tap™
Telematics Analytics Platform

Road Analytics User Guide

Austroads

tca®

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Transport Certification Australia Ltd
T: +61 3 8601 4600
E: tca@tca.gov.au
W: tca.gov.au
ABN 83 113 379 936

About Us

Transport Certification Australia (TCA) is a centre of excellence within Austroads that ensures telematics and other vehicle technologies meet high standards of trust and performance. TCA helps transport agencies across Australia and New Zealand collect reliable, secure data from vehicles—supporting better decision-making, safer roads, and more efficient networks. It also provides trusted data and analytical services that empower government and industry to deliver smarter transport outcomes.

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Introduction 1

Welcome

This guide will help you perform tasks related to the Road Analytics service of the Telematics Analytics Platform (TAP) and understand the key features of the screens you'll be using.

What is the Telematics Analytics Platform?

TAP is a secure portal that allows authorised users to access data, analysis and map-based reporting for telematics applications of the National Telematics Framework.

TAP comprises various services that support the use of telematics within the National Telematics Framework, as shown in Table 1.

Table 1: TAP Services

Service	Allows users to
Road Analytics 	• View and filter dashboards of telematics data of vehicle use on road networks. • Extract telematics data of vehicle use on road networks.
Enrolment Reporting 	• Access statistics and reports about the number of enrolments in each scheme and application by jurisdiction, including unique vehicles, enrolments and number of operators. • Access identifiable reports of vehicle participation in schemes, where the user is authorised to access the data to ensure compliance with conditions of access and other legal instruments.
Help Desk 	• View and modify helpdesk records related to usage of telematics applications • Create helpdesk records related to usage of telematics applications • Monitor progress towards their resolution.
Malfunction Management 	• View and modify records of malfunctions or possible tampers of devices or systems used to support telematics applications • Create new records of malfunctions or possible tampers of devices or systems used to support telematics applications • Monitor progress towards their resolution.

Related Documents

The following documents are referred to in this document:

- *Accessing the Telematics Analytics Platform*.

Comments and Feedback

TCA welcomes your feedback on improvements to future editions of this document. Please send any documentation-related comments and suggestions via the Contact form on TCA's website.

Further Information

For further information regarding the use of other TAP services, such as Malfunction Management, Help Desk or Enrolment Reporting, please contact us at support@tca.gov.au.

Getting Started 2

This section provides information on the following:

Logging In

To set up your account and log into TAP for the first time, refer to *Accessing the Telematics Analytics Platform*. The guide is available on the TCA website and includes information on how to best view and experience this portal.

To log in again after you have logged out, navigate to https://tap.tca.gov.au/tcaportal/login and click on **Click here to log in**.

If you fail to log in after 10 attempts, you will be locked out of TAP. If you cannot log in, or if you think you may be locked out, please email support@tca.gov.au.

Logging Out

To log out of TAP, click **Logout** at the top right of any TAP screen that is open.

Your session will time out after 30 minutes of inactivity using this service. If this happens, log in again to start a new session.

User Permissions

When you have been approved as a TAP user, an administrator will give you access to applicable TAP services in accordance with your completed application form.

If you would like to access a TAP service other than those you currently have access to, please fill up the TAP Application form, available on https://urm.tca.gov.au/enrolment.

Certain screens may display minor differences in function and the results displayed, depending on the user type. The guide will note any of these differences where they occur.

Changing Your Method of Two-Factor Authentication

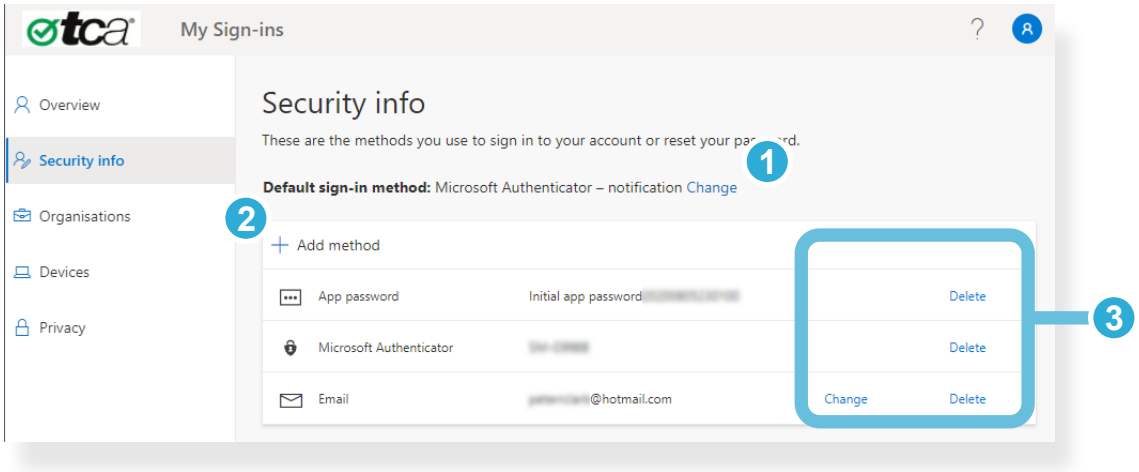
You will set your method of two-factor authentication when you set up an account and log in for the first time. For example, if you selected **Authentication phone** for two-factor authentication, you may have selected the method **Send me a code by text message** or **Call me**.

You can change your method of two-factor authentication at any time.

To change your method of two-factor authentication:

1. Navigate to the Microsoft My Sign-ins screen: https://mysignins.microsoft.com/security-info.
   The My Sign-ins screen appears.
2. On the left pane of the My Sign-ins screen, click **Security info**.
   The My Sign-Ins—Security info screen appears, as shown in Figure 1, showing the default sign-in method you had chosen.

Figure 1: My Sign-Ins—Security Info Screen

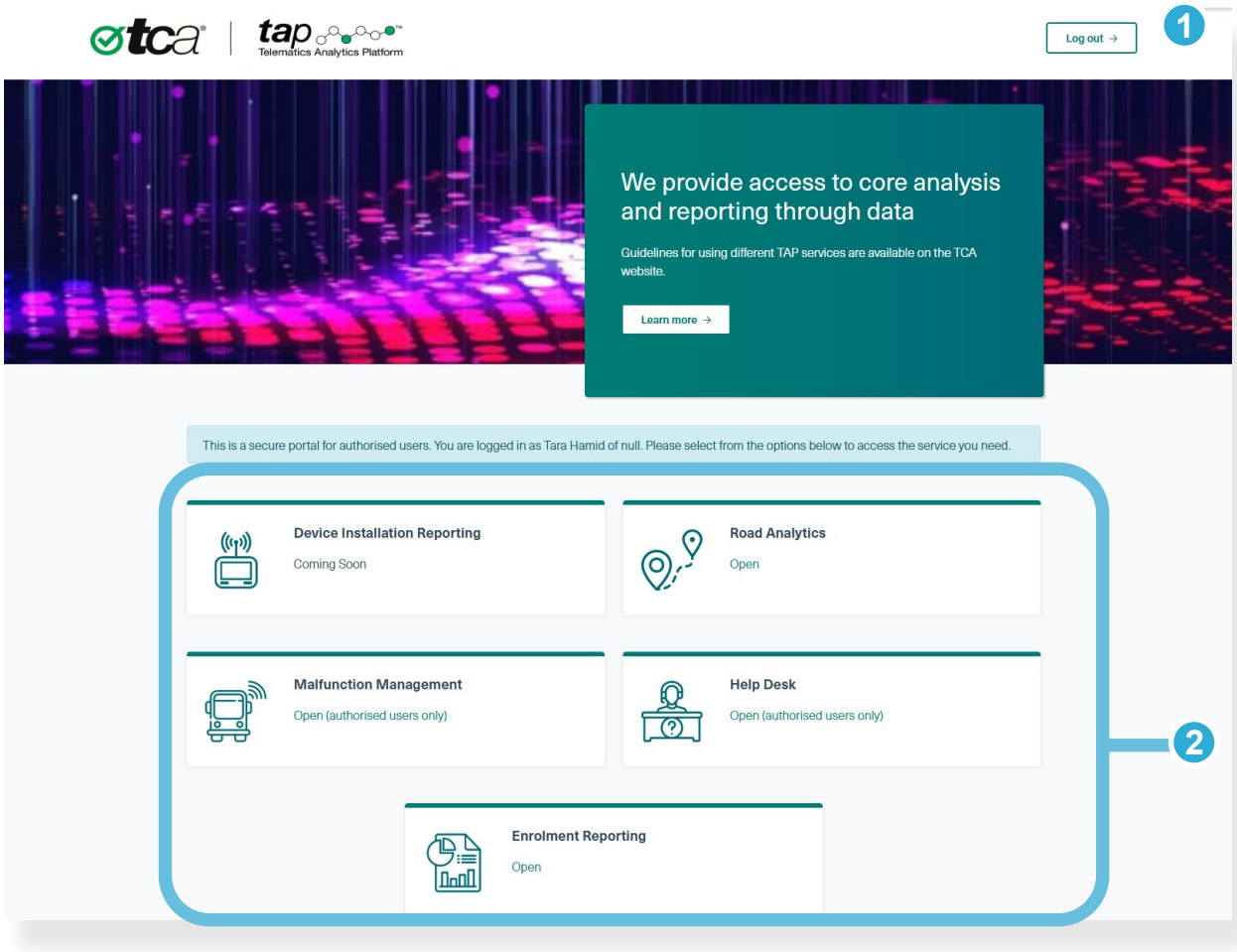


1. The **Change** link after the default sign-in method allows you to change the default sign-in method.
2. The **Add Method Plus Sign** link allows you to add a new two-factor authentication method.
3. The **Change** and **Delete** links after previously set methods allow you to modify or delete previously set two-factor authentication methods.

TAP Landing Page

The TAP Landing Page is the first screen you will see when you have logged in to TAP. The main elements of this screen are shown in Figure 2.

Figure 2: TAP Landing Page



1. The **Log out** button logs you out of TAP.

2. The area at the bottom of the screen allows you to open a TAP service, depending on your user access settings.

   To open a TAP service, click the green hyperlink beneath a service name.

Opening a Dashboard

After you have opened the Road Analytics service, you can navigate to the dashboard you want to open.

A dashboard is a reporting interface that shows road use of vehicles enrolled in applications of the National Telematics Framework (NTF) within your jurisdiction. Examples of NTF applications include the Road Infrastructure Management (RIM), the Telematics Monitoring Application (TMA) and the Intelligent Access Program (IAP).

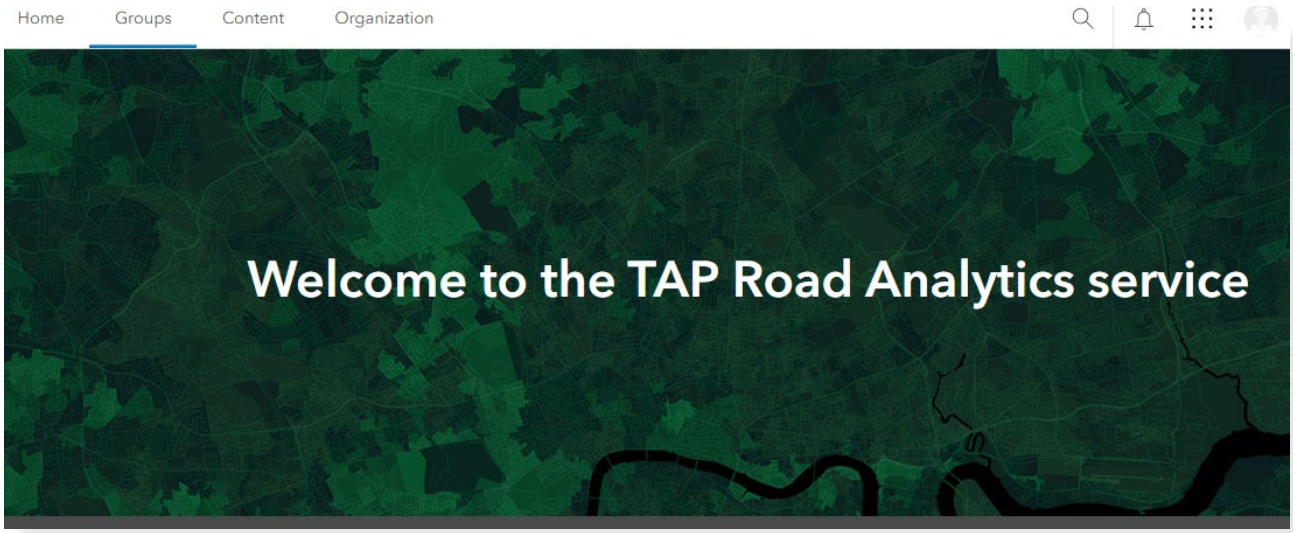
The dashboards you have access to are categorised within a group that has been created for your jurisdiction – for example, Victorian Road Manager or NSW Road Manager. Your membership of a road manager group is assigned when you are approved as a TAP user.

The following procedure describes how to access the group you are a member of and how to open the dashboard you would like to use.

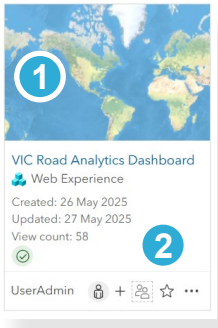
To open a dashboard:

1. Open the Road Analytics service by clicking on it from the TAP Landing Page. The Road Analytics service screen is shown in Figure 3.

Figure 3: Road Analytics Service Screen



2. From the top bar of this screen, click the **Groups** tab. This tab contains all of the groups that you are a member of, or have access to.
3. Click **View details** to open the specific Group you want to open (e.g. Victorian Road Manager).
4. At the bottom of the Group screen, locate the dashboard you want to open.
5. To open the dashboard directly, click the map area 1 of the dashboard link. To open a description of the dashboard first, click the dashboard title 2 and then click on View.
6. If you clicked the dashboard title to open the dashboard description, the Dashboard Description screen appears. To open the dashboard from this screen, click the map icon at the top left of the Dashboard Description screen.



Working with Dashboards 3

This section provides information on the following:

About Dashboards

A dashboard is a reporting interface that shows road use of vehicles enrolled in an NTF application in your jurisdiction.

A dashboard allows you to perform a variety of actions, such as:

- Finding specific locations, road segments or structures on the map
- Turning on map layers to show information such as structures and local government areas
- Using filters to display only the information you want see, such as vehicle category, telematics application, time period and road type
- Viewing the data of road segments or structures.

Each week, the data available in each dashboard is updated with data from the previous week.

The following key terms are commonly used on dashboard interfaces:

- **Road segment** is a length of road of the road network on the National Telematics Map. Each road segment has a unique identifier.
- **Journey** is all the contiguous movements of a vehicle until its period of rest. It includes an origin and destination. The standard method for calculating a journey, as shown in dashboards, uses a five-minute break in polling records as the end of one journey and the beginning of the next journey.

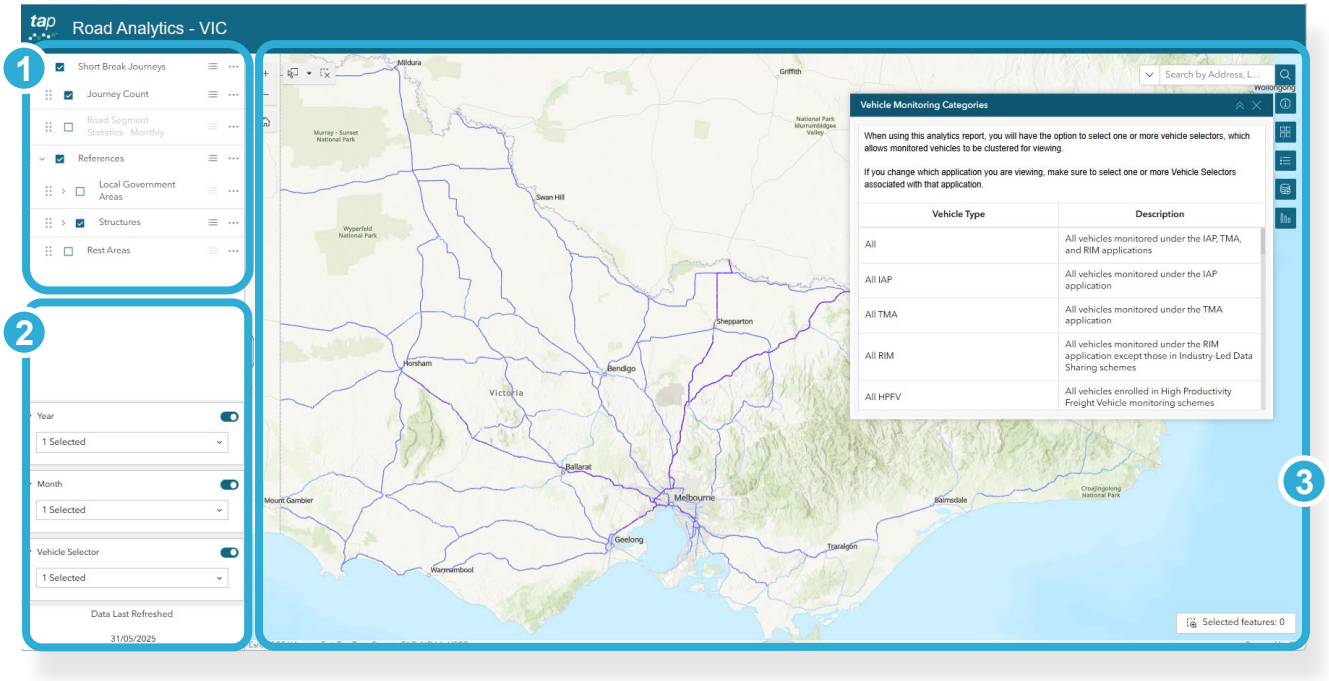
Other key terms are explained on first use in this section, and in Appendix A.

Dashboard Areas and Screen Elements

Dashboard Areas

The Dashboard screen shows a map of your jurisdiction and widgets that allow you to apply filters and adjust layer information, as shown in Figure 4.

Figure 4: Dashboard Areas



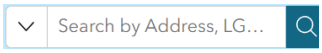
1. The **Layers widget** allows you to switch on layers to show supplementary information, such as structures and local government areas, or counts of vehicles or journeys (see various procedures in Working with Map Layers, Filtering Data and Viewing and Interpreting Data).

2. The **Filters widget** allows you to use filters to refine the information in the layer(s) selected above. You can use filters, such as vehicle type or category, telematics application, time period and road type (see various procedures in Filtering Data and Viewing and Interpreting Data).

3. The **Map area** allows you to locate the area of the map you would like to monitor road usage information on (see the next section Finding a Location or Structure on the Map).

Map Area Screen Elements

In the Map area, the following screen elements allow you to perform actions as described below.

	The **Zoom In** button increases the magnification of the map area you have selected. *Note:* You can also zoom into a location with your mouse wheel.
	The **Zoom Out** button decreases the magnification of the map area you have selected. *Note:* You can also zoom out of a location with your mouse wheel.
	The **Home** button returns you to the default magnification for your jurisdiction.
	The **Legend** button displays the map legend, based on the layer selected. *Note:* If more than one attribute layer is selected, the layer highest on the attribute layer list will be applied to the map, despite legends for all selected attribute layers being shown. See also Viewing Layer Data.
	The **Basemap Gallery** button allows you to select the background style of the map. 'Light Grey Canvas' is selected by default.
	The **Vehicle Monitoring Categories** button displays a list of monitoring categories available to your jurisdiction, as shown in the Vehicle and Application Selector. This pop-up window provides descriptions of each category to help you make the most appropriate choice when filtering data.
	The **Search bar** allows you to enter a name (e.g. of a road or town) or identifier (e.g. of a road segment or structure) in order to find it on the map.
	The **Add Data** button allows you to add external data sources (e.g. ArcGIS Server Web Services and Shapefiles) to the map. Note that the added data will not be sustained beyond the current session.
	The **Monthly Charts** button allows you to select data from the *Road Segment Statistics - Monthly* layer and generate a month-by-month chart.
	The **Selection tool** and **Clear Selection** buttons allow you to select a user-defined map area to filter statistics and charts. Selecting the drop-down allows you to customise the user-defined map area using a range of selection tools.
	The **Attribute Table** button at the bottom of the map area shows attributes of one or more selected road segments in the map area.

In addition to the navigation buttons and screen elements above, you can move from one area of the map to another area nearby by clicking the map and dragging it to show the new location.

Finding a Location or Structure on the Map

You can use the Search bar in the Map area to find locations, roads, road segments and road structures.

To find a location or structure on the map:

1. In the Map area, enter the name, address or identifier of the location or structure in the Search bar.
   - You can search by name or address for a road, town, city, or structure (e.g. ‘Bendigo’, ‘Moreland Rail Overpass’). After entering a keyword, click any auto-complete suggestion that completes your search query.
   - You can search by ID if you have the identifier of a road segment or structure (such as a bridge or rail crossing), and if the identifier set has been pre-loaded into the mapping function. Check with your TAP administrator for datasets that have been loaded into TAP.
2. Click the **Search** button  .

Working with Map Layers

A map layer is a dataset that can be shown on the map for a defined information type (such as road structures or local government areas), or a road segment attribute being monitored (such as Journey Count).

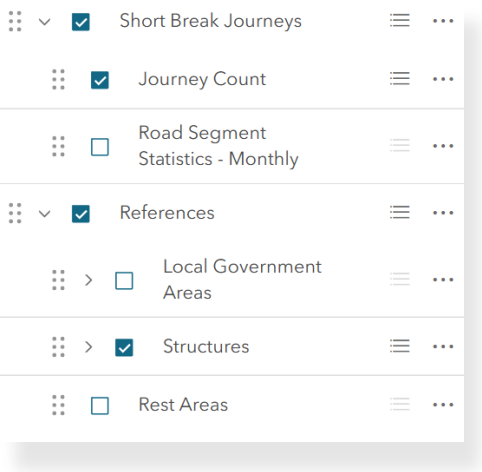
Access the Layers list from the Layers area.

Figure 5 shows aspects of the Layers list.

In this example:

- The Short Break Journeys and the References layer groups are turned on.
- In the Short Break Journeys layer group, the Journey Count layer is turned on – the heat map legend will be based on Journey Count.
- In the References layer group, the Structures layer is turned on.

Figure 5: Layers List



Common Layer Definitions

The following is a list of definitions for common layers available on maps of this service:

Journey Count	The number of all monitored vehicles that have traversed a road segment. *Note:* In this context, 'journey' is used differently to the standard definition provided on page 11.
Vehicle Count	The number of unique monitored vehicles (based on vehicle identifier) that have traversed a road segment.
Average Speed	Vehicle speed is derived from changes in vehicle position records over a 30-second period. The speed of all monitored vehicles that have traversed a road segment is averaged to arrive at *estimated* average speed over the length of the road segment. *Note:* Average vehicle speed results are estimates only, and may be influenced by factors such as road geometry and global navigation satellite system (GNSS) quality. Authorities should exercise caution when interpreting data presented on the Average Speed layer.
Average Journey Time	The average estimated travel time to traverse the road segment, across all matching journeys by relevant vehicles. The measure is the average of the estimated time taken by each vehicle to cross the road segment, calculated by dividing the length of the road segment by the vehicle's estimated average speed. This data is subject to the same factors as estimated average speed above.

Viewing Layer Data

You can view the data of only one layer at a time within a single layer group, irrespective of the number of layers you have selected within that group.

If you have selected more than one layer within a layer group, TAP will show the data of the layer in the highest position on the Layers list.

You can view more than one layer if the layers are within different layer groups.

To view the data of a layer:

1. In the Layers list, select both the layer group and the layer.
   For example, the Structures layer will only show if the References layer group is turned on.
2. In the Map area, zoom in to a magnification that shows the data.
   For example, to view structure data, after you have selected the Structures layer and References layer group, zoom to a magnification that allows the display of data. Structures will not appear at a lower magnification due to the difficulty of distinguishing their precise location on the map.

Filtering Data

Filters allow you to make specific choices about the data shown in the Map area and in charts created in the Filters area. You can filter data by one or more of:

- Vehicle monitoring category (such as vehicle Selector)
- Time period (Year and Month)
- Using the Monthly Chart
- User-defined map area
- Road segment attribute.

To filter data by vehicle monitoring category:

In the **Vehicle Selector** at the bottom of a layer area, select the monitoring category and/or telematics application associated with the vehicles you wish to see data from in the Map area.

Note: Items in this list correspond to vehicle monitoring described in schemes available in your jurisdiction – an item may be a specific vehicle category or all vehicle categories for a specific scheme. If you wish to view data of a monitoring category that is not on this list, please contact the TAP Service Manager at support@tca.gov.au.

To filter data by time period:

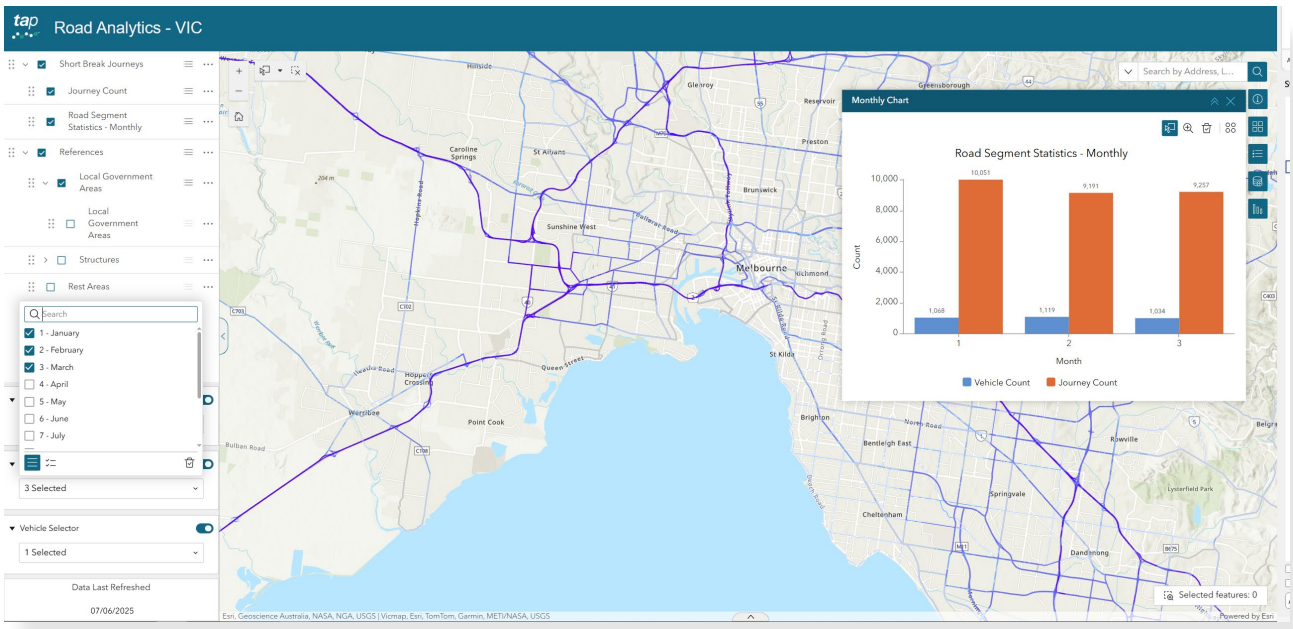
In the Filters area, click the **Year Filter** or the **Month Filter** tabs and select the period that contains the data you wish to see. Data will be shown for any layer where the toggle is turned on. Using the toggle, you can choose whether or not to apply the Year or Month Filters.

Note: The Month Filter only applies if the Road Segment Statistics – Monthly layer is turned on.

To filter data using the Monthly Chart:

1. In the Filter area, select the relevant Vehicle Selectors, as well as the months you wish to include in the Monthly Chart. In the Map area, click on the Monthly Chart button  .

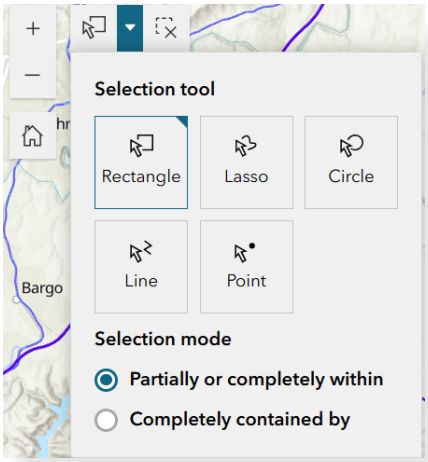
Figure 6: Using the Monthly Chart



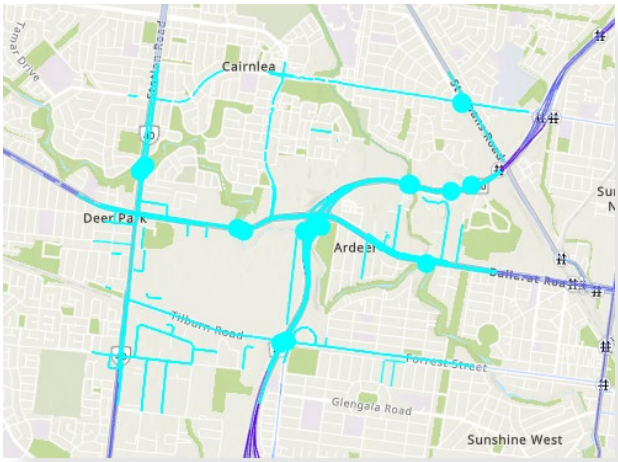
To filter data by user-defined map area:

1. To select data on any map area, locate the **Selection Tool**, which provides the options to select an area using the Rectangle, Lasso, Circle, Line or Point tools (Figure 7a).
2. The selected features will be highlighted on the Map area with Blue Circles (Figure 7b).

Figure 7: a) User-Defined Map Area Selection and b) Selected Features Within the User-Defined Map Area



(a)



(b)

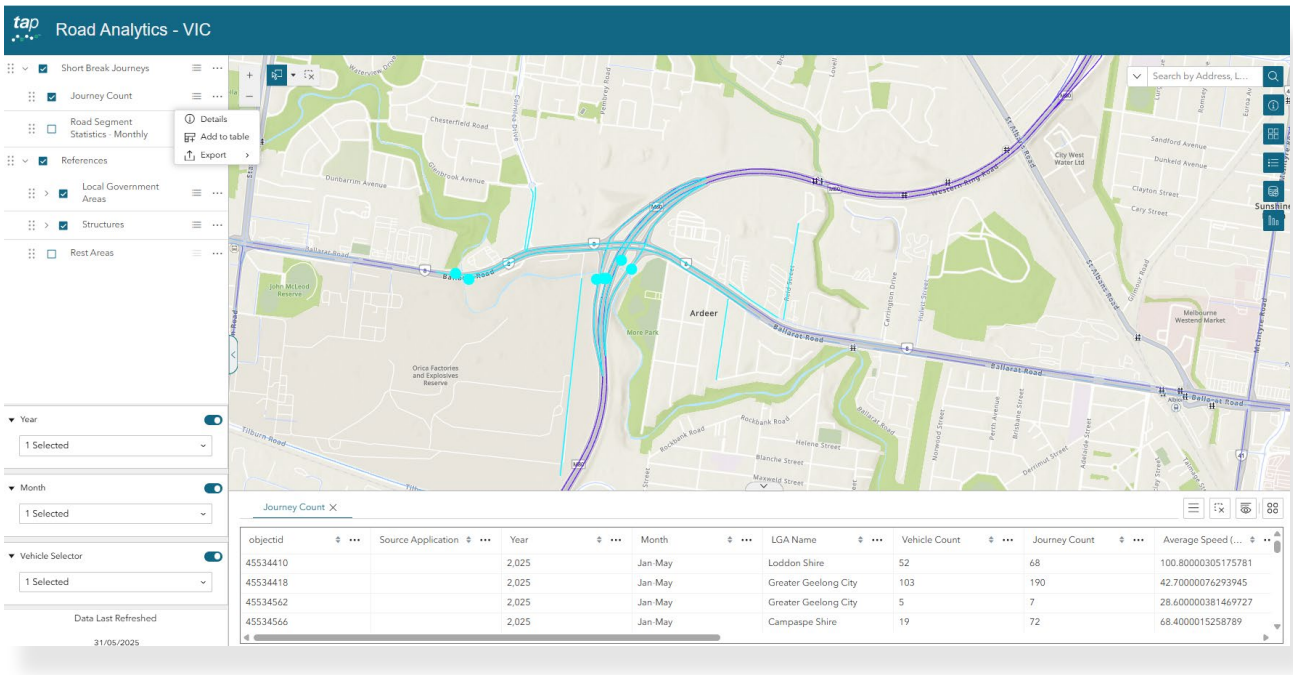
To filter data by road segment attribute:

1. Use a spatial filter to define an area – see the above procedures.
2. At the bottom of the Map area, click the Attribute Table button  to open the Attribute Table. Each column is a road segment attribute.
3. On the Layers window, identify the layer you need to display/export the attribute table for.
4. Click on the three dots next to the layer. You will then have the options to 'Add to table' 

or 'Export' 

. If you choose Export, you will then have the options to export the table as JSON, CSV and GeoJSON.
5. The relevant file will be stored in your Downloads folder.

Figure 8: Display/Export of Data Using Road Segment Attribute



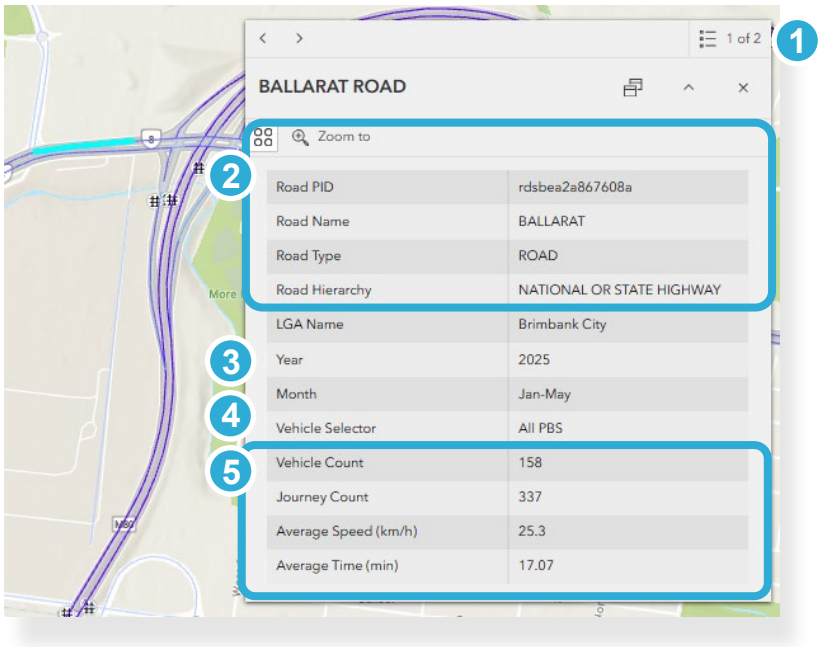
Viewing and Interpreting Data

You can view data in this TAP service in several ways:

- View information of one or more road segments
- View information of a structure
- View the latitude and longitude information of a road segment or structure
- Create, save and print a chart.

When viewing and interpreting information of a road segment pop-up window, interpret values as shown in Figure 9:

Figure 9: Road Segment Pop-Up Window



1. If a road segment is near one or more other road segments, and if you selected it at a magnification that makes it difficult for TAP to determine which road segment you wanted to see, it will provide data of all road segments in that area. In the example above, there were two road segments in the area selected. To see each one, click the forward arrow at top right.

   To view data of only a single road segment, increase the magnification before clicking the segment.

2. **Road PID** is the identifier of the road segment. Likewise, **Road Name** is the name of the road segment, and **Road Type** is the value selected in the Monthly Filters tab of the Filter area. The **Road Hierarchy** indicates the functional classification of roads based on their role within the transport network. The **LGA Name** field can include every LGA the road segment passes through.

3. **Year** and **Month** are the time periods selected for the aggregated data shown in this pop-up window. To select different time periods, go to the Filters area and open the Monthly Filters tab.

4. **Vehicle Selector** is the value selected in the Vehicle Selector in the Filters area. It may be one or more vehicle categories or all vehicles monitored by schemes of a specific telematics application, such as RIM.

5. For definitions of values in this area, see Common Layer Definitions (page 15).

When interpreting data, keep the following points in mind:

- Position records are generated every 30 seconds and are matched to the road segment they were generated on. When data records are processed, if a road segment is long enough to contain more than one position record, any duplicates are removed. However, a shorter road segment may not contain a position record if the vehicle traversed it in less than 30 seconds. Therefore, some shorter road segments may be undercounted.
- Dashboards show aggregated values on each road segment. If a road segment contains less than five unique vehicles or traversals, a value of 5 is assigned to protect the privacy of the Operator(s).
- A route or road segment may not have any data for the specific set of filters you have selected. Although it is possible that no monitored vehicles travelled on this route or road segment during the time period you've selected, your filters may also be too restricted. If this may be the case, select a more general set of filters (e.g. a greater time period, or all vehicles monitored under the application rather than a specific category).

To view information of one or more road segments:

1. In the Map area, use the search and zoom functions to locate the road segment you want to view.
   - To select the single road segment, zoom in to a sufficient magnification that allows TAP to distinguish it from other nearby road segments when it is clicked.
   - To select a group of nearby road segments, zoom out to a sufficient magnification that allows TAP to add all nearby road segments when one is clicked.

   Note: You can only view the data of a road segment if vehicles have traversed it in the time period you have selected, as indicated by the map legend.
2. Click the road segment.
   The Road Segment pop-up window appears, as shown in the example in Figure 5.
3. To view road segment data in the Attribute Table, click the **Actions** button at the top left of the Road Segment pop-up window.
4. Click **View in table** View in table.
5. You can also choose to export information for one road segment by clicking the **Actions** button at the top left of the Road Segment pop-up window, then clicking on **Export** Export, which allows you to export as JSON, CSV or GeoJSON files.

To view information of a structure:

1. In the Layers area, go the Layers list and select the **References** layer group and the **Structures** layer.
2. In the Map area, use the search and zoom functions to locate the structure you want to view.

   Tip: To distinguish a structure more clearly from a nearby road segment, zoom to a higher magnification.
3. Click on the structure.
   The Structure pop-up window appears, showing brief information about the structure.

To create a chart and export the chart data:

1. In the Layers area, select the Road Segment Statistics – Monthly tab.
2. In the Map area, use the search and zoom functions to locate the road segment or area of data you want to view.
3. Following one or more procedures in Filtering Data (page 16), use filters to define the data you would like to show in a chart.
4. In the Map area, click on the **Monthly Chart** button  .
   A month-by-month chart of the selected data appears.
5. To zoom into a section of the chart, click the enlarge icon  .
6. To export and save the source, click the **Actions** button  at the top right, then click on **Export**  , which allows you to export the chart data as JSON or CSV.

A Acronyms and Definitions

Acronyms

CSV	comma-separated values
GeoJSON	Geographical JavaScript Object Notation
IAP	Intelligent Access Program
JSON	JavaScript Object Notation
NTF	National Telematics Framework
PID	persistent identifier
RIM	Road Infrastructure Management
TAP	Telematics Analytics Platform
TMA	Telematics Monitoring Application

Definitions

Average Journey Time	In the context of a road segment attribute, the average estimated travel time to traverse the road segment, across all matching journeys by relevant vehicles. The measure is the average of the estimated time taken by each vehicle to cross the road segment, calculated by dividing the length of the road segment by the vehicle's estimated average speed. See also: *average speed*.
Average Speed	In the context of a road segment attribute, the average of the speeds of all monitored vehicles that have traversed a road segment. See also: *vehicle speed*.
Dashboard	A reporting interface that shows road use of vehicles enrolled in applications of the National Telematics Framework in a jurisdiction.
Journey	All the contiguous movements of a vehicle until a period of rest occurs. Each journey includes an origin and destination. See also: *journey count*. Note: On dashboards of this TAP service, 'journey' means a **short-break journey**, which is a journey that ends when there is a break of five minutes or more in vehicle polling records. This approach captures dense patterns of local travel, such as frequent, repeated trips to and from a location, without extended stops.
Journey Count	In the context of a map layer, the number of all monitored vehicles that have traversed a road segment. See also: *journey.*

Jurisdiction	A geographical area containing a road network (i.e. typically an Australian state or territory). *See also: road manager.*
Layer	A component of a layer group, consisting of a dataset for a defined information type or a road segment attribute.
Layer Group	A named group of layers.
Road Manager	An entity, associated with a jurisdiction, responsible for the administration of schemes of one or more National Telematics Framework applications.
Road PID	In the context of a road segment attribute, the 'persistent' identifier of a road segment of the road network on the National Telematics Map.
Road Name	In the context of a road segment attribute, the name of the road segment.
Road Length	In the context of a road segment attribute, the length of the road segment.
Road Segment	A segment of the road network on the National Telematics Map.
Structure	In the context of this TAP service, any structure such as a bridge, tunnel or railway, that may be monitored by a road manager.
User Interface	A generic term for any device or interface used by the Operator and/or its nominated representative to enter data into the telematics device.
Vehicle Count	In the context of a road segment attribute, the number of unique monitored vehicles (based on vehicle identifier) that have traversed a road segment.
Vehicle Speed	A value derived from changes in vehicle position records over a 30-second period.
Vehicle Type	In the context of a road segment attribute, the vehicle type value selected in the Vehicle and Application Selector.

Contact

Transport Certification Australia
Level 17, 360 Elizabeth Street
Melbourne VIC 3000

Phone: + 61 3 8601 4600
Email: tca@tca.gov.au
Website: tca.gov.au