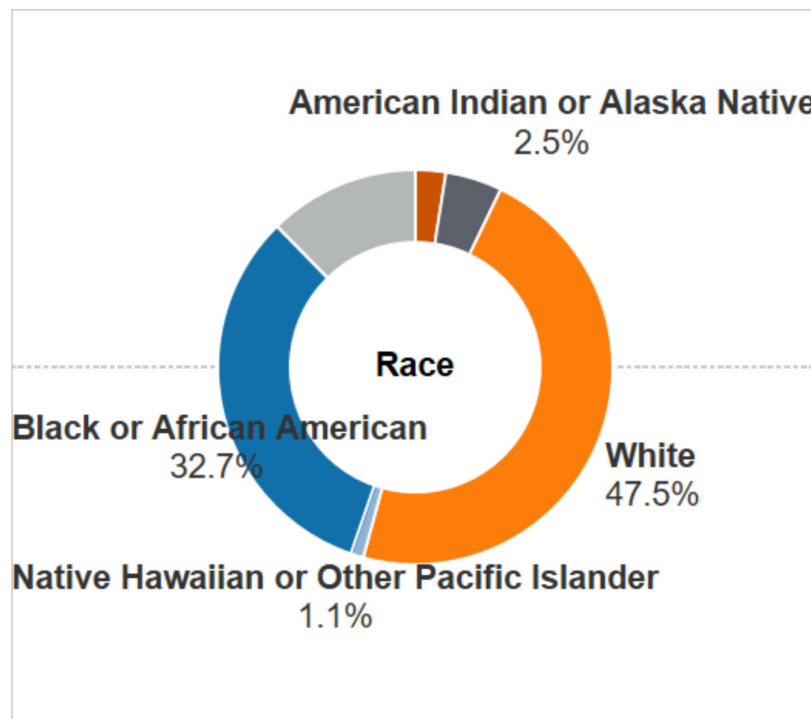
Clear Presentation

Arrestee demographic data is described as “self-reported.” However, demographic data is based on both subject IDs (e.g., driver’s licenses) and officer perceptions. OIG suggests inserting a footnote indicating that all information comes from officer reports. By default, the Arrest dashboard presents information by precinct. Users may not know the precinct associated with locations they frequent (e.g., home, school, or work). OIG supports the inclusion of precincts. However, alternative geographic boundaries, such as neighborhoods (identical to “MCPPs”), should be provided.

Accessibility

OIG found one instance of insufficient color contrast between a doughnut chart label (written in black text) and its dark blue background color (hex code #1170AA) (Figure 7).¹⁰ The background color should be changed to improve contrast.

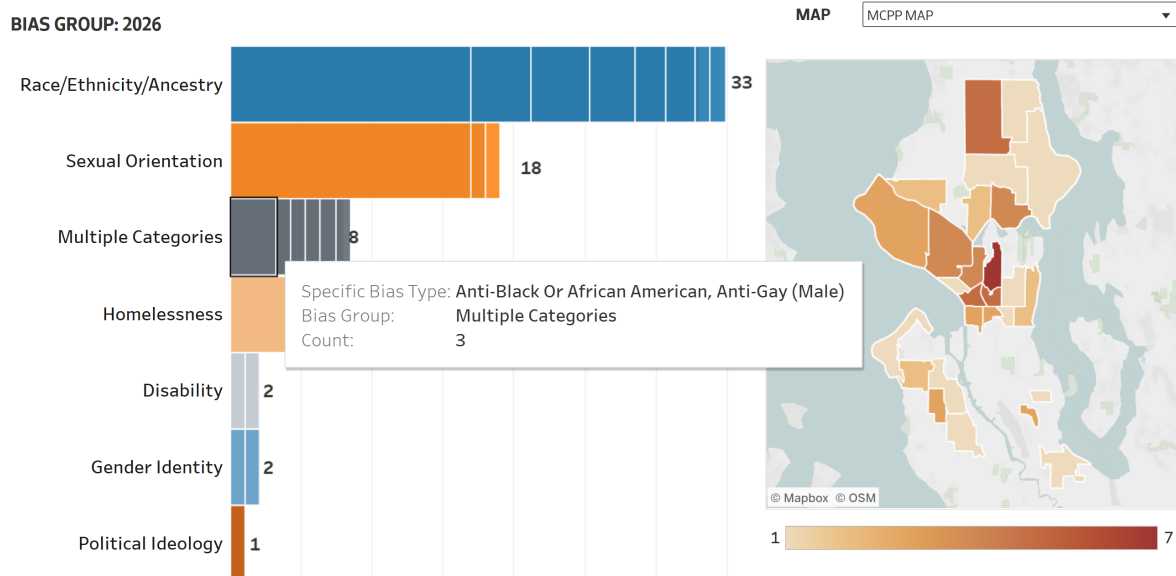
Figure 7: Insufficient Color Contrast Between Text and Pie Chart Colors in the Arrest Dashboard



¹⁰ “Hex” or hexadecimal codes consist of six letters and/or numbers and represent each color that can be displayed on a computer monitor.

Bias Crime Dashboard

Figure 8: Specific Bias Types with Multiple Group Memberships



Understandable Wording

The terms “bias crimes,” “bias incidents,” and “crimes with bias elements” should be defined.

Clean Data

The [Bias Crimes Dashboard](#) includes options in its Specific Bias Types variable that are defined by multiple group memberships, such as “Anti-Black or African American, Anti-Gay (Male)” (Figure 8). Most analytics software programs cannot recognize when a variable’s categories overlap. As a result, bias crimes given this label might not be included when users seek information about crimes based on race or sexual orientation alone. OIG suggests SPD use mutually exclusive (i.e., non-overlapping) categories that treat membership in groups of interest as a binary (yes/no) variable.

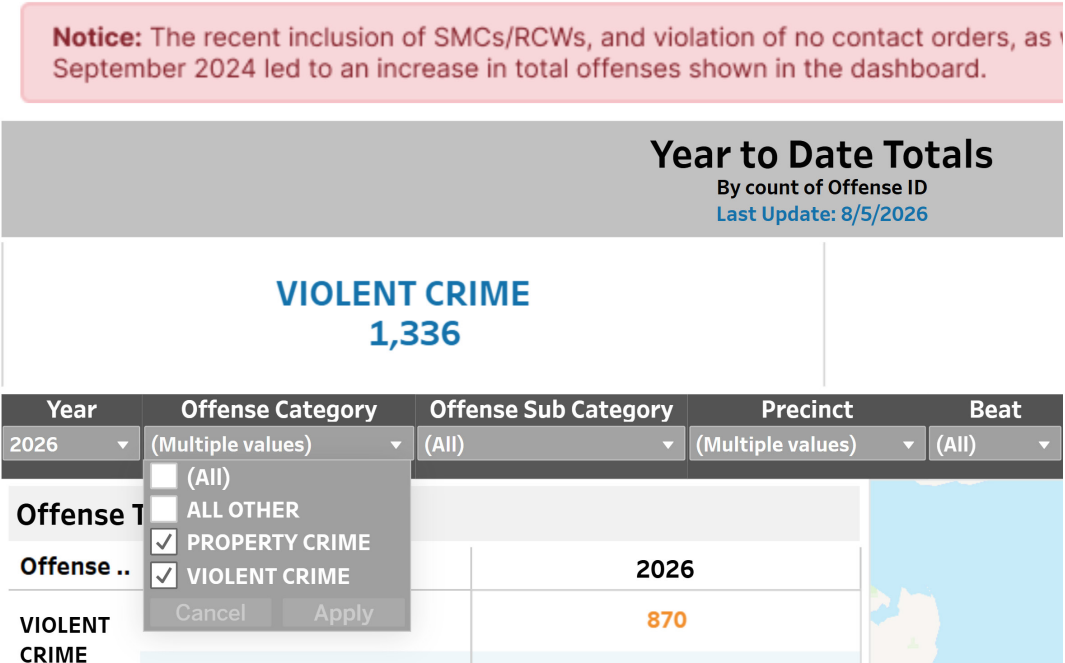
Users interested in crimes with intersectional bias (i.e., biases based on multiple identities) can click on the corresponding dashboard component to filter all other elements by it. For example, clicking the Race/Ethnicity/Ancestry component would remove all bias crimes based on sexual orientation that were not also related to race, ethnicity, or ancestry.

Crime Dashboard

Understandable Wording

In the [Crime Dashboard](#), “Offense Category” and “Offense Subcategory” are unclear terms. “Offense Category” could be renamed to “Crime Against” with the options “Person,” “Property,” and “Society,” per the FBI’s National Incident-Based Reporting System guidelines (Figure 9).¹¹ In addition, items in the Offense Subcategory variable provide enough detail for most users and can be used across dashboards.

Figure 9: Offense Category and Offense Subcategory Dropdown Menus



Clear Presentation

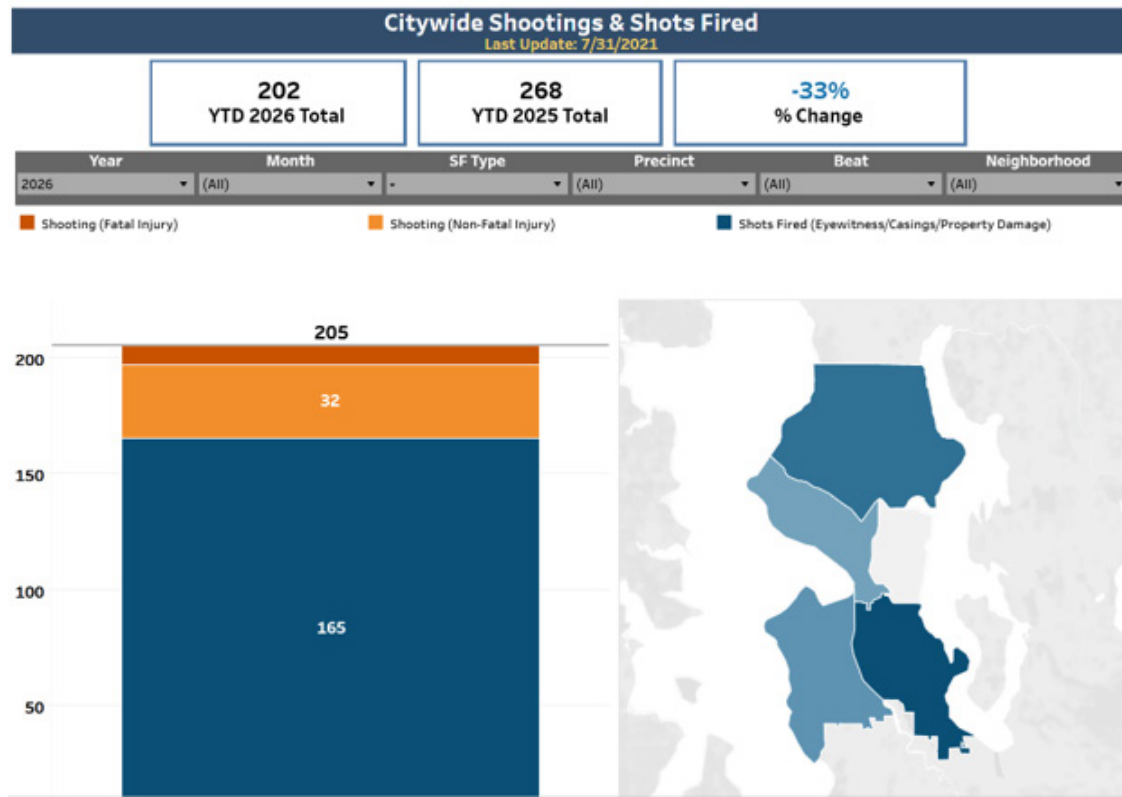
The Shooting & Shots Fired tab on the Crime dashboard does not have a label above its interactive map box. As a result, users may not recognize how borders in the map are drawn.

Events in the Shootings & Shots Fired tab (“Shots Fired,” “Shooting (Non-Fatal Injury),” and “Shooting (Fatal Injury)”) are not mutually exclusive (Figure 10). If events were mutually exclusive, then the “YTD 2026 Total” would be 205, not 202. OIG suggests separating each stack of the bar chart and informing users that events may belong to multiple categories.

According to the Shootings & Shots Fired tab, counts refer to “a distinct count of reports and not the number of victims.” To emphasize this distinction, the y-axis might instead read “Number of Reported Events.”

11 Berzofsky, M., Barrick, K., Scott, T., Smith, E., & Barnett-Ryan, C. Bureau of Justice Statistics. (2022). [Indicators for crime estimates using NIBRS data](#). U.S. Department of Justice.

Figure 10: Stacked Bar Chart on the Crime Dashboard's Citywide Shootings & Shots Fired Tab



Support User Goals

The Crime Rate tab does not filter by geographic area. OIG suggests providing crime rates by neighborhoods (i.e., Micro-Community Policing Plans).

Accessibility Standards

The red disclaimer at the top of the Crime dashboard is an image that may not meet accessibility requirements (Figure 11). This disclaimer can be moved below the dashboard and written in plain text.

Figure 11: Disclaimer in Crime Dashboard

Notice: The recent inclusion of SMCs/RCWs, and violation of no contact orders, as well as other smaller changes to the data in September 2024 led to an increase in total offenses shown in the dashboard.

The banded rows on the visualization's main tab (also called "Crime Dashboard") use a beige background color (hex code #F0F7FA) and orange text color (hex code #F49C45). This color contrast is below the minimum requirement specified by WCAG (Figure 12).

Figure 12: Color Contrast of Crime Counts Table in Crime Dashboard

AGGRAVATED ASSAULT	1,192
HOMICIDE	11
RAPE	147
ROBBERY	568
Total	1,918

CAD Dashboard

Understandable Wording

In the [CAD Dashboard](#), Some categories in “Event Group” are unclear (e.g., “administrative” and “assigned duty”). These categories should be combined into one label (e.g., “Administrative”) or removed (Figure 13).

Figure 13: Unclear Wording in CAD Dashboard

Year

2026

Dispatch Precinct

(All)

How Received

(All)

Event Group

(All)

Final Call Type

(All)

Map

Precinct

2026 CAD Events by

Traffic

Disturbance

☒ (All)
☒ Administrative
☒ Alarms, False
☒ Animal Complaint
☒ Arson, Bombs, Explosion
☒ Assaults
☒ Assigned Duty
☒ Assist Other Agency
☒ Assist Public

Support of User Goals

The CAD dashboard currently presents average, median, and mode response time (Figure 14). However, users may not recognize why these measures of time differ. For example, the size difference between the mean (71.2 minutes) and median (16.5 minutes) suggests that response times for some calls may be extremely long. Meanwhile, the modal response time (0.2 minutes, or 12 seconds) may overrepresent onviews (i.e., encounters immediately following an officer’s observation, not a dispatch). OIG suggests only providing the median response time, which is less affected by extreme response times.

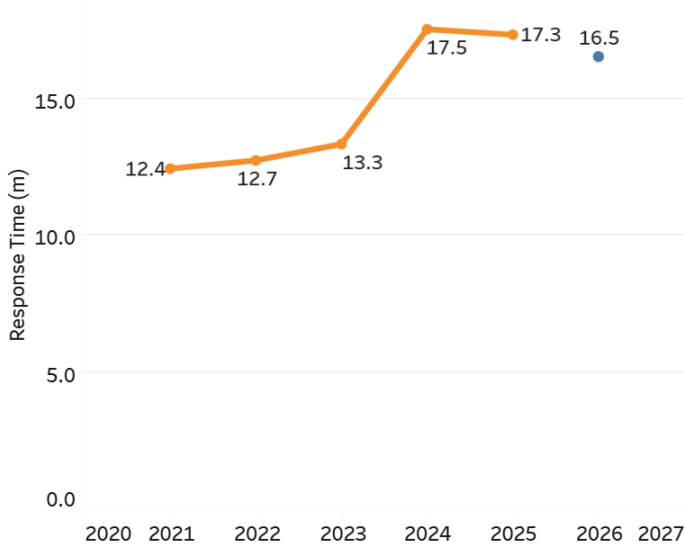
Figure 14: CAD Dashboard Response Time

Priority

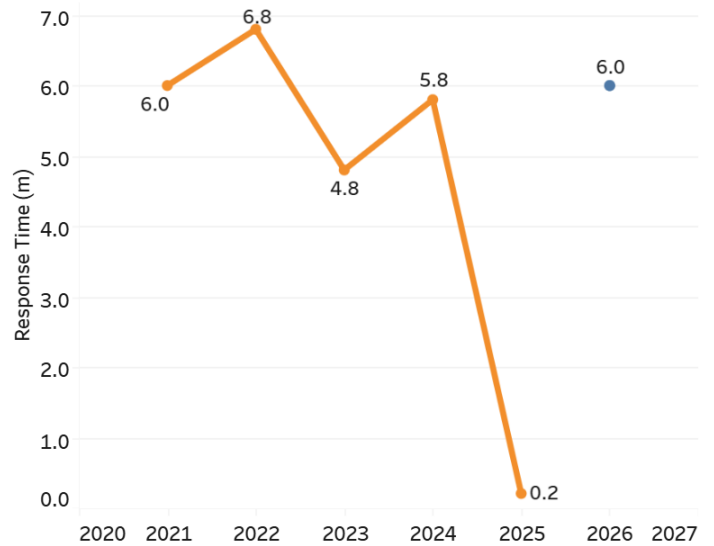
(All)

Last Update: 8/1/2026

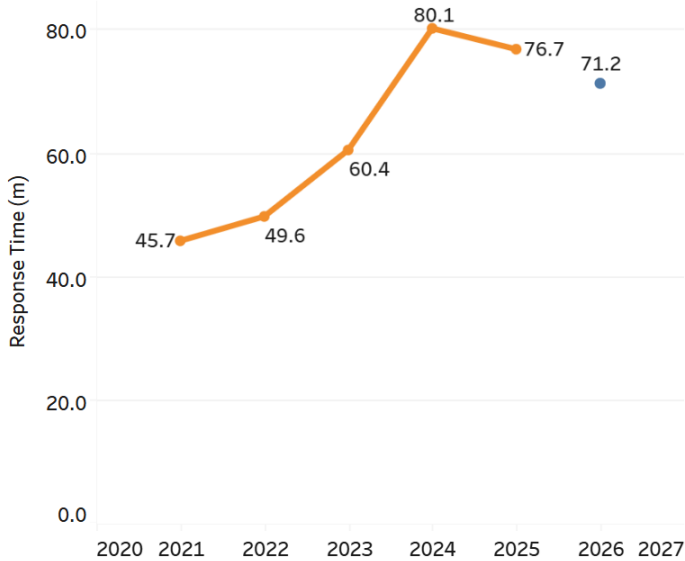
Median



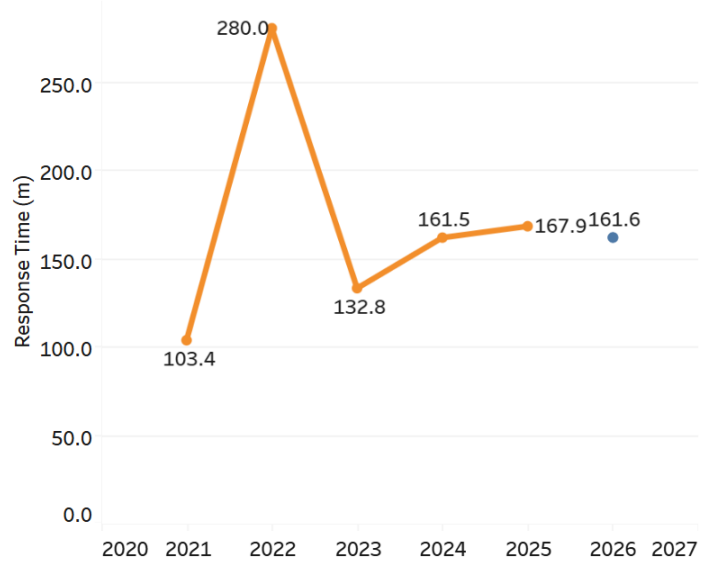
Mode



Average



Standard Deviation



Crisis Contact Dashboard

Understandable Wording

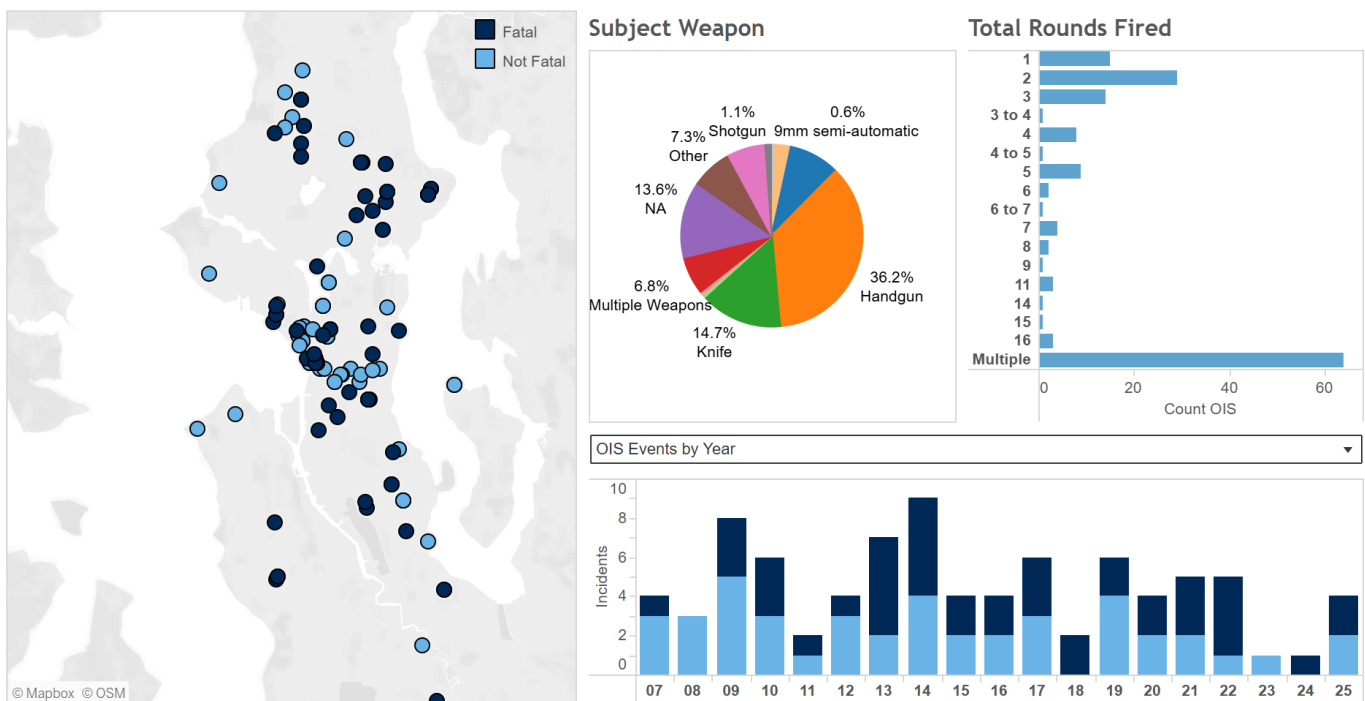
In the [Crisis Contact Dashboard](#), Crisis Disposition should be renamed to a more familiar term (e.g., “Outcome of Crisis Case”).

Clean Data

Outcomes should be consolidated to help users draw inferences (e.g., “Crisis Clinic” and “Social Service” can be merged).

Use of Force Dashboard

Figure 15: Total Rounds Fired in Officer-Involved Shootings Dashboard



Clean Data

In the [Officer-Involved Shootings Dashboard](#), the “total rounds fired” categories should have consistent numerical ranges (e.g., “3-4”). Because some numbers are grouped, OIG suggests placing all counts into groups (e.g., “1,” “2,” “3-4,” “5-7,” etc.) (Figure 15).

Clear Presentation

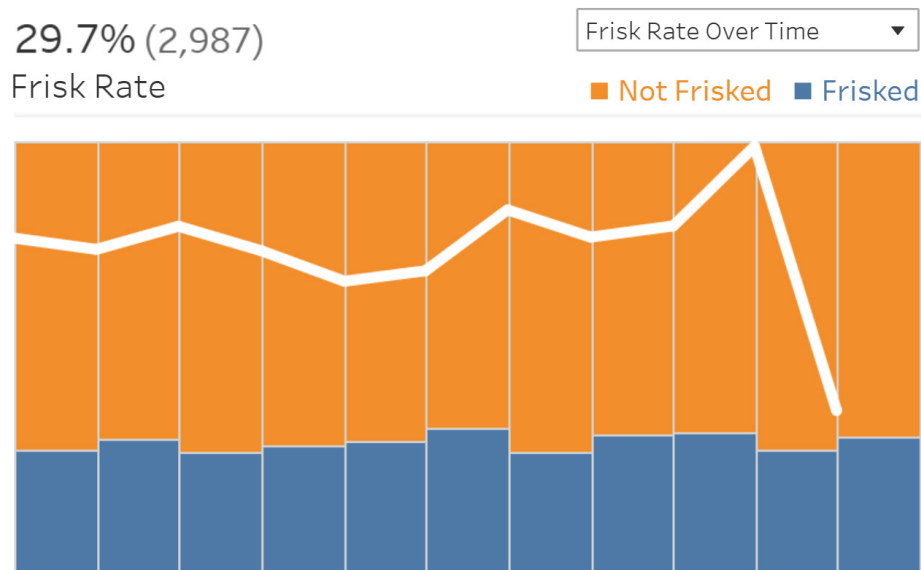
Outcomes should be consolidated to help users draw inferences (e.g., “Crisis Clinic” and “Social Service” can be merged).

Terry Stops Dashboard

Clear Presentation

The [Terry Stops Dashboard](#) should explain what the white line in its Frisk Rate view represents (Figure 16). In addition, this view should include axes and axis labels.

Figure 16: Frisk Rate View in the Terry Stops Dashboard



Understandable Wording

In the Crisis Contact dashboard, Crisis Disposition should be renamed to a more familiar term (e.g., “Outcome of Crisis Case”).

Clean Data

Outcomes should be consolidated to help users draw inferences (e.g., “Crisis Clinic” and “Social Service” can be merged).

Use of Force Dashboard

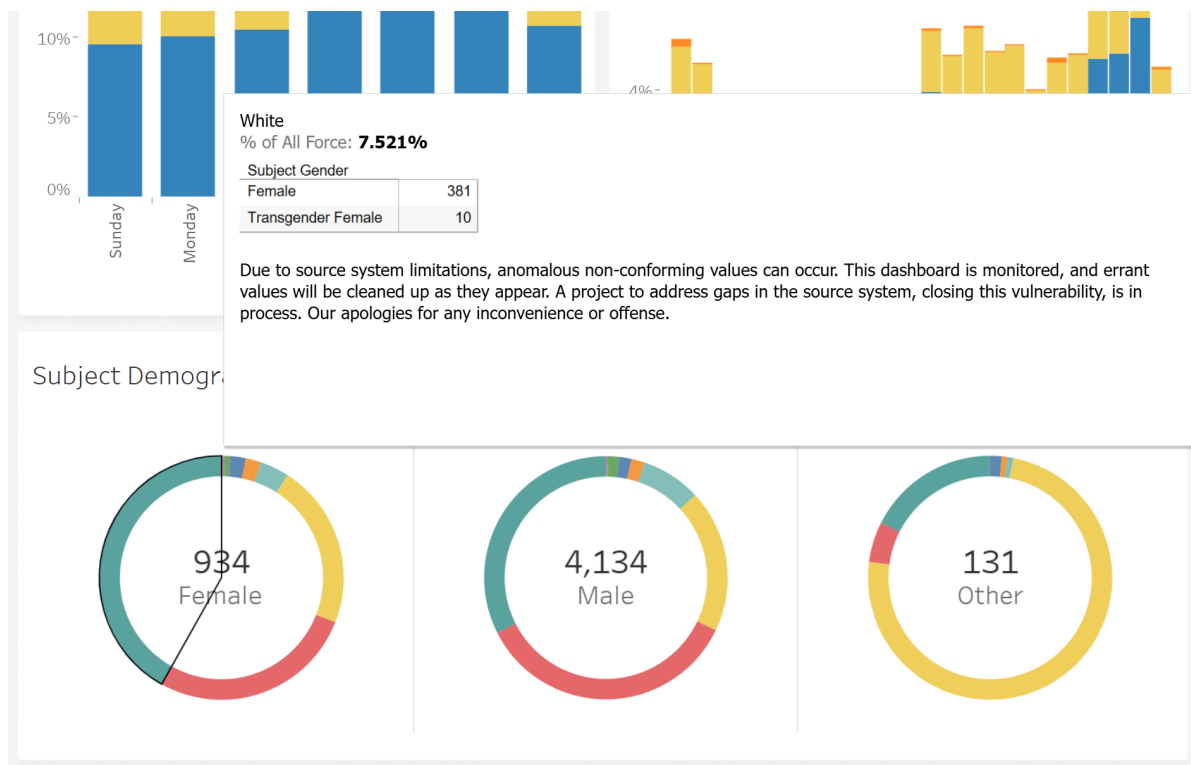
Understandable Wording

In the [Use of Force Dashboard](#), the disclaimer that appears when users hover over the doughnut chart (i.e., “Due to source system limitations...”) of gender distributions has complex language (Figure 17). This disclaimer should be removed or turned into a footnote with simpler language, e.g.:

This dashboard is updated automatically when officers write reports. Sometimes, reports contain mistakes and need to be edited. We will correct any issues as soon as we identify them.

“Female” and “transgender female” should be consolidated into a single “female” category (Figure 17).

Figure 17: Use of Force Dashboard Contains Complex Wording



Accessibility Standards

The City of Seattle Style Guide requires line graphs to distinguish lines using something besides color. OIG suggests SPD add distinct shapes to each line.

The color contrast between precinct boundaries and their labels is 4.34:1 (see below for a sample of how “the quick brown fox jumps over the lazy dog” appears with this contrast ratio). This combination is below WCAG’s recommended 4.5:1. The background color should be lightened to meet this standard.

The quick brown fox jumps over the lazy dog.

Concept Design for SPD Dashboards

OIG has designed concept SPD dashboards that:

- Use plain language;
- Present information in a clear visual hierarchy; and
- Aid users in finding information of interest.

These mockups are provided only for SPD’s consideration. Any revisions to SPD’s dashboards may not resemble these proposed designs. This design uses components available in popular dashboard creation tools such as Tableau and Microsoft Power BI, but the exact presentation may not be the same. SPD, not OIG, is responsible for designing and maintaining these dashboards.

The numbers in our mockups are for demonstration purposes only.
They do not represent crime statistics for any location.

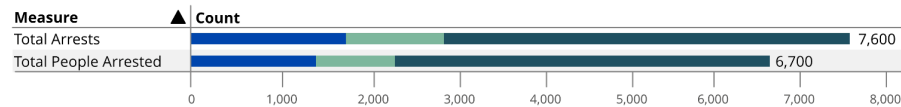
Figure 18: Concept Design for Arrest Dashboard

Arrest Dashboard

2025 ▾ All Months ▾ All Encounters ▾ All Crimes ▾

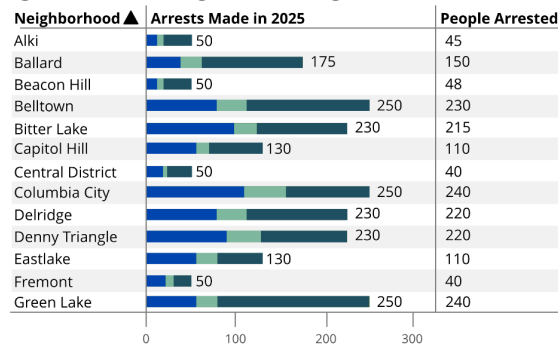
Person Property Society

Totals

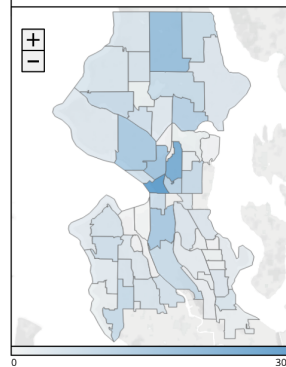


Location

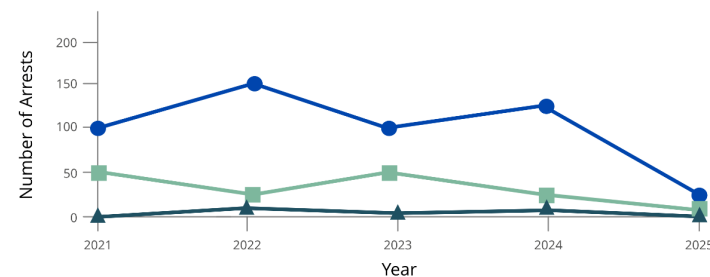
By Neighborhood By ZIP Code By Precinct/Beat



Arrests for All Crimes January 1, 2025—Now



Trends



Show Me

Annual Trends ▾

Crime Categories ▾

Person
Property
Society

Subject Demographics

Gender	Number ▾	Percentage
Male	280	67.5%
Female	133	22.5%
Nonbinary	32	0.5%
Total	500	100.0%

Race	Number ▾	Percentage
White	350	35.5%
Black or African American	218	30.5%
Asian	33	4.5%
Unknown or Self-Identifying	22	3.5%
American Indian or Alaska Native	5	0.5%
Native Hawaiian or Pacific Islander	3	0.5%
Total	500	100.0%

Age	Number ▾	Percentage
Under 18	350	35.5%
18-29	218	30.5%
30-39	33	4.5%
40-49	22	3.5%
50-59	5	0.5%
60 and Older	3	0.5%
Total	500	100.0%

Dropdown Menus

At the top of the dashboard, users can choose which information is displayed on the interactive dashboard. Options are intuitive. For instance, selecting “2025” allows the user to filter the data by year(s). Meanwhile, “All Encounters” lets users choose “Someone called first responders” or “Officer saw something,” rather than “dispatch” or “onview.”

The “All Crimes” menu lets users check which crimes are counted in dashboard elements. The menu uses a hierarchy based on the National Incident-Based Reporting System (NIBRS) “Crime Against” and “Offense Categories,” e.g.:¹²

Person

- Assault Offenses
- Homicide Offenses
- Kidnapping/Abduction

Property

- Arson
- Bribery
- Burglary/Breaking and Entering

Society

- Drug/Narcotics Offenses
- Gambling Offenses
- Pornography/Obscene Material

By seeing example offenses, Definitions for each “Crime Against” category become self-explanatory. Users can determine each category’s characteristics without additional documentation.

Totals Bar

A totals bar displays citywide counts of crimes against persons, property, and society at the top. Its color scheme, used throughout the entire visualization, is based on the City of Seattle Style Guide’s “cool” palette:

- Cobalt
- Aqua Forest
- Daintree

The Daintree color was substituted with a dark teal. OIG suggests consulting with the City’s Digital Engagement Team to select a replacement color for the final dashboard.

Because the dashboard is interactive, selecting any label or portion of the bar will filter other components of the visualization. For instance, if a user selects the cobalt portion of the bar or the “Person” label, only data regarding crimes against persons will be displayed on the dashboard.

Colors vary in both hue (shade) and luminosity (lightness). The dark-light-dark pattern of the color scheme

¹² Berzofsky, M., Barrick, K., Scott, T., Smith, E., & Barnett-Ryan, C. Bureau of Justice Statistics. (2022). [Indicators for crime estimates using NIBRS data](#). U.S. Department of Justice.

allows users with color vision deficiencies to distinguish the crime categories by luminosity. The ordering of categories is consistent throughout the visualization. For any bar, the leftmost and rightmost portions will always represent crimes against persons and society, respectively.

Location

The Location section provides counts of crimes against persons, property, and society based on a user-selected set of geographic boundaries. In the concept dashboard, users can toggle between neighborhood, ZIP code, and precinct/beat. As shown above, there is both a table and a map of locations. Elements of the visualization and their dimensions are labeled for easy navigation.

Because the dashboard is interactive, users can click on neighborhood names or other geographic boundaries in the table, and all regions except the selected boundary will be deemphasized in the map. Selecting a region on the map will produce the same effect and temporarily hide all other locations in the table.

Trends

The trends section shows counts of crimes by year, stratified by NIBRS categories. Because colors alone cannot be used to distinguish NIBRS category, shapes mark the values at each 12-month interval. Users can toggle between Annual and Monthly Trends.

Tables counting various subject demographics are presented at the bottom of the page. The interactivity of the graph means that selecting one gender, racial, or age group will filter all other elements of the visualization to display only associated cases, allowing users to examine data in cross-sections. Text at the bottom of the page should clarify that demographic information was reported by officers and may not accurately reflect subject characteristics.

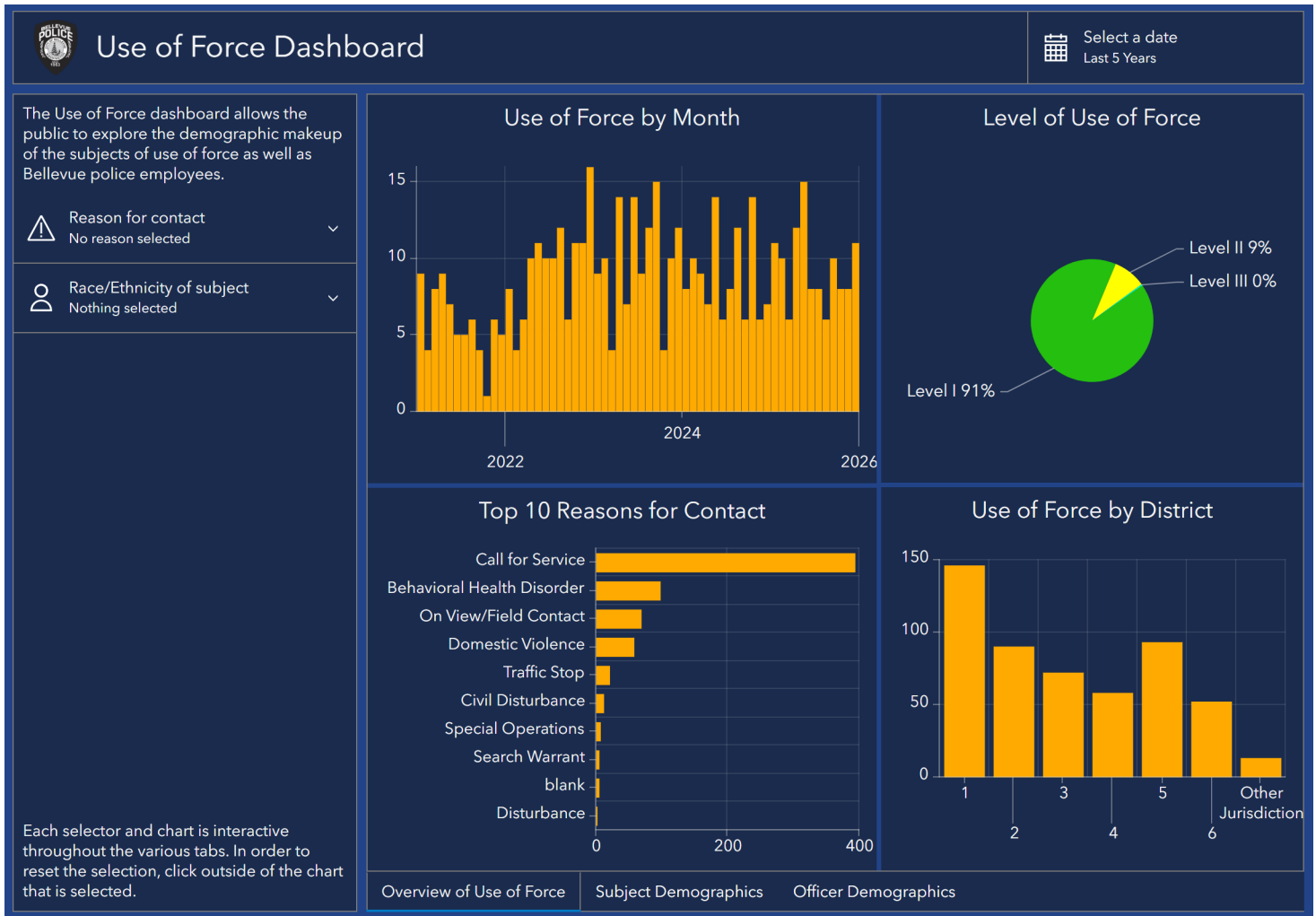
Concluding Remarks

The proposed design would offer several improvements to SPD's current data visualizations. First, by presenting information in a consistently applied hierarchy, users who learn to navigate one dashboard will know how to navigate others. Second, the layout answers a limited number of questions and answers the most asked questions at the top of the dashboard. Finally, the suggested dashboard uses design trends specified by the City of Seattle's Digital Engagement Team, which have been vetted for accessibility and provide cohesion with other city departments.

Appendix A: Example Jurisdictions

Bellevue Police Department

Figure 19: Bellevue Police Department Use of Force Dashboard



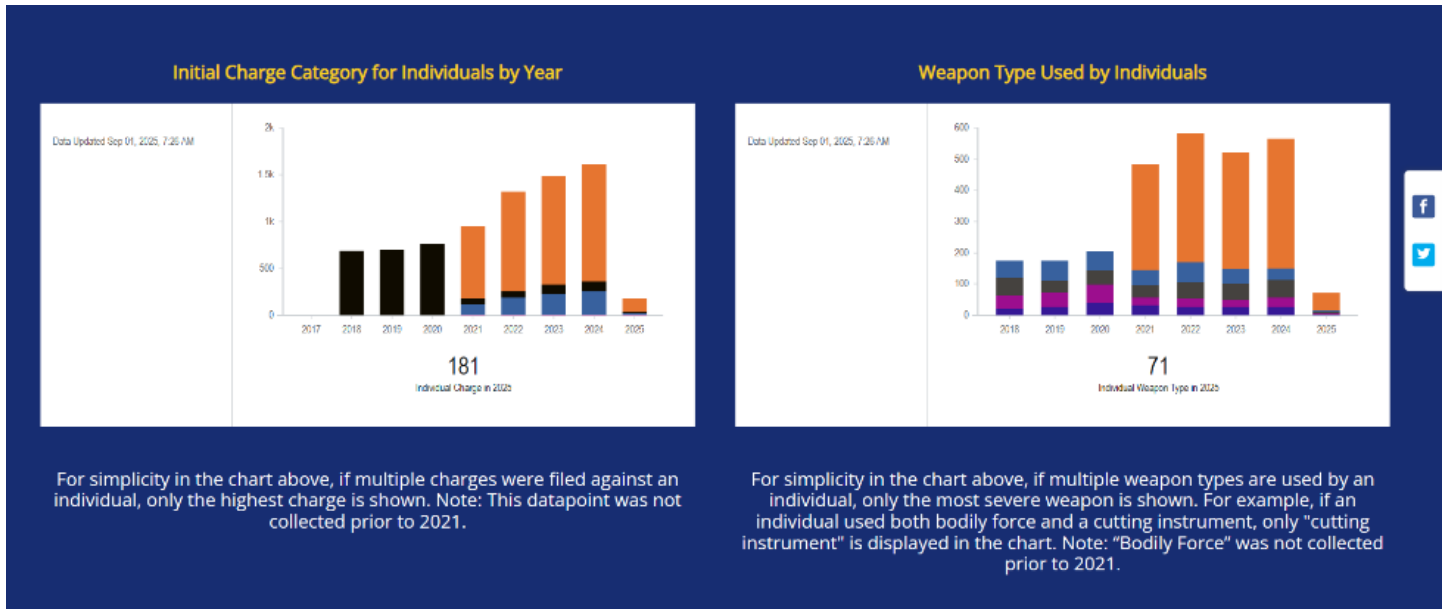
The [Bellevue Police Department's Use of Force Dashboard](#) demonstrates characteristics of quality dashboard design:

- **Support user goals:** Users who are interested in use of force data are most likely to ask questions about trends over time (i.e., is force increasing or decreasing) and racial disparities in police use of force. The dashboard makes this information easy to find. Use of force by month is displayed in the top left corner, which is typically the first place a user will look on a webpage. Race and ethnicity information is also easy to find, accessible from both the sidebar on the left as well as "Subject Demographics" on the bottom.
- **Present information clearly:** Each component of this visualization has a title, and all axes are given tick marks.
- **Meets accessibility requirements:** The colors of this visualization are high contrast. Yellow-orange bars stand out from the dark-blue background, and the green, yellow, and light blue colors of the pie chart are easily distinguishable. Labels are fully spelled out and easy to read.

- Use understandable terms: Users are told that the chart is interactive, and that selecting by any dimension on one tab, other elements of the graph will change accordingly.

Phoenix Police Department

Figure 20: Phoenix Police Department Use of Force Dashboard



The [Use of Force Dashboard](#) for the Phoenix Police Department (PPD) spreads information across multiple visualizations that span a web page. PPD's design allows the department to integrate plain language explanations in both text and video format. A header at the top of the page allows users to obtain use of force counts as a function of race and ethnicity. A disadvantage to PPD's approach is its limited interactivity: clicking an element in one visualization does not modify the appearance of the other. Nevertheless, the design is simple, and users would likely be able to quickly find answers to their questions.

Appendix B: SPD Dashboard Assessment 2023



Seattle Office of
Inspector General

SPD Dashboard Usability Assessment 2023

December 11, 2023

Introduction and Methodology

In September 2023, U.S. District Judge James Robart ordered the Seattle Police Department (SPD) to “develop a data transparency, usability, and accessibility plan that addresses how to (1) improve the collection of data on race in stops, detentions, and use of force; (2) incorporate this data in reporting; and (3) provide public access to these reports and any other data that CPC and OIG identify as being critical to transparency.” This assessment summarizes the Office of Inspector General for Public Safety’s (OIG) suggestions to SPD as they seek to collect and present data in a more comprehensive and accessible manner.

To this end, OIG evaluated SPD’s publicly available data dashboards according to:

- Nielsen Norman¹ Usability Heuristic Evaluation;
- Documentation on Visual Analysis Best Practices by Tableau;²
- Web Content Accessibility Guidelines (WCAG) 2.12,³ as well as color-vision deficiency simulations.

After assessing each dashboard using criteria specified in the above documents, OIG identified areas of improvement for the usability of nine dashboards: the [Arrest](#), [Crime](#), [Computer-Assisted Dispatch \(CAD\)](#), [Crisis Contact](#), [Use of Force](#), [Officer-Involved Shooting](#), [Bias Crime](#), [Terry Stops](#), and [Trust and Safety](#) dashboards. Specifically, OIG suggests that SPD:

- Choose wording suitable for lay audiences;
- Ensure data is “clean” before publishing;
- Ask clear questions and provide clear answers;
- Support user goals; and
- Meet accessibility standards.

Table 1, which can be found at the end of this document, summarizes areas to improve.

In addition to identifying potential improvements for SPD’s presentation of publicly available data, OIG also observed several pre-existing strengths. First, SPD has demonstrated a clear commitment to transparency, and their data collection efforts to date have earned the department a #1 ranking on the VERA Institute’s [Police Data Transparency Index](#). In addition, SPD publicizes data on bias and hate crimes, a unique offering not provided by agencies in similarly sized metropolitan areas. Finally, OIG observed multiple improvements to dashboard elements over the course of this review. OIG commends SPD’s work to date in improving public access to and understanding of policing data through self-analysis and collaboration.

1 Nielsen Norman is a nationally recognized user experience (UX) research firm. User experience researchers study how people interact with computers and ways to simplify those interactions.

2 Tableau is a leading data visualization software company. The City of Seattle uses Tableau’s software to create dashboards.

3 18F, a branch of the U.S. General Services Administration, refers to WCAG 2.1 as “the gold standard” of web accessibility guidelines.



Choose Wording Suitable for Lay Audiences

Agencies can impact how people perceive the content they create and display. This is a critical component in ensuring accessibility and usability for the public. All nine dashboards include wording that is highly technical and likely difficult for lay audiences. For instance, each dashboard includes words such as “precinct,” “beat,” “MCP,” and “watch” (Figure 1). Members of the general public will likely be unfamiliar with these terms.

The [Arrest](#), [Crime](#), [CAD](#), [Crisis Contact](#), [Use of Force](#), [Terry Stops](#), and [Trust and Safety](#) dashboards use overly technical language. For example, the Arrest dashboard provides the “number of arrests” and “number of unique individuals arrested” but does not explain the difference between these two counts. The Arrest dashboard also includes a bar graph displaying “Frequency of Arrests” but does not clearly indicate how data is grouped before frequencies are tallied (e.g., by person per year).



Figure 1. SPD’s [Crime Dashboard](#) includes numerous technical terms such as “Precinct,” “Beat,” “MCP,” “SeaStat Category,” and “SeaStat Offense.”

The [Crime Dashboard](#) includes other obscure terms such as “SeaStat Category” and “SeaStat Offense” in the Crime dashboard tab (Figure 1). Further, the Crime Rates tab contains an explanation of its contents with a readability score of 13, which is considered poor:⁴

Crime rates are calculated based upon the Washington OFM’s [Office of Financial Management] population totals for the City of Seattle. Rates confer an advantage over totals because they represent the number of crime incidents relative to population size. While crime rates are not a proxy for understanding how likely any given person is to be a victim of a crime, they allow statements to be made about how much crime takes place within the city’s population.

The [CAD](#), [Crisis Contact](#), [Use of Force](#), and [Terry Stops](#) dashboards also contain overly technical or undefined terms. More specifically, the CAD and Crisis Contact dashboards mention “Onviews,” and the Terry Stops dashboard references “Stop Resolution.” Meanwhile, the Use of Force and [Trust and Safety](#) dashboards display Type I, Type II, and Type III uses of force and Trust and Safety scores, respectively, but neither dashboard includes a definition for any of these terms.

4. OIG evaluated documentation using Hemingway, a web-based tool that calculates a “readability score” for any given text. Readability scores correspond to U.S. K-12 grades. According to the [U.S. Environmental Protection Agency’s](#) guidance on readability, government websites should target readability scores between 7 and 8 to reach as many people as possible.

OIG also found statistical jargon in the [Terry Stops](#), [Use of Force](#), and [Crime](#) dashboards. First, the Terry Stops dashboard refers to counts of individuals within each category as n. In addition, the Use of Force dashboard's Force Trends visualization includes linear regression equations as well as R-squared and p-values. Similarly, the Crime dashboard's "Shootings & Shots Fired" tab references "distinct" counts of report numbers.

Suggestions for Improvement

- List technical terms and their definitions for each dashboard. Each dashboard should have no more than three technical terms.⁵
- Provide a different option to separate regions (e.g., ZIP codes).
- Replace "MCP" (Microcommunity Policing Plan) with "neighborhood."
- Create documentation with technical notes in a separate location on the SPD website. Technical notes should be clear, succinct, and accessible. An example of high-quality documentation can be found on the [American Community Survey](#)'s website.

Ensure Data is "Clean" Before Publishing

The data presented in SPD dashboards comes from various databases. Multiple users save information to these databases. Much like documents written by multiple authors, information in these databases needs to be "proofread" before being shared with the public. This process is known as data cleaning. When data is not cleaned, quality control problems such as the following can arise:

- Typos can lead to unintended miscalculations of key metrics.
- A user's entry may appear twice or more when it should only appear once, resulting in overcounts.
- There may be redundant categories, which limit an audience's ability to draw conclusions.

OIG identified instances of redundant categories in the [Crime](#) and [Bias Crime](#) dashboards. In the Crime dashboard (Figure 2), multiple labels ("Null," "<Null>," "NULL," and "Unknown") all indicate unknown precincts.

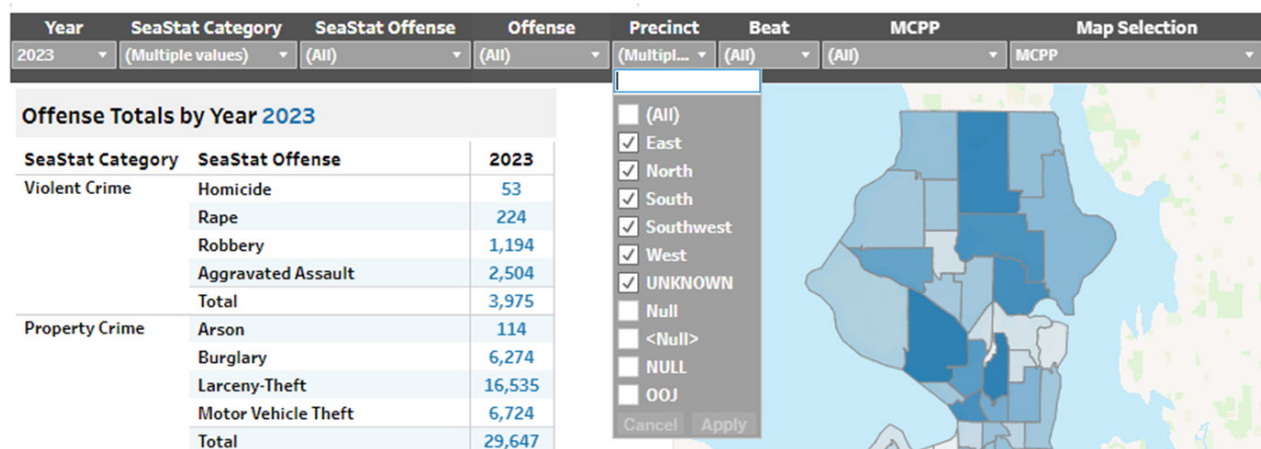


Figure 2. SPD's [Crime Dashboard](#) contains multiple labels for "null" values.

⁵ OIG considers any word that is not among the 5,000 most commonly used words to be a technical term. If a term contains two or more words (e.g., "aggravated assault"), each word should be among the 5,000 most commonly used words.

Appendix B: SPD Dashboard Assessment 2023

The [Bias Crime Dashboard](#) includes categories that are overly specific and often redundant. For instance, “Anti-Lesbian” and “Anti-Lesbian (Female)” are listed as two separate categories of the “Specific Bias Type” variable (Figure 3). Displaying this information in such intense detail frustrates users’ ability to identify trends in bias and hate crimes. This dashboard also incorrectly classifies “transgender” as a sexual orientation.

In addition, OIG also found a misspelling of the word “abandoned” in the [CAD Dashboard](#).

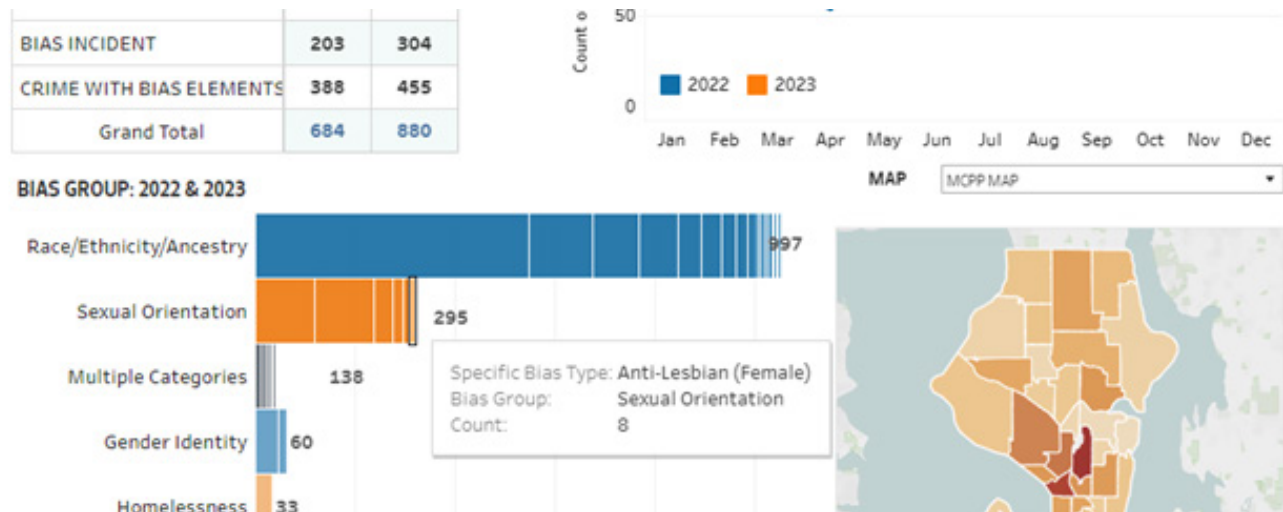


Figure 3. The SPD [Bias Crime Dashboard](#) considers “Anti-Lesbian” and “Anti-Lesbian (Female)” to be distinctly different groups. Such precision frustrates users’ ability to identify trends in bias and hate crimes.

Suggestions for Improvement

- Clean raw data before displaying it in dashboards. Suggested transformations include, but are not limited to, removing null values from visualizations; consolidating categories that describe fewer than 5 percent of records; and ensuring data is free of typos.
- To balance transparency with accessibility, provide raw, untransformed data for download on the Seattle Open Data portal.

Ask Clear Questions and Provide Clear Answers

According to Tableau documentation on best practices in data visualization, dashboards should ask and answer one specific, clear question. Ideally, users should be able to decipher that question and navigate a dashboard [without consulting documentation](#). However, some of the dashboards, such as the [Trust and Safety Dashboard](#) (Figure 4), need improvement to achieve this ideal. Currently, this dashboard attempts to answer the following questions:

- How does perceived trust vary by location?
- How does perceived safety vary by location?
- How have perceptions of trust and safety varied over time?
- What are the primary concerns of area residents?

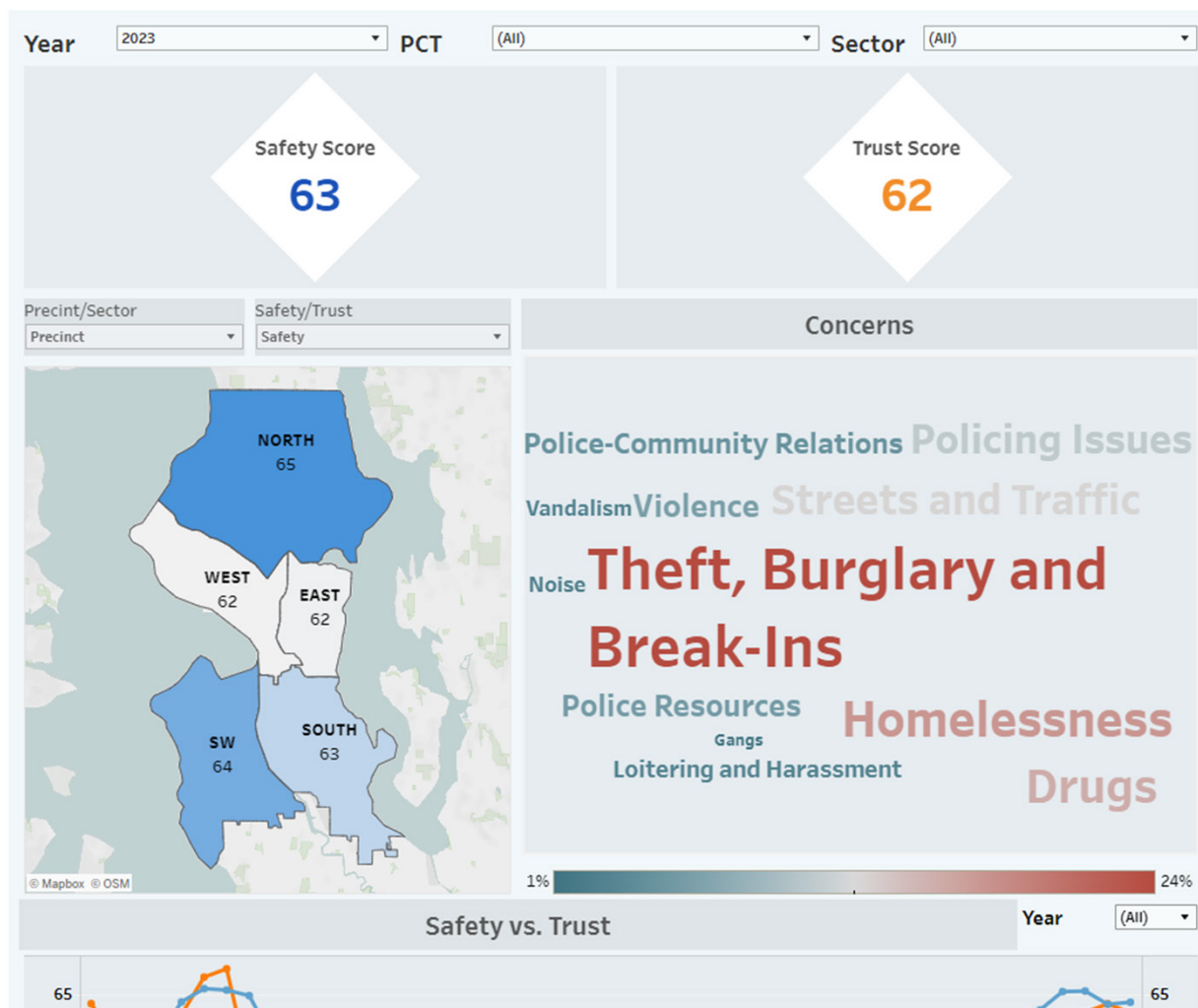


Figure 4. The SPD [Trust and Safety Dashboard](#) attempts to answer multiple questions within the same tab. Also, information presented in the “Concerns” word cloud would be better displayed in a bar chart.

To ensure dashboards answer questions clearly, Tableau recommends that all views—the tables, maps, charts, or other elements that make up a dashboard—be identified with subtitles and contain axis labels and legends, if appropriate. While some dashboards (e.g., the [Trust and Safety Dashboard](#) in Figure 4) do contain subtitles, other dashboards (e.g., the [Crime Dashboard](#)’s “Shootings and Shots Fired” tab) do not feature subtitles for all views. Meanwhile, axis labels and legends would improve understanding of bar charts in the [Crisis Contact](#) and [Arrest](#) dashboards.

Some dashboards include views that do not clearly communicate trends. In the [Trust and Safety Dashboard](#), SPD uses a word cloud to show the most common concerns of respondents across all and within each precinct. However, a bar chart would better answer the question about which concerns are most pressing to residents. Additionally, the color scheme, which uses lighter colors to display values near 12 percent, is not intuitive, as users may assume that lighter text demonstrates issues of lower concern.

Suggestions for Improvement

- Views should be placed in separate tabs and labeled with questions (e.g., “How many uses of force have taken place from 2014-2023?”).
- Documentation should adhere to [best practices](#) described by Nielsen Norman.
- Each view should have a subtitle as well as a legend and axis labels where applicable.
- Bar charts should replace less common views such as [treemaps](#), word clouds, and [packed bubble charts](#).
- Tooltips (i.e., text that appears when a user hovers over a button, link, or other object) should be used sparingly and include minimal text.

Support User Goals

According to Nielsen Norman, designs should prioritize features that support user goals. Software developers must identify the needs of their users and create products that satisfy those needs. Similarly, dashboard creators should anticipate what questions their users may have and how the dashboard can be designed to quickly answer those questions. Any non-essential elements should be removed, per Nielsen Norman guidance.

Racial disparities in policing are of great interest to the Seattle community, especially to users of these dashboards. However, both the [Terry Stops](#) and [Use of Force](#) (Figure 5) dashboards present subject race as a subset of gender. Users who are interested in racial disparities regardless of gender will have to manually add percentages to find the information they seek.

The Use of Force dashboard also features a view displaying use of force on each day of the week as well as overly technical documentation about data cleanliness. Both elements are non-essential and should be removed.

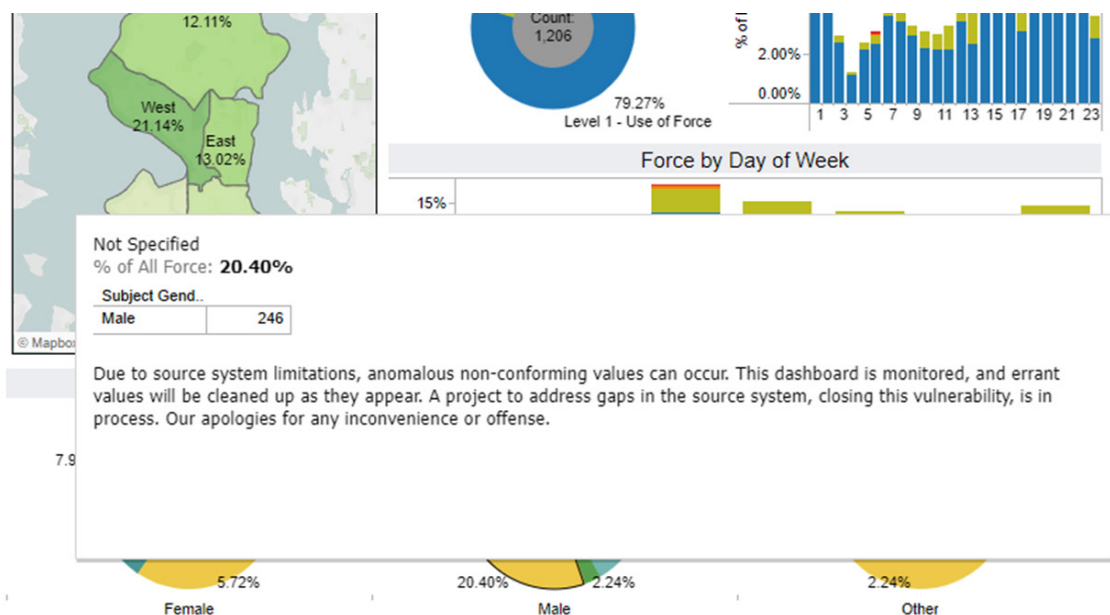


Figure 5. The [Use of Force Dashboard](#) presents racial disparities in use of force as a subset of gender. It also contains non-essential information, such as use of force counts on each day of the week and technical documentation.

Suggestions for Improvement

- Include subject and officer race in the [Use of Force](#) and [Terry Stops](#) dashboards. Race data should not be presented as a subset of other demographic data (e.g., gender, as in the current version of the Terry Stops dashboard).
- Remove elements that are unlikely to interest users from dashboards (e.g., Force by Day of Week), leaving them only in raw data files accessible to users interested in more sophisticated analysis.
- Hold focus groups with community organizations or conduct periodic surveys to better understand users' goals.

Meet Accessibility Requirements

Certain visualizations include colors whose contrast ratios are below thresholds set by accessibility guidelines for state and federal agencies.⁶ For instance, the contrast ratio between the background color and font color of “Policing Issues” in the [Trust and Safety Dashboard](#) (Figure 4) is too low.⁷ Similarly, the [Crisis Contact Dashboard](#) (Figure 6) features a red line above green bars, which is nearly invisible to users with color vision deficiencies.

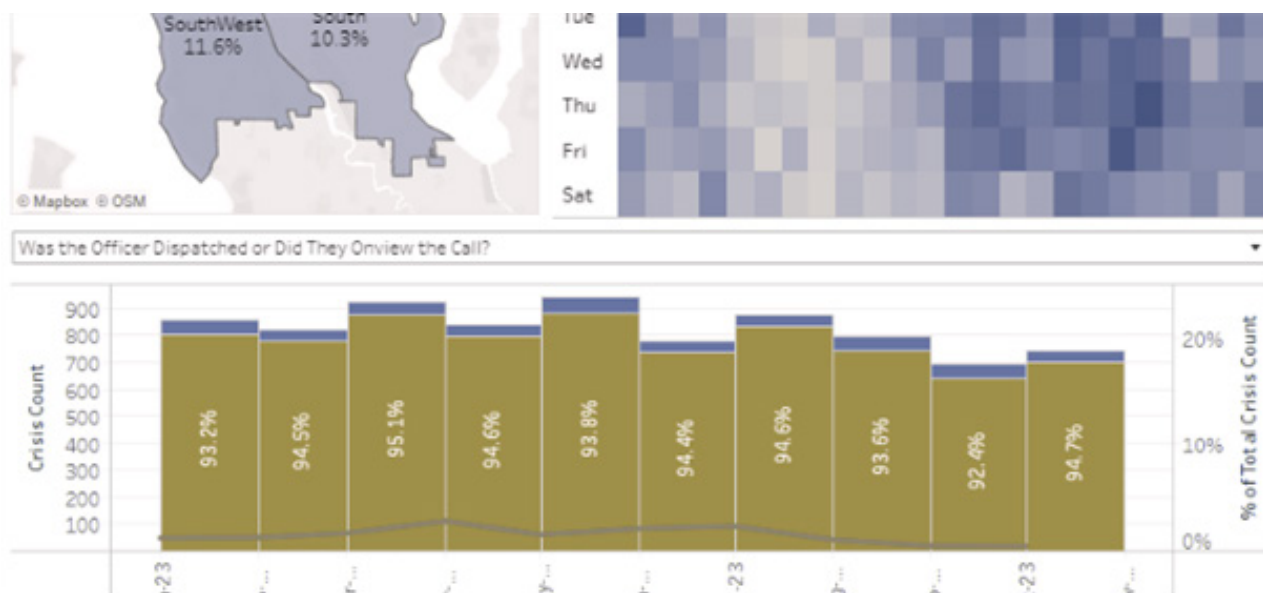


Figure 6. The SPD [Crisis Contact Dashboard](#) features a red line over green bars in its bottom view. When a filter is applied to simulate protanopia (red color deficiency), the line becomes nearly invisible.

6 Contrast ratios between text and background colors should be at least 4.5, per Web Content Accessibility Guidelines (WCAG 2.1), a set of standards cited by both Section 508 of the Rehabilitation Act and WA State Office of the Chief Information Officer (OCIO) Policy 188.

7 The hex value of the text color is #BEC9CB, and the hex value of the background color is #E6ECF0. The contrast ratio between these two colors is 1.42, under the threshold of 4.5.

Suggestions for Improvement

- Ensure that each possible pairing of colors within the same view has a [color contrast ratio](#) of at least 3:1, per [WCAG 2.1 guidelines](#). Text and backgrounds should have a contrast ratio of at least 4.5:1.
- Make dashboards adhere to guidelines described in the [City of Seattle Digital Style Guide](#), which prioritizes accessibility.
- Collaborate with disability rights organizations (e.g., Disability Rights WA) to identify further barriers to access.

Summary and Concluding Remarks

OIG commends SPD's commitment to transparency and substantive progress in collecting and publicizing data. As of this writing, SPD's publicly available resources match or exceed those provided by police departments in similarly sized metropolitan areas. Still, OIG finds multiple opportunities for SPD to improve the usability and accessibility of its dashboards, such as simplifying language, cleaning data before presenting it, asking clear questions and providing clear answers, supporting users' goals, and meeting accessibility standards. Implementing suggested improvements will ensure community members can understand the clear, insight-rich data SPD has committed to provide.

Table 1

Summary of Areas for Improvement

	Choose wording suitable for lay audiences	Clean data before presenting it	Ask clear questions and provide clear answers	Support users' goals	Meet accessibility standards
Arrest Dashboard	Terms such as “unique individuals arrested,” “arrest initiated by,” and “mutually exclusive” are unclear. Less technical terms should be used instead.	--	The treemap should be replaced by a bar chart.	Frequency of repeat arrests is likely not a primary question. Arrest Policy and Metadata should be moved to separately stored documentation.	Per City of Seattle branding guidelines , color alone is not sufficient to designate differences between groups in line, pie, or other charts. Because group names are not displayed, the pie charts at the bottom of the visualization fail to meet standards.
Crime Dashboard	Jargon such as “SeaStat Category,” “SeaStat Offense,” “Precinct,” “Beat,” and “MCPD” should be replaced with less technical language. Methodology and crime rates tab include overly technical language.	Only one stand-in value for missing data should be used.	--	--	The “Monthly Trend” view at the bottom of the Crime Dashboard tab lacks axis titles. In Shootings and Shots Fired tab, the line chart should have different line types (e.g., solid, dashed), per City branding guidelines. The contrast ratio between the dark blue bar and black text in the Shootings and Shots Fired bar graph is below that required by WCAG 2.1.

Appendix B: SPD Dashboard Assessment 2023

	Choose wording suitable for lay audiences	Clean data before presenting it	Ask clear questions and provide clear answers	Support users' goals	Meet accessibility standards
CAD Dashboard	--	The word "abandoned" is misspelled in the "2023 CAD Events by Group" treemap.	A bar graph should replace the treemap.	--	--
Crisis Contact Dashboard	Terms such as "onview the call" and "disposition" will not be understood by typical users. These terms should be changed to less technical language.	"Veteran" is misspelled in the tooltip associated with the bar graph displaying percentages of crisis incidents not involving Veterans.	The bar graph displaying percentages of crisis incidents not involving Veterans lacks axis labels. Only by reading the tooltip does the user know that the bar graph shows the number of crisis cases not involving Veterans.	Race data should be added in anticipation of probable questions and to comply with citywide RSJI .	Colors should match those specified by City branding guidelines. Replace packed bubble chart with bar chart.
Use of Force Dashboard	The regression equations appearing in tooltips of the line graph titled "Force Trends" are unnecessary for lay audiences.	--	--	Data should be stratified by race alone, rather than race and gender. In addition, many of these metrics (e.g., day of week) are likely not of interest to the general public.	Colors are not suitable for those with color vision deficiencies. Colors in line chart are by themselves not sufficient to display group differences, per City branding guidelines.
OIS Dashboard	"Disposition" should be replaced with a more commonly used term.	Elements in the bar chart under "Total Rounds Fired" should be binned so that redundant categories are removed (e.g., "4" and "4 to 5" should not coexist).	Bar charts should replace pie charts.	--	Colors in pie charts are not suitable for those with color vision deficiencies.

Appendix B: SPD Dashboard Assessment 2023

	Choose wording suitable for lay audiences	Clean data before presenting it	Ask clear questions and provide clear answers	Support users' goals	Meet accessibility standards
<u>Bias Crime Dashboard</u>	--	Categories should be consolidated.	--	--	Per City branding guidelines, color alone is not sufficient to designate differences between groups. Line charts should be modified to adhere to guidelines.
<u>Terry Stop Dashboard</u>	Terms such as "Watch" and "Stop Resolution" are overly technical and should be replaced with more common language (e.g., "Time of Day," "What Happened").	--	A bar graph should be used in place of the treemap.	Data should be stratified by race alone, rather than race and gender.	Colors are not suitable for those with color vision deficiencies. Color contrast ratios do not meet WCAG requirements.
<u>Trust and Safety Dashboard</u>	Safety and Trust scores are never defined.	--	A bar graph should be used in place of the word cloud.	--	The color contrast ratios in the word cloud do not meet WCAG requirements.