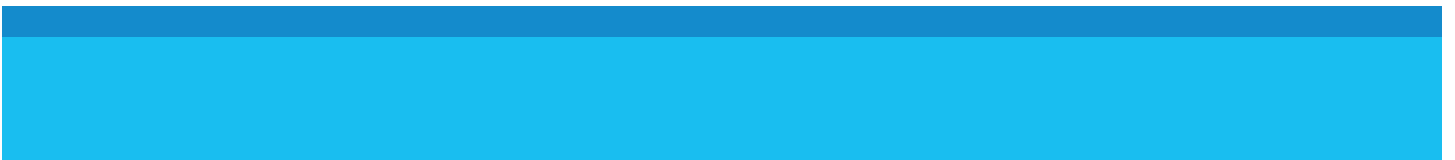


# BMC System Performance Dashboard

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USER GUIDE



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## 1. Overview

This document contains documentation and reference materials supporting the BMC System Performance dashboard development. The purpose of this dashboard is to allow users to explore in detail the existing conditions as they relate to speeds, travel time reliability, bottlenecks, and other congestion-related topics. This can be done at a regional level or more specifically for each jurisdiction in the BMC region.

This document is organized into **User Guide** and **Technical Documentation** sections. The goal of the **User Guide** section is to describe the core functionality of the dashboard from a user's perspective, providing an overview of the dashboard organization and highlighting specific features of interest. The goal of the **Technical Documentation** section is to equip developers with the tools and knowledge needed to make updates to the data showcased in the dashboard.

## 2. User Guide

The dashboard is structured around two tabs: **Annual Bottlenecks** and **Annual Speeds**. Both tabs display data from the RITIS Probe Data Analysis suite, for the years 2019, 2020, 2021, and 2022 when available.

### 2.1 Annual Bottlenecks

The **Annual Bottlenecks** tab allows the user to explore the top bottlenecks region-wide or for a specific jurisdiction or set of jurisdictions for a year between 2019 and the present. Users can use the filters and parameters menu (1) to select which year to show data for, and which jurisdiction(s) to show the top bottlenecks for, the number of bottlenecks to show, whether to show if in the top bottlenecks region-wide or within the selected jurisdictions, and whether to number them according to their regional rank or rank within the selected jurisdictions. In addition, by default the region's Vulnerable Population Index (VPI) geographies are shown, and a second parameter menu (2) enables the user to choose the VPI threshold above which geographies are highlighted in a grey color. A high-level summary of the total congestion metrics is shown in the top-right corner (3). The map (4) shows the top bottlenecks, with their size and color changing depending on their rank (a bigger, more yellow circle corresponds to a top bottleneck). The layers button on the top-left corner of the map (5) enables the user to add or remove different geospatial layers, including: Priority Letter Project Points and/or Lines, LRTP Points and/or Lines, TIP Points and/or Lines, and the aforementioned VPI layer.

The chart on the right visualizes the trend of the chosen travel time reliability metric for the chosen year (1), over the year's months. The filter menu (6) enables the user to choose the measure they would like shown (between Interstate, Non-Interstate, and Truck Travel Time reliability metrics) and the relevant targets that the metrics should meet (2022 targets are entered by default). Note that the Truck Travel Time Reliability metric is an index as opposed to a percentage, and the values for this measure should be at or *below* the target in order to meet it as opposed to above it for the other two metrics. The chart (7) shows the travel time reliability trend across months, labelling each month with its metric value, its color corresponding to whether the target is met (blue) or not met (red).

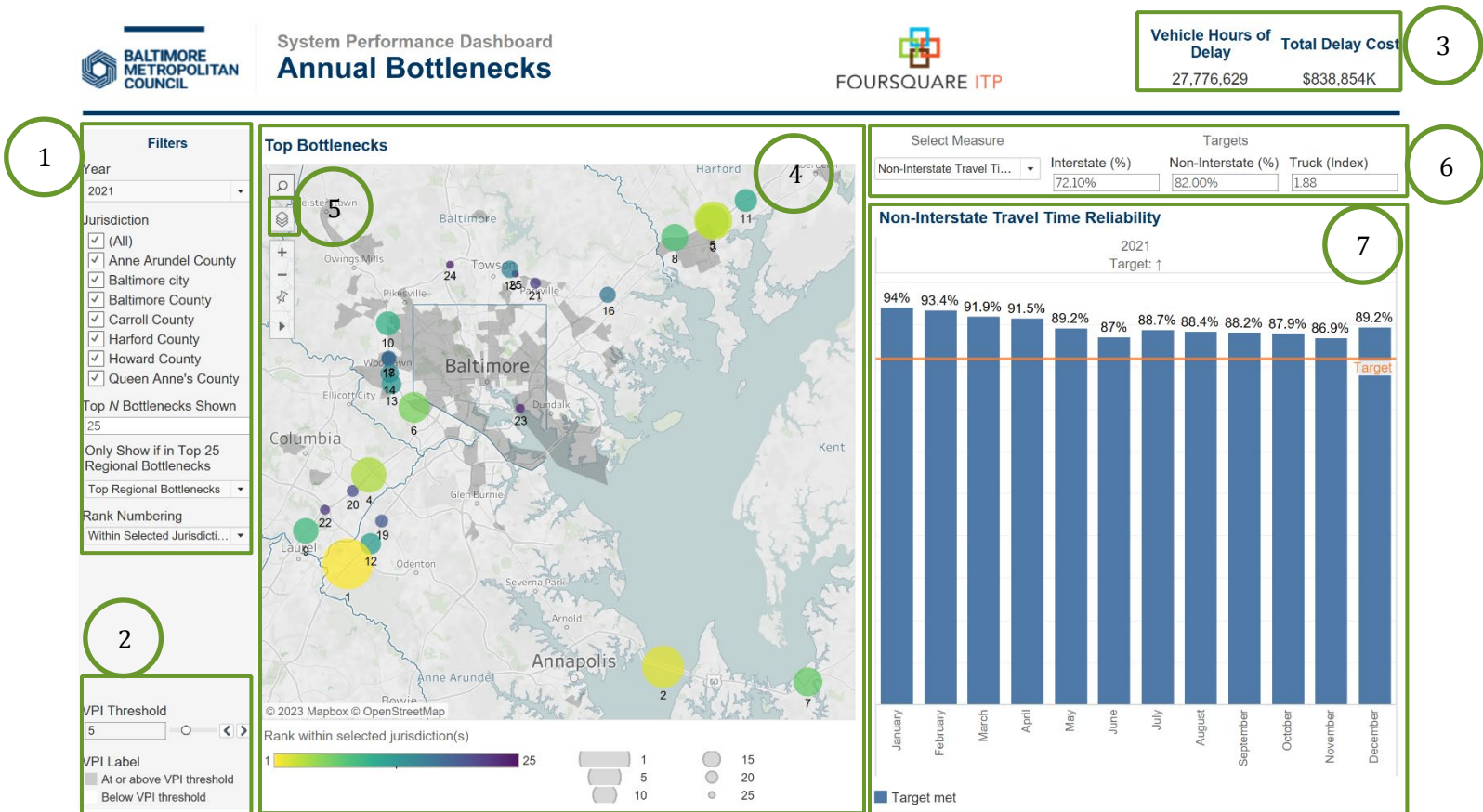


Figure 1: Annual Bottlenecks Tab

## 2.2 Annual Speeds

The **Annual Speeds** tab enables the user to visually explore the speeds on roadway segments in the metropolitan area, as well as visualize the causes of congestion regionally or in each jurisdiction. Similarly to the previous tab, users are able to choose the year whose data they would like to display as well as the jurisdiction(s) (1), and the VPI threshold above which communities are highlighted (2). A high-level summary of the total congestion metrics is shown in the top-right corner (3). In the map parameters (4), the user can select which measure is shown on the map (between average speeds, travel time index, and planning time index), as well as the hour of day for which to display the given metric. The map (5) updates accordingly. The layers button on the top-left corner of the map (5) enables the user to add or remove different geospatial layers, including: Priority Letter Project Points and/or Lines, L RTP Points and/or Lines, TIP Points and/or Lines, and the aforementioned VPI layer.

The causes of congestion chart on the right side (7) lists the total time and cost of delay by cause. This is shown as a list and as a donut chart. The list has the advantage of breaking down the multiple causes categories, which are shown as a single item in the donut chart.

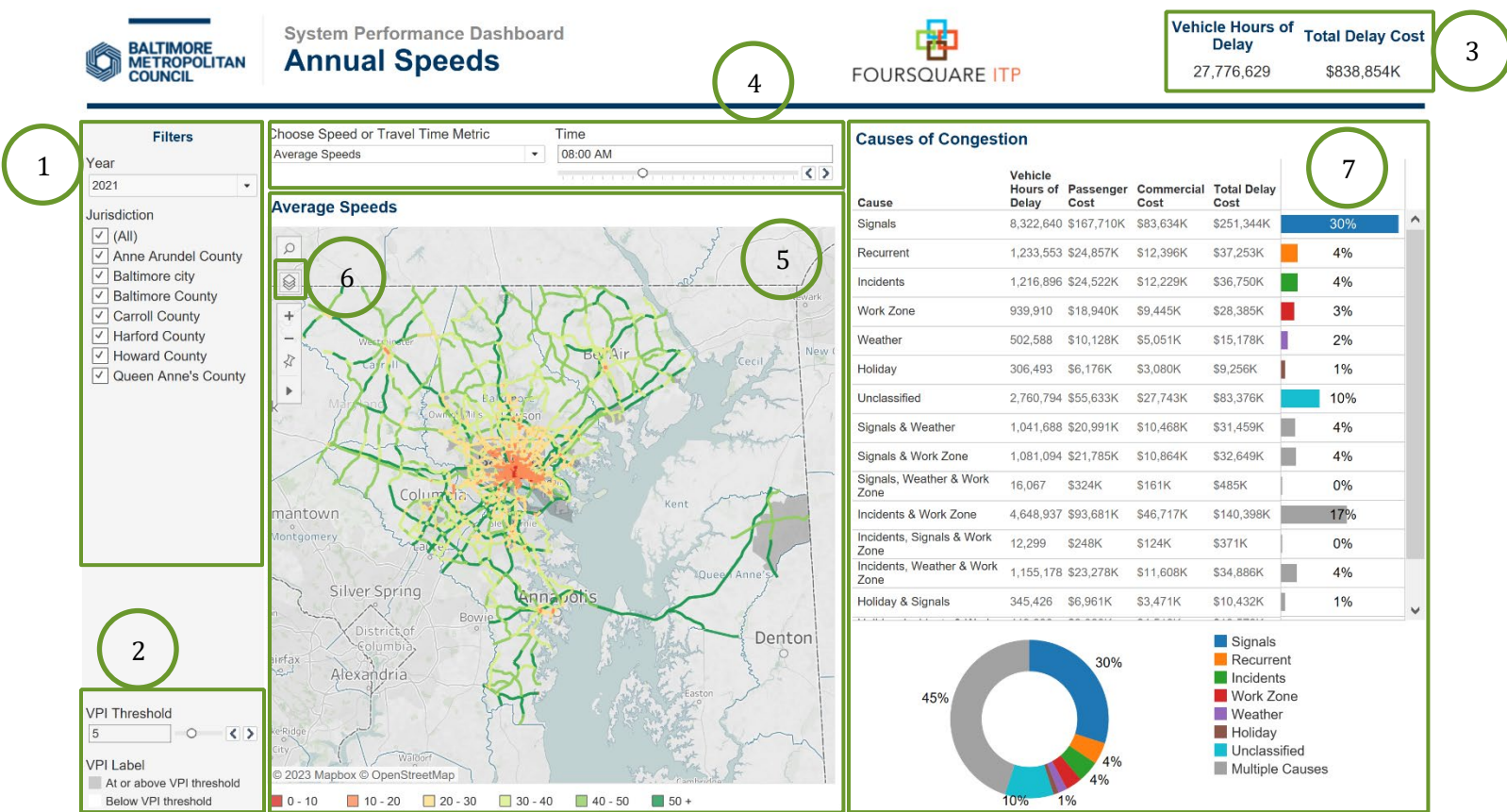


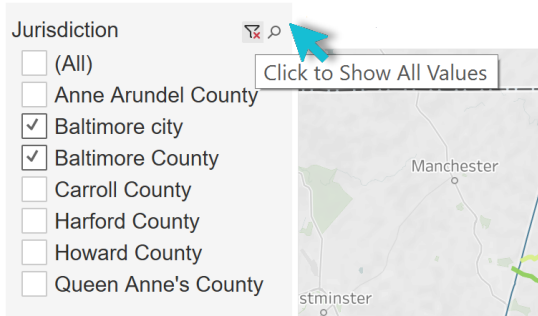
Figure 2: Annual Speeds Tab

## 2.3 Dashboard Features

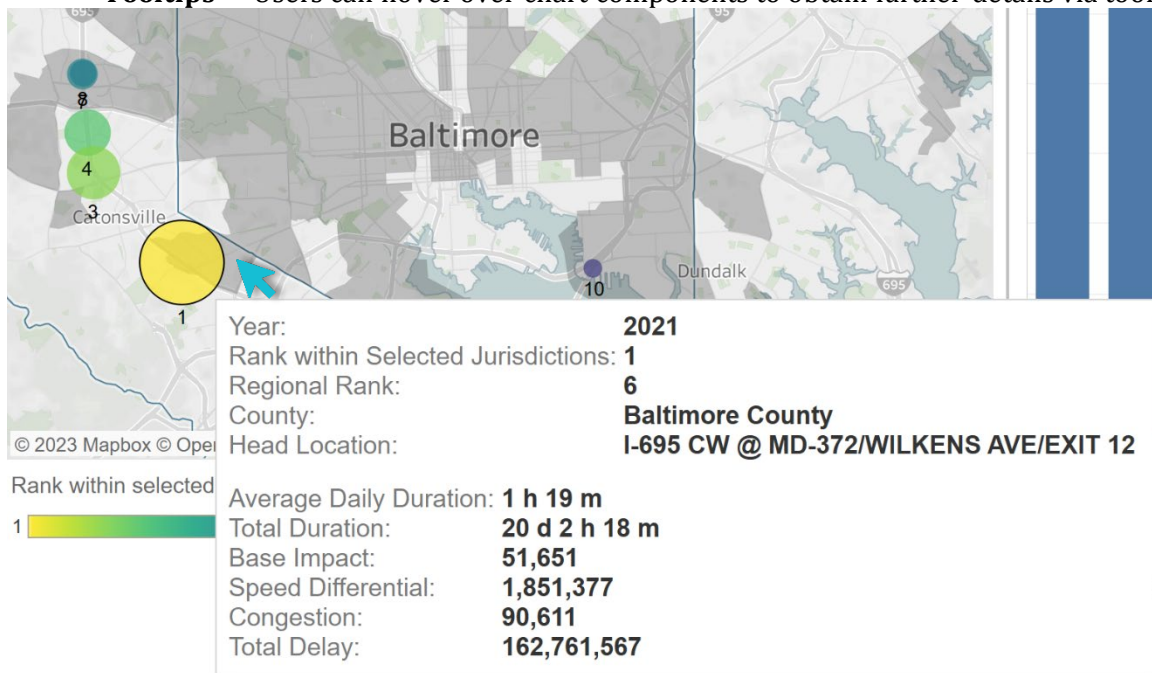
Each dashboard is equipped with auxiliary features that help enhance the user experience and provide a rich set of “details on demand,” or further details that are hidden in a visualization’s default state but are available upon user need via user interaction (e.g., tooltips).

### 2.3.1 Quick Tips

- **Reset Individual Filters** Users can reset a specific filter to its default selection (in most cases ALL) by clicking the *Clear Filter* button that shows up when hovering over the downward arrow in the filter box.



- **Tooltips** Users can hover over chart components to obtain further details via tooltips.



## 2.4 Saving Data and Images

Users can save data, tables, charts, and map images from the dashboard corresponding to the filter selections that are made. Users can also save the whole dashboard as an image or save any specific table, map, or chart as an image or data file. The procedures for saving are described in the subsequent sections.

### 2.4.1 Saving as Images

Through Tableau Online, to save the dashboard as an image, users can navigate to **Choose a format to download > Image** on the main menu bar of Tableau Online.

Through Tableau Reader, to save the dashboard as an image, users should exit the full-screen view and navigate to **Dashboard > Export Image** on the main menu bar of Tableau Reader. Users will be asked to provide a file name and folder location to save the dashboard as an image.

## 2.4.2 Exporting as PowerPoint

Through Tableau Online, to save the dashboard as a PowerPoint, users can navigate to **Choose a format to download > PowerPoint** on the main menu bar of Tableau Online as shown in Figure 4.1.

Through Tableau Reader, to save the dashboard and/or the elements of the dashboard as a PowerPoint, users may navigate to **File > Export as PowerPoint** on the main menu bar. Users will be asked to select the content to include in the PowerPoint slide from the following three options:

- **This View** – Tableau generates a PowerPoint slide with the current view.
- **Specific sheets from this dashboard** – Users can select and generate PowerPoint slides for each element selected (i.e., the selected charts, maps, summaries generated in separate sheets).
- **Specific Sheets from this workbook** – Users can select and get PowerPoint slides on each element selected (i.e., the selected charts, maps, summaries generated in separate sheets). In this case, users will find the elements/sheets in the Tableau file. Please note that, the last two options will provide the same outcome for the LOCUS dashboard in question.

Finally, users will be asked to provide file name and folder location to save the dashboard as a PowerPoint file.

## 2.4.3 Exporting as PDF

Similar to exporting as PowerPoint, users can also export the dashboard and its element to a PDF file. To do so, users may navigate to **File > Print to PDF** on the main menu bar in Tableau Reader or select **PDF** as download option in Tableau Online. Likewise, in PowerPoint export, users will have options to export only the dashboard using **Active sheet** option. Users can export all the different sheets with different elements of the dashboards (i.e., the entire workbook) in a single PDF file by selecting **Entire workbook**. Finally, users will be asked to provide a file name and folder location to save the dashboard as a PDF file.

## 2.4.4 Saving a Chart or Table

To save a specific table or data for any chart shown on the dashboard, Tableau Reader users must select the specific table or chart first. Then, users may navigate to **Menu > Worksheet > Export > Image**.

Cross-tabulation can also be generated by selecting **Crosstab to Excel** option. This procedure will generate the crosstab in an Excel sheet, but the file is **NOT** automatically saved. Users must save the file in Excel software to store the data on their local system.

Tableau Reader users can copy and paste a chart or underlying data to a presentation slide or document using the quick export feature of the dashboard. Users need to right-click on a chart and navigate to **Copy** option to copy the chart as an image, data table, or cross-tabulation and paste it in a document.