LOCUS

User Guide for Measure Up! LOCUS 2019-2020 Dashboard

Cambridge Systematics, Inc. (CS) developed the Measure Up! LOCUS 2019-2020 Dashboard from trip tables prepared by employing thoughtful algorithms to transform location-based services (LBS) data and transit ridership data (smart farecard and APC) into carefully validated travel patterns for Los Angeles County. The dashboard also summarizes freight movements in the region, using the truck trip table from the regional Heavy-Duty Truck Model. This user guide focuses on the description of the dashboard and provides instructions on how to utilize the dashboard.

Learn more about LOCUS on www.camsys.com/locus

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About the Data

The Measure Up! LOCUS 2019-2020 Flow Dashboard leverages three datasets that reflect granular travel and activity patterns observed in Los Angeles County (1) LOCUS, which captures overall travel as well as estimates for non-motorized travel, (2) regional transit ridership data from a combination of TAP transactions and automated passenger counts (APC) datasets, and (3) truck movement data from SCAG's regional heavy-duty truck (HDT) model.

Location-based services (LBS) data collected passively from mobile devices are becoming an increasingly valuable source of information about travel patterns. LBS data are collected by GPS applications running either in the background or foreground on cellular devices, where the device user has opted to allow access to the app to import the device's geographic location. LBS data are spatially more accurate than other forms of cellular data because they collect geographic locations on a GPS platform.

These data can provide detailed information about how people are moving, where they are going, and when their travel is occurring. Compared to household surveys, LBS data can be collected for longer periods of time, at more regular intervals, and from a larger sample size. As a result, these datasets are massive in size, often containing millions of records collected over a period of months, rather than the typical 1 to 2-day travel diary often collected by travel surveys. Not only does this generate a larger overall sample, but travel patterns of individual devices can be measured over a period, while maintaining sufficient degrees of privacy since the device ID cannot be tied to any demographic or personally identifiable information.

LBS data serve as the primary data source for Measure Up! LOCUS. The development of LOCUS is grounded in a deep understanding of travel behavior and econometrics coupled with strong big data analytics and validation expertise. In the development of Measure Up! LOCUS, the following key steps have been adhered to:

- Passenger travel across a variety of market segments including travel purposes, time-of-day, and day of the week are captured. Flow patterns are developed at the census block group level, which supports granular evaluation of travel.

- Using the inferred home location of the devices, LOCUS helps identify those devices that live in equity-focused communities (e.g., low-income and/or minority population communities).

- Data from Q3 and Q4 of 2019 and 2020 are included in the development of the dashboard. LOCUS only retains the most reliable data using rigorous heuristics and data cleaning techniques.

- Data in the final product have been expanded to match Census population data and validated against national sources of travel behavior.

- LOCUS data (and Transit Ridership data) are displayed using a Tableau interface that allows for quick and easy summaries.

This user guide focuses on the description of the Tableau dashboard and provides instructions and definitions on best ways to utilize the dashboard. For additional information on the data and validation procedures, users are referred to the accompanying LOCUS Validation Report.

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Accessing the Dashboards

This LOCUS platform has been developed in a data visualization platform called Tableau. Tableau is a powerful data visualization software that manages large datasets effectively.

Users can access the dashboard in two ways (1) using a free software called **Tableau Reader**, that can be installed locally on a computer/laptop (2) using a web-interface called **Tableau Online,** that hosts the platform on the cloud and requires no installations. Both approaches will allow the users to interact with the data, use pre-defined filters, save images, export dashboard outputs into a PowerPoint and/or Word document; **Tableau Online** offers several additional features such as saving sessions (views) that allows users to bookmark their analysis – more information is provided section 3.2.

The instructions to download Tableau Reader and accessing the dashboard via Tableau Online are presented below.

2.1 Downloading and Installing Tableau Reader

The LOCUS platform has been developed using Tableau version 2020.4. Users will need to download Tableau Reader 2020.4 (or a newer version if available) from the official Tableau website to access LOCUS. Users can visit https://www.tableau.com/products/reader and click on **Download Now** button to start downloading the installation file. Direct links to download Tableau Reader for the most popular operating systems are included below:

• Windows 64-bit: https://www.tableau.com/downloads/reader/pc64

• Windows 32-bit: https://www.tableau.com/downloads/reader/pc32

• Mac OS: https://www.tableau.com/downloads/reader/mac

Figure 2.1 Downloading Tableau Reader from Tableau Official Website

Users can install Tableau Reader by double-clicking on the downloaded installation file. Users will need to register with Tableau but note that Tableau Reader is free. Your organization's IT rules and firewall settings may impact the installation of Tableau Reader (which appear to impact the dashboard features and functions).

Figure 2.2 Installing Tableau Reader
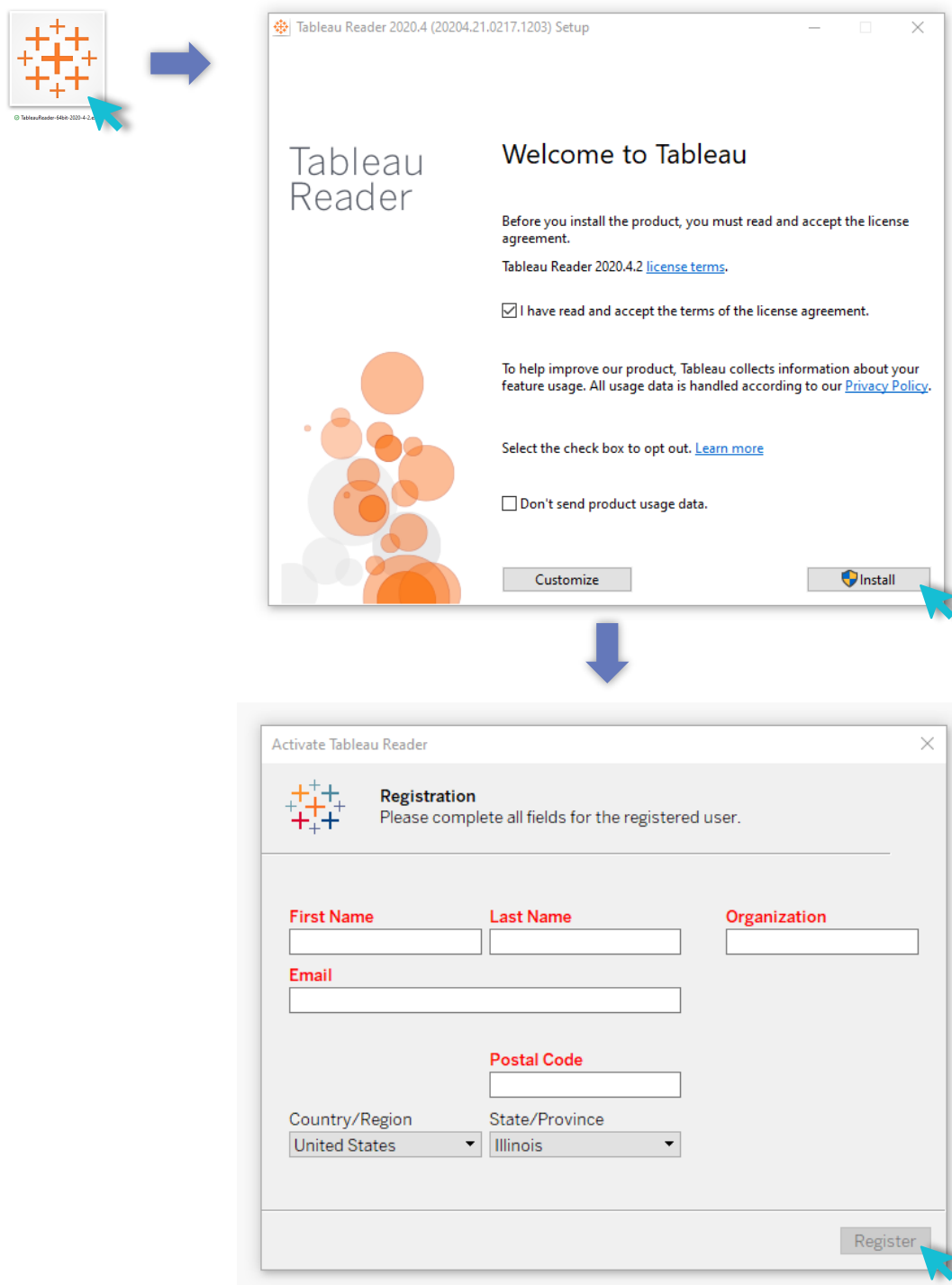
2.2 Setting up Tableau Online

Users can access the cloud-hosted version of the dashboard through the Tableau Online website, that requires no installations on the user's end. However, this is a licensed distribution of the tool and requires the user to submit a request to RIITS for activation of the account. Once the request is approved, the users will get an email with an invitation link to sign up and create an account.

**Figure 2.3 Activating Tableau Online Account**
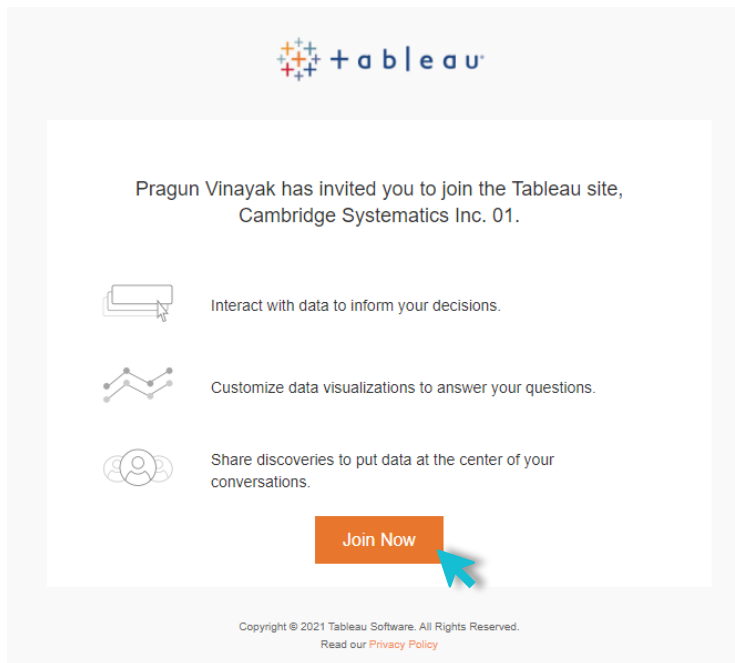
Dashboard Features

The Measure Up! LOCUS 2019-2020 Flows Dashboard is an interactive visualization tool for documenting passenger trips data (overall and transit) in origin-destination (O-D) format. Flows are segmented by time of day, trip purpose, trip length, equity group, and day of week. The dashboard displays weighted person trips representing typical weekday and weekend day travel estimates, and transit market shares. This section provides information on how the dashboard can be used to support technical evaluations.

3.1 Accessing Dashboard – Tableau Reader

To open the dashboard, users can start the Tableau Reader program from their system start menu. Users may also create a shortcut on the desktop, on the taskbar or on the quick-access toolbar for easy access.

**Figure 3.1 Opening Tableau Reader in Windows OS**
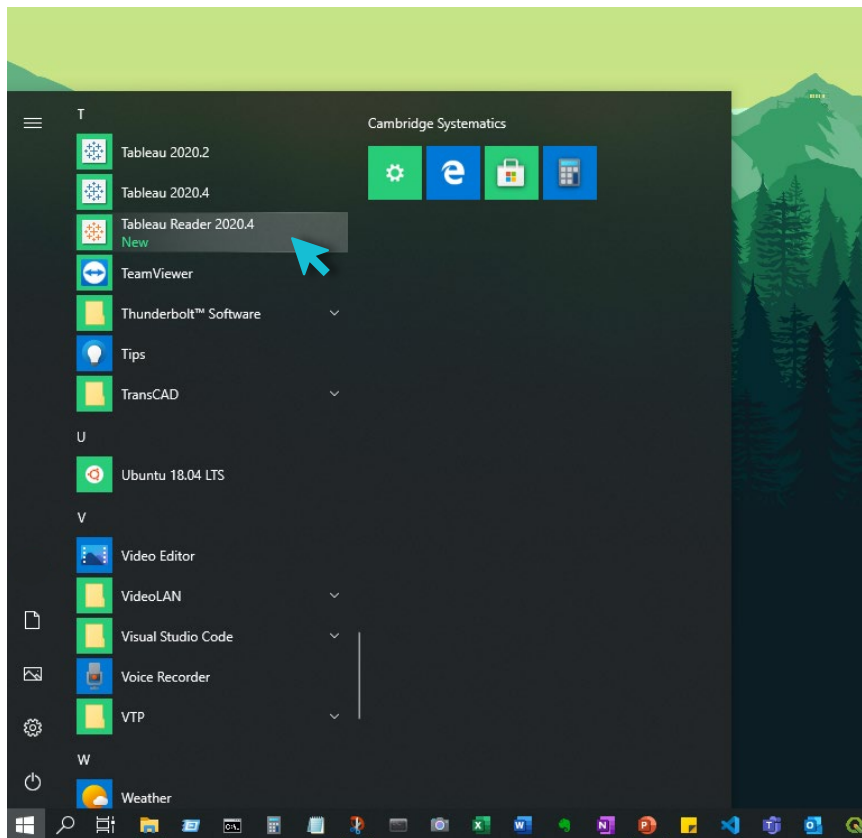
Once Tableau Reader is open, users can open the dashboard by navigating *File > Open > <<LOCUS dashboard directory>> > Open*. Users may choose presentation mode found on the top ribbon (or press **F7**) for a full-screen view.

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3.2 Accessing Dashboard – Tableau Online

With the account set up, users can login into https://online.tableau.com/ through any web-browser (Chrome or Firefox recommended) with their credentials. On the home page, the user can navigate to **Explore > All Workbooks** to access the dashboards. Users can then click on the thumbnail to select the dashboard and reveal the different pages available. Click on any of the pages to open the dashboard viewer (similar to Tableau Reader) – user can navigate between the different tabs using navigation buttons embedded in the dashboard.

Figure 3.2 Opening Dashboard on Tableau Online
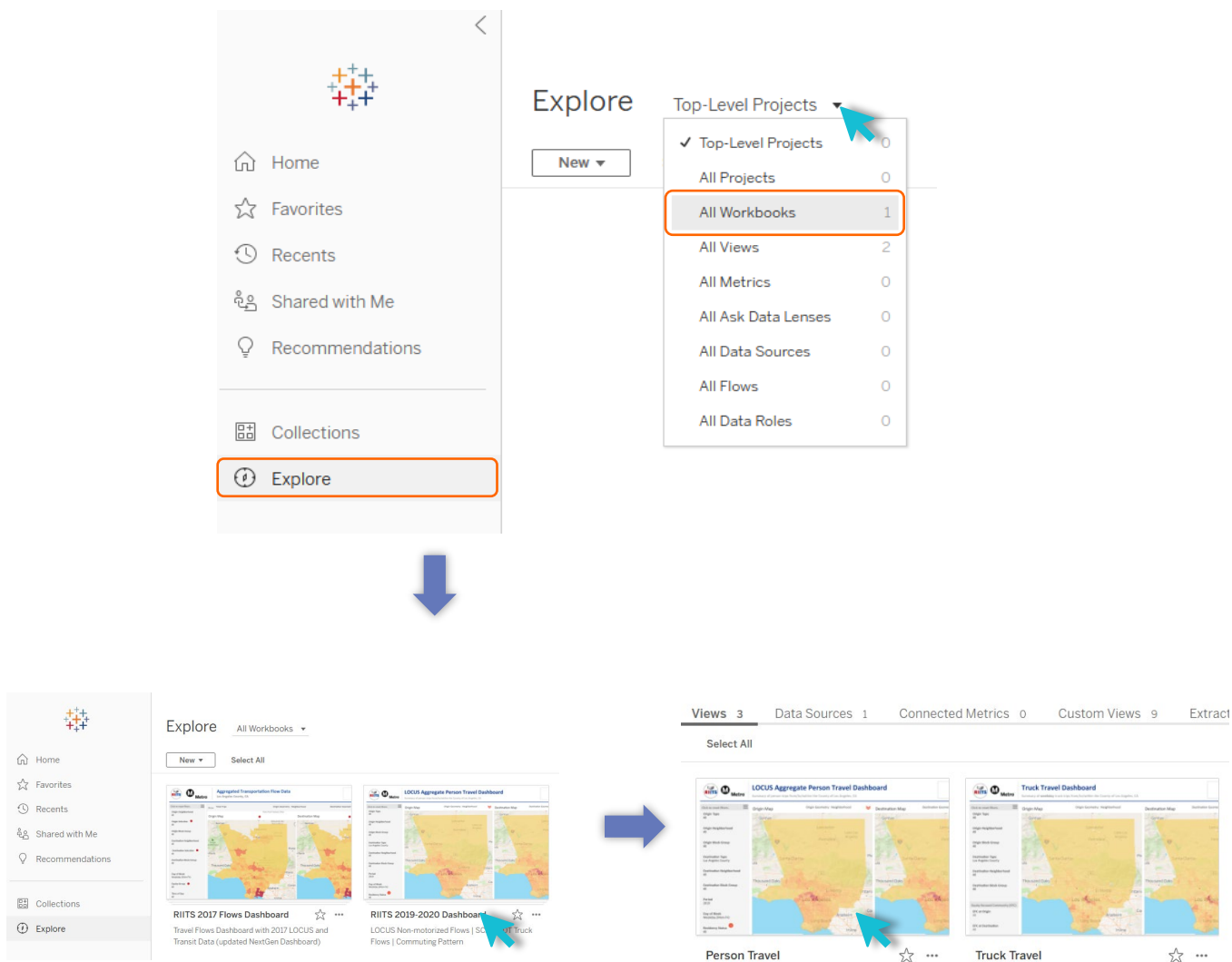
3.3 Dashboard Panels

The dashboard is structured around three pages (1) Person Travel (2) Truck Travel (3) Commuting Patterns.

"Person Travel" page summarizes multimodal person travel in the region across four travel modes – transit, walk, bike, and auto. *"Truck Travel"* summarizes heavy truck movements in the region across three functional classes based on the gross vehicle weight. Unit of analysis on these two pages is **trips**. *"Commuting Patterns"* summarizes changes in the commuting activity to regular locations (such as work-places or school) between 2019 and 2020. Unit of analysis on this page is **persons who are commuters**. For more details, readers are referred to the LOCUS Validation Report.

All three pages have components arranged into five panels to provide users with smooth navigation and interactive experience - *Figures 3.3, Figure 3.4, and Figure 3.5* show the layouts for each page. . Features and dashboard functionalities are similar across the tabs – "Person Travel" tab is used for illustrative purposes. To navigate between the three pages, click on the relevant tab in the navigation pane at the top of the dashboard (see *Figure 3.3).*

Person Travel

1. P1 - Topline Travel Market Summary (Travel Market Size)
2. P2 - Travel Segment Filters
3. P3 - Maps
4. P4 - Trip Segments Charts
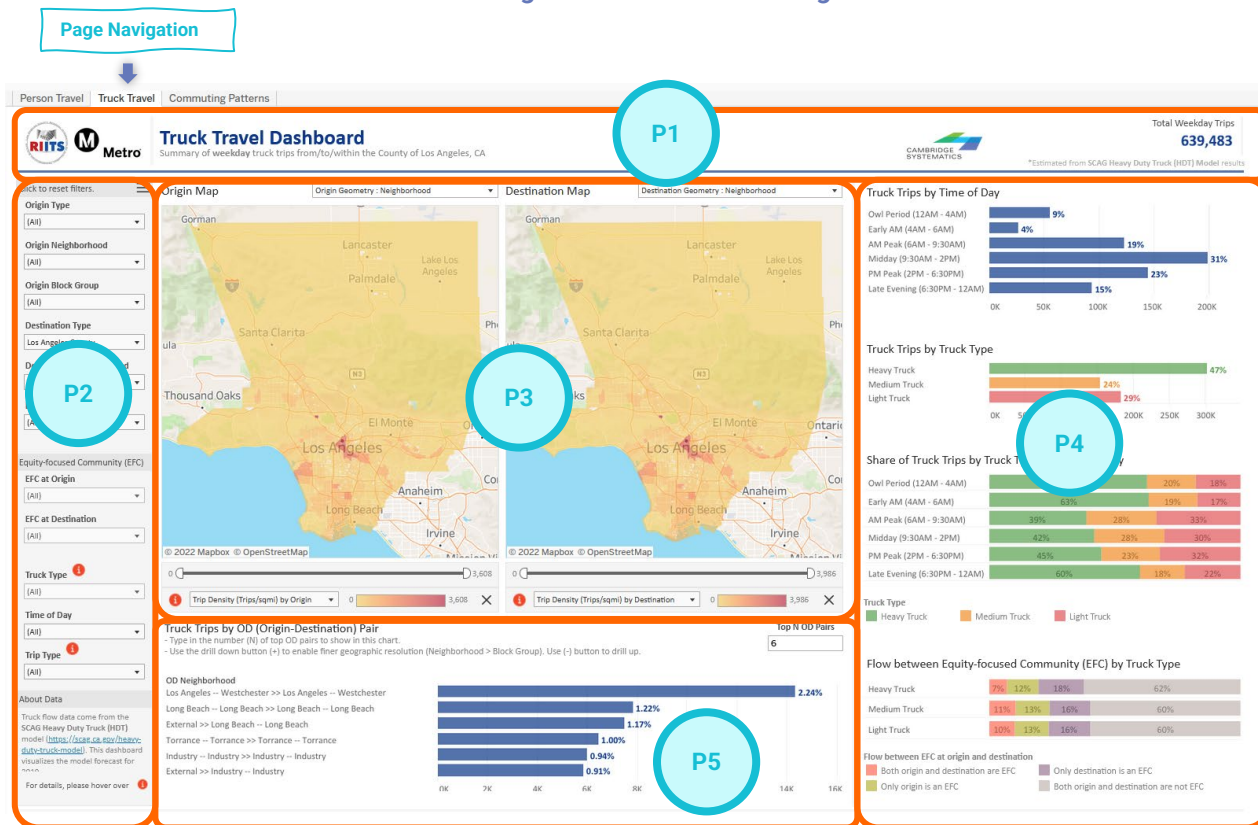5. P5 - Origin Destination Flow Table

Figure 3.3 Person Travel Page
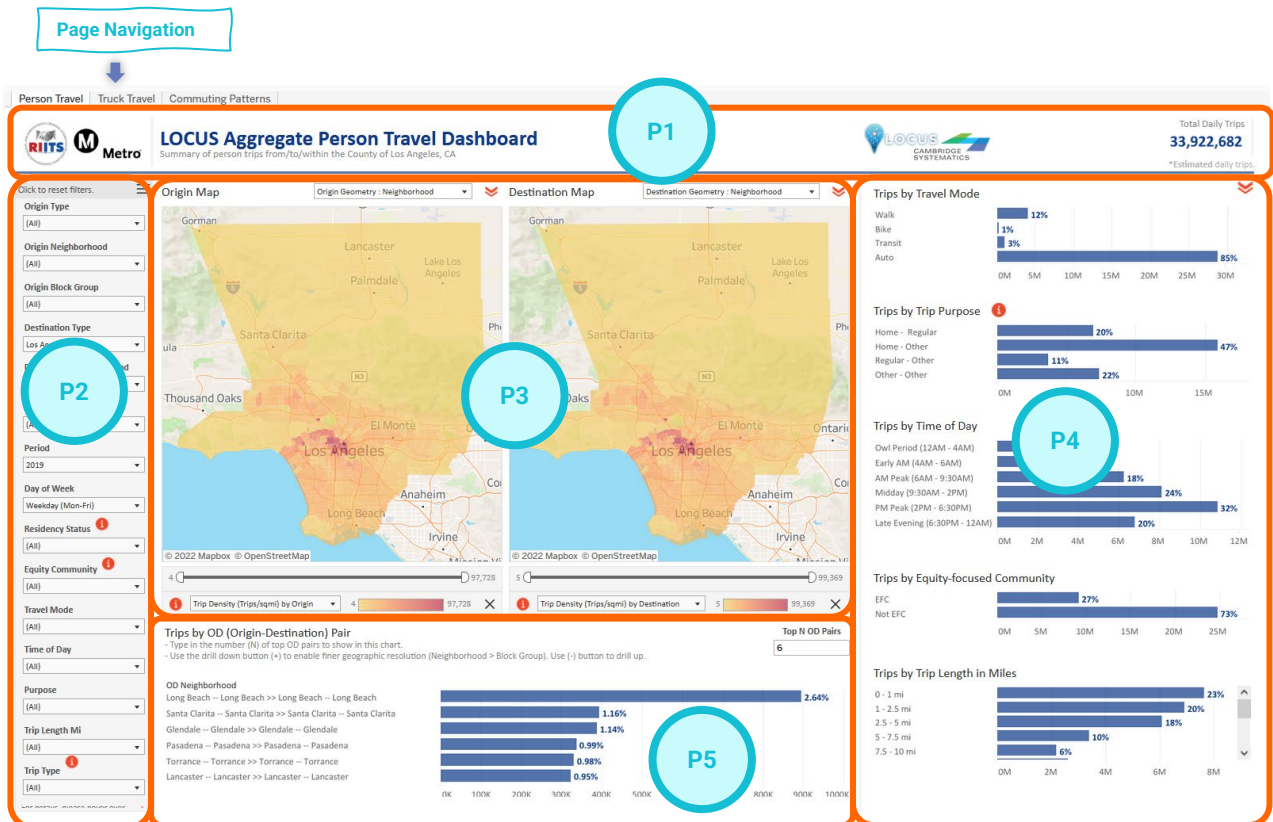
Truck Travel

1. P1 - Topline Travel Market Summary (Travel Market Size)

2. P2 - Travel Segment Filters

3. P3 - Maps

4. P4 - Trip Segments Charts
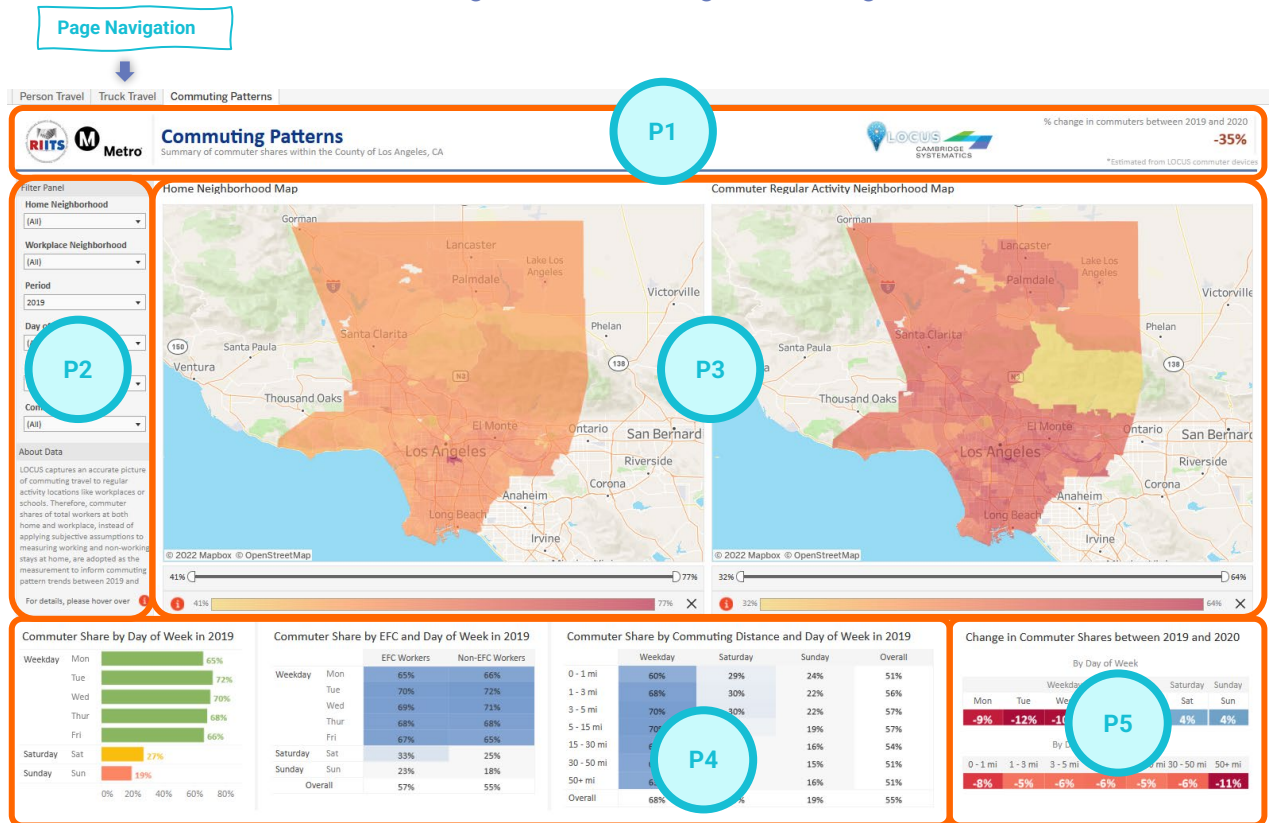
5. P5 - Origin Destination Flow Table

Figure 3.4 Truck Travel Page

Commuting Patterns

1. P1 - Topline Travel Market Summary (Change in Number of Commuters (2019 vs 2020))
2. P2 - Traveler Segment Filters
3. P3 - Maps
4. P4 – Commuter Segment Charts
5. P5 – Change in Commuting Patterns (2019 vs 2020)

Figure 3.5 Commuting Patterns Page

3.3.1 P1 – Topline Travel Market Summary

The top-right banner of the dashboard shows the topline travel market summary based on the select travel scenario by users. For the *"Person Travel"* and *"Truck Travel"* pages, this exhibits the total size of the travel market (number of daily trips); for the *"Commuting Patterns"* page, this exhibits the change in number of commuters between 2019 and 2020. Figure 3.6 shows P1 for the three pages.

Figure 3.6 Topline Travel Market Summary – Person Travel, Truck Travel, and Commuting Patterns

3.3.2 P2 – Travel and Traveler Segment Filters

Data filters that allow users to zoom into the markets of greatest interest are located on the left panel as shown in *Figure 3.3, Figure 3.4, and Figure 3.5*. Users can select one or more filters at any instance to create a subset of trips or commuter statistics to be included in the display. Users can select the desired options from a dropdown menu that appears after clicking the downward arrow on the right of each filter box.

The filters are arranged by different groups such as filters for origin selection, filters for destination selection, filters for trip characteristics, filters for home location selection (and regular location for the commuting pattens). Each page contains filters that are common across pages (and allow propagation across pages) and filters specific to the page. *Figure 3.7* shows the travel segments filters on the *"Person Travel"* page.

Figure 3.8 shows an inventory of travel segment filters available across the three pages. The travel segments that users can apply are described in the following subsections.

Figure 3.7 Travel Segment Filters on "Person Travel" Page

**Figure 3.8 Travel Segment Filters by Page**

| Filter Group	Filter	Person Travel	Truck Travel	Commuting Patterns
Trip Origin	Origin Type	✓	✓	
	Origin Neighborhood	✓	✓	
	Origin Block Group	✓	✓	
	EFC* at Origin		✓	
Trip Destination	Destination Type	✓	✓	
	Destination Neighborhood	✓	✓	
	Destination Block Group	✓	✓	
	EFC* at Destination		✓	
Traveler Characteristics	Residency Status	✓		
	Equity Community*	✓		See EFC Community
	Home Neighborhood			✓
	Workplace Neighborhood			✓
	Commuting Distance			✓
Trip Characteristics	Period	✓		✓
	Day of Week	✓		✓
	Travel Mode	✓		
	Truck Type		✓	
	Time of Day	✓		✓
	Purpose	✓		
	Trip Length Mi	✓		
	Trip Type	✓		

* EFC = Equity-focused Community, based on LA Metro definitions – see Section *3.2.2.2* for details

Quick Tips

- Users can hover over the orange info button (🛈) placed near a filter or component to enable tooltip that shows additional information about that filter or component.
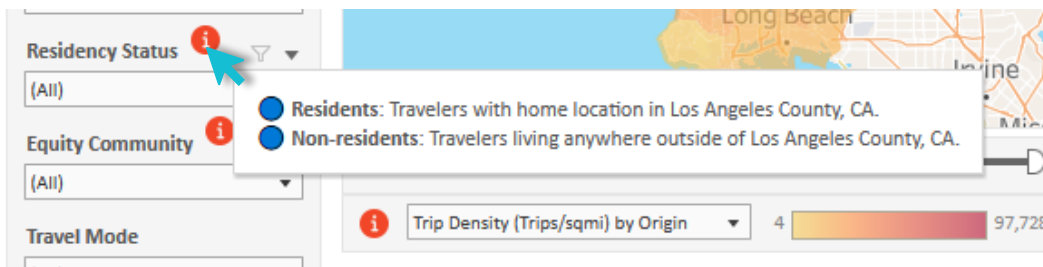
- Users can reset a specific filter to its default selection (in most cases ALL) by clicking the **Clear Filter** button that shows up when hovering over the downward arrow in the filter box.
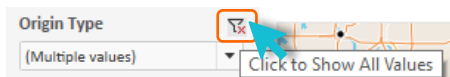
- Users can also reset filters by group or reset ALL by using the **toggle** button on the top-right corner of **Panel 2**. When users click the ☰ button, a pop-up window appears with reset buttons for different filter groups. There is also an option to reset ALL filters in the travel segment filter panel. To close this pop-up window, users should click the ✕ button.
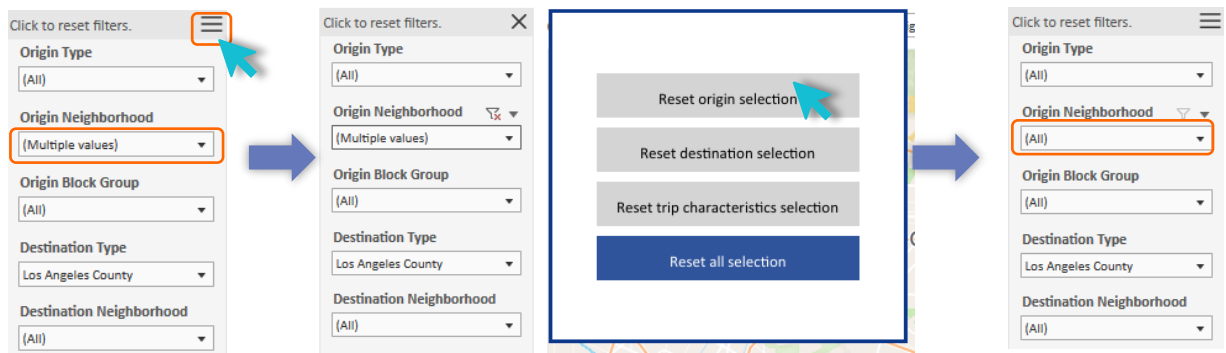
### 3.3.2.1 Filters for Geographic Selection

Several geographic filters are available in the dashboard. Users can sort data based on the origin location and/or the destination location of the trip – see **Figure 3.8** for the geographic selection filters available on each page.

Two spatial resolutions are available for origin/destination ends of trips on *"Person Travel"* and *"Truck Travel"* pages - Neighborhoods (270 in LA County) and Census Block Groups, which the latter being the finer resolution. *"Truck Travel"* has an additional trip end filter – whether the origin and/or destination end of truck trips start in Equity-focused Communities (see definitions in Section 3.2.2.2)

These filters are also organized based on a hierarchical context which means that the filters will show relevant values only based on other geographic selection. For example, if a user makes selections on **Origin Neighborhood** (say *Los Angeles -- Downtown*), then **Origin Block Groups** will show only the Block Group geographies that are within the *Los Angeles -- Downtown* neighborhood.

Figure 3.9 illustrates an implementation of the geographic filters – this figure shows the *"Person Travel"* page where Origin Neighborhood was selected as *"Los Angeles – Downtown"* and Destination Neighborhood was selected as *"Los Angeles – Koreatown"*. Based on this origin/destination selection, the dashboard shows information specific to only those on an average weekday.

Figure 3.9 Use of Geographic Selection Filters
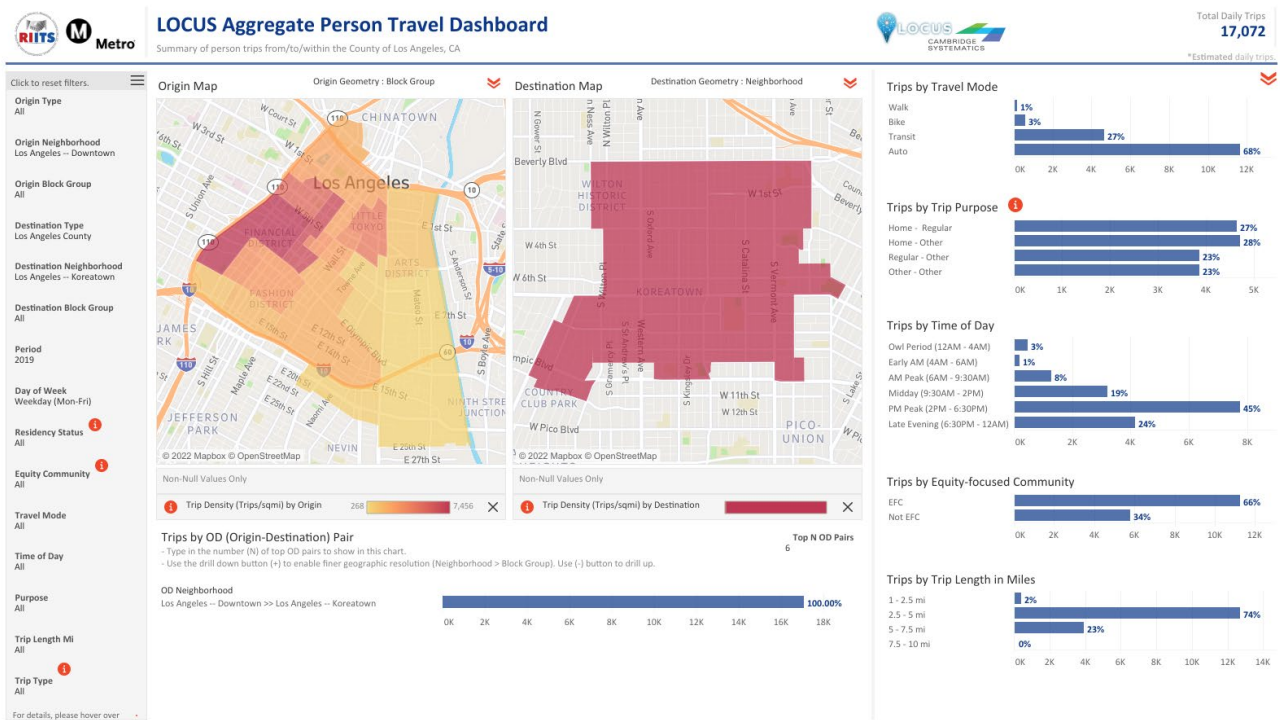
3.3.2.2 Filters for Trip and Traveler Characteristics

There are several filters under this group that allows users to analyze travel patterns for specific travel segments, based on attributes associated with the trips and travelers (trip makers) - see Figure 3.8 for the filters available under these groups, which are described briefly below:

Period

The *"Person Travel"* and *"Commuting Patterns"* pages report travel patterns from Q3-Q4 of 2019 and 2020. Users can select either **2019 or 2020**. "Truck Travel" reports only 2019 truck movements – this is based on the availability of model forecasts for only specific years.

Day of Week

The *"Person Travel"* and *"Commuting Patterns"* pages report average daily trips by different days of week. Weekdays are treated as a single category (Monday through Friday), while weekend options include individual categories for Saturday and Sunday. Therefore, users can amongst the three available options in their analysis : **Weekday**, **Saturday** and **Sunday**. Note that *"Truck Travel"* reports only **Weekday** travel.

Residency Status

"Person Travel" page reports travel for Los Angeles County residents and Out-of-County residents (labeled non-residents), based on their inferred home locations. Users can conduct analysis for **All** travelers, or separately for **Residents** and **Non-residents**.

Equity Community

The **Equity Community** is a LOCUS device or transit farecard user-based filter, where the tags are based on the inferred home location census block groups. Census block groups are tagged with Metro's "Equity Focused Communities" (EFCs) classification. Metro has defined EFCs as those communities most heavily impacted by gaps in inequity throughout the County. These communities represent geographic areas that have the following socio-economic characteristics:

• More than 40% of households are low-income AND

• Either more than 80% of households are non-white OR more than 10% have no access to a vehicle.

Two classifications are possible – **EFC Community and Non-EFC Community**. More information is available here.

Travel Mode

This filter on the *"Person Travel"* page allows users to segment the analysis based on four travel modes – **Walk**, **Bike**, **Transit**, and **Auto**. More information on the travel mode inference is available in the LOCUS Validation Report.

Truck Type

This filter on the *"Truck Travel"* page allows users to segment the truck trips based on three classifications in the truck model based on their **Gross Vehicle Weight (GVW)** - **Light Truck** (GVW between 8,500 lbs and 14,000 lbs), **Medium Truck** (GVW between 14,001 lbs and 33,000 lbs), and **Heavy Truck** (GVW more than 33,000 lbs).

Purpose

The *"Person Travel"* page allows for segmentation of trips into four travel purposes:

• **Home−Regular** which includes trips between home and work/school/college (regularly visited mandatory location).

• **Home−Other** which includes trips between home and a non-regular location. This may include trips from home to the grocery store, a place of worship, a friend/relative's home, or to beach/state park.

• **Regular−Other** which captures trips between the non-home regular location and a non-home location. This captures trips such as going to/from lunch from/to the workplace, stopping on the way back from work to pick up a child from daycare, and/or going to a part-time work location after university classes.

• **Other−Other** which captures travel between non-home and non-regular locations.

Time of Day

The ***Time-of-Day*** filter allows users to filter the set of trips across various time periods during the day or at night. LOCUS uses six time periods in this dashboard. The definitions are as follows:

• **Early AM :** 4 AM − 6 AM

• **AM Peak**: 6 AM − 9:30 AM

• **Midday**: 9:30 AM − 2 PM

• **PM Peak**: 2 PM − 6:30 PM

• **Late Evening**: 6:30 PM − 12 AM

• **Owl Period**: 12 AM − 4 AM

Trip Length Mi

This filter allows users to select trips based on trip length. The following trip length categories are included in the *"Person Travel"* page.

• Under 1 mile;

• 1 to 2.5 miles;

• 2.5 to 5 miles;

• 5 to 7.5 miles;

• 7.5 to 10 miles;

• 10 to 15 miles;

• 15 to 20 miles;

• 20 to 30 miles;

• 30 to 40 miles;

• 40 to 50 miles; and

• Over 50 miles.

Trip Type

Trips that start and end in the same block group are defined as ***Intrazonal Trips***. ***Interzonal Trips*** are trips that have origin and destination in different block groups. This filter is applicable to the *"Person Travel"* and *"Truck Travel"* pages.

Home Neighborhood

This filter is applicable to the *"Commuting Patterns"* page – allows users to filter commuters based on their **Home Neighborhood**. Note that this page includes only residents of Los Angeles County.

Workplace Neighborhood

This filter is applicable to the *"Commuting Patterns"* page – allows users to filter commuters based on their **Workplace Neighborhood**. Note that this page includes only residents of Los Angeles County.

Commuting Distance

This filter is applicable to the *"Commuting Patterns"* page – allows users to filter commuters based on the distance between their home and workplace locations. The following trip length categories are included -

•   Under 1 mile;

•   1 to 3 miles;

•   3 to 5 miles;

•   5 to 15 miles;

•   15 to 30 miles;

•   30 to 50 miles; and

•   Over 50 miles.

3.3.3 P3 - Maps

The middle panels in the dashboard are used for mapping purposes. Maps on the three dashboard pages have slightly different elements and user-defined customizations, as described below.

Person Travel

There are two possible map configurations based on the desired type of analysis – *Trips* and *Mode Shares* – which can be toggled using the orange chevron on the top-right corners of the maps. In the ⌄ state, the panel shows *Trips,* and in the ⌃ state the panel shows *Mode Shares*. *Figure 3.10 (Trips)* and *Figure 3.11 (Mode Shares)* show the map layout and basic features of the maps such as changing geometry type, selecting the display measures, using tooltip for detailed information, and sliders for filtering geometries.

Figure 3.10 Trips Panel
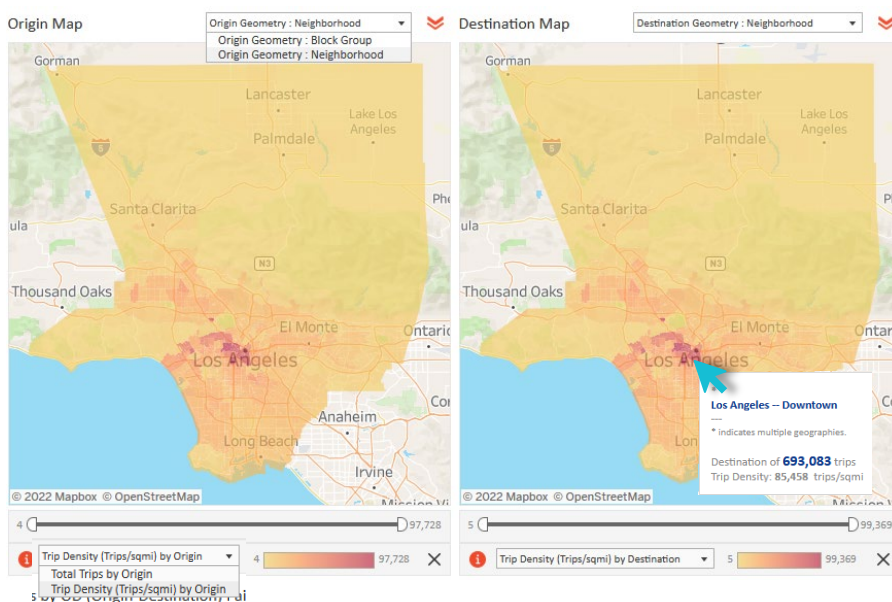
Figure 3.11 Mode Shares Panel
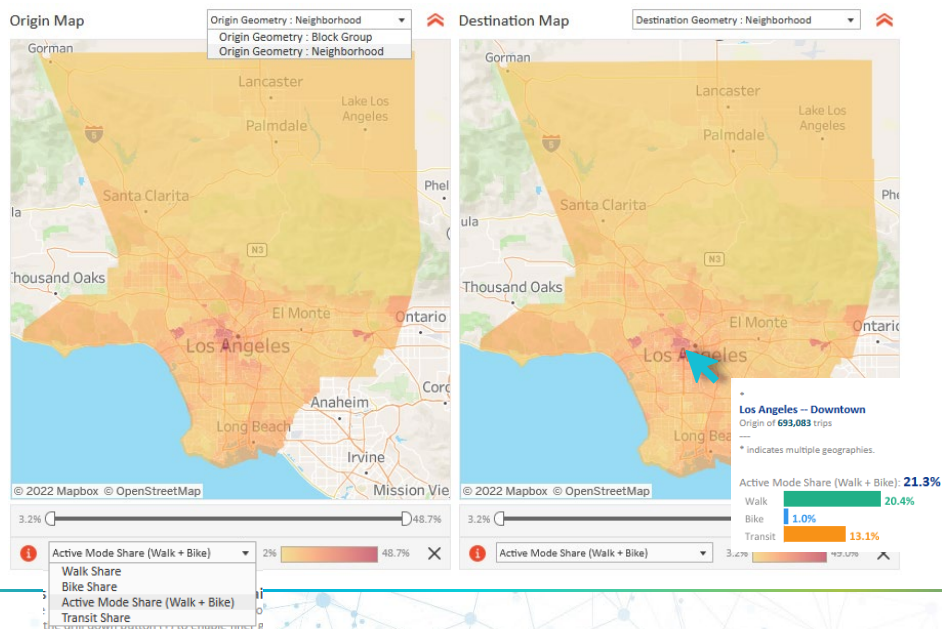
The **Origin Map** shows travel metrics (trips or mode shares) for trips originating in each zone and the **Destination Map** shows the travel metrics for trips ending in each zone. Using the **Measure** filter located below the maps, users can choose to see different measures for the **Trips** and **Mode Shares** panels. For **Trips** panel, users can select the absolute measure (**Total Trips**) or normalized measure (**Trip Density – Trips/sqmi**) of travel activity. For the **Mode Shares** panel, users can choose between **Walk Share, Bike Share, Active Mode Share (Walk + Bike), and Transit Share.**

The color-coding in all maps shows the increasing intensity of trip activity (or mode share percentages), with orange shade indicating larger trip activity (or mode share percentages). Users have an option to view the map at different geographic levels (Neighborhood or Block Groups) using the **Origin Geometry** or **Destination Geometry** filter on the top-right corner of the maps. Users can use the tooltip functionality to see the travel statistics associated with a particular a geography by hovering over the map.

There is also a slider to filter geometries based on trip intensity. Please note that this slider does not apply to other analytics in the dashboard. Users must check and adjust the range accordingly after changing the **Origin Geometry** or **Destination Geometry** filter. This filter can be toggled to show/hide states using the ≡ and ✕ buttons located at the bottom right corners of the **Origin Map** and **Destination Map**.

Truck Travel

For the "*Truck Travel*" page, the **Origin Map** shows the trips made from each zone and the **Destination Map** shows the trips made to each zone. Using the **Measure** filter users can select the absolute measure (**Total Trips**) or normalized measure (**Trip Density – Trips/sqmi**) of travel activity. **Figure 3.12** shows the map layout and basic features of the maps such as changing geometry type, selecting the display measures, using tooltip for detailed information, and sliders for filtering geometries.

Color coding, tooltip functionalities, geographic resolution selection, and sliding filter options are the same as those on the "*Person Travel*" page.

Figure 3.12 Maps on Truck Travel Page
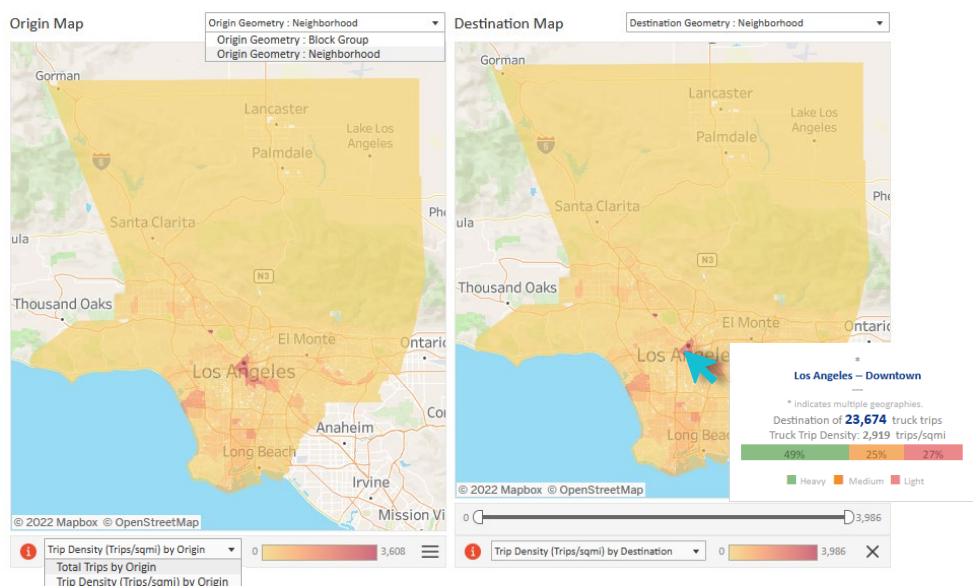
Commuting Patterns

For the *"Commuting Patterns"* page, the **Home Neighborhood Map** shows the home locations of commuters (residents who commute to a regular activity location such as workplace/school) and **Commuter Regular Activity Neighborhood Map** shows the regular activity location of those commuters. **Figure 3.13** shows the map layout and features such as tooltip for detailed information and sliders for filtering geometries.

The color-coding shows increasing percentage of commuters going to their regular activity location on an average day (based on selected day(s) of week) in the selected period (2019 or 2020), with the darker shading indicating higher share of commuters. Users can use the tooltip functionality to see the commuter statistics associated with a particular a geography by hovering over the map.

There is also a slider to filter geometries based on percentage of commuters. Please note that this slider does not apply to other analytics in the dashboard - users must check and adjust the range accordingly after changing other filters. This filter can be toggled to show/hide states using the ≡ and ✕ buttons located at the bottom right corners of two maps. **Figure 3.14** showcases an application of this filter to studying commuting patterns on **weekdays** – left map shows the home neighborhoods sending atleast 60% of their commuters to their workplaces in **2019** and right map shows the same in **2020**. The impact of the pandemic is evident – very few neighborhoods have a majority of their workers commuting during the pandemic year.

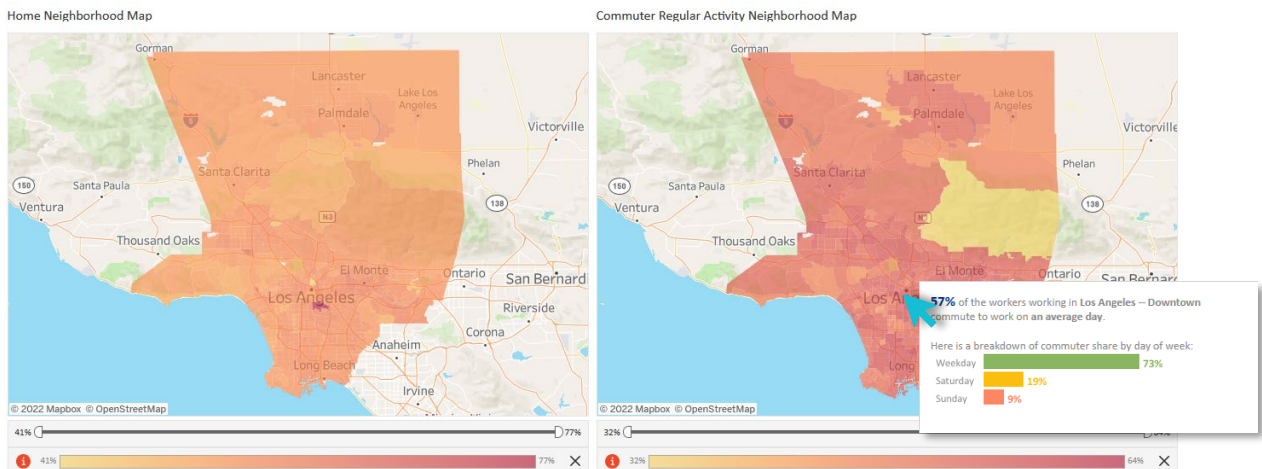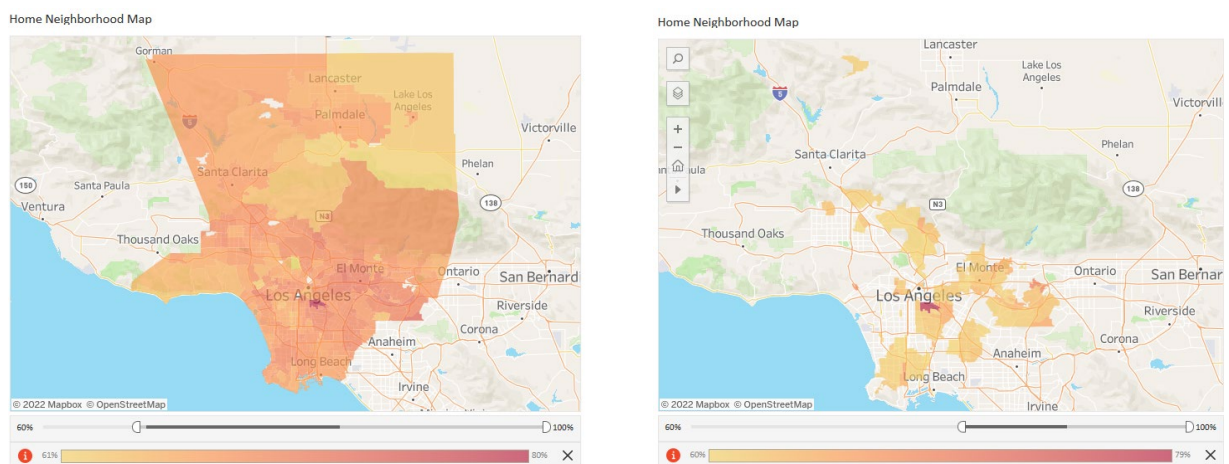#### Figure 3.13 Maps on Commuting Patterns Page

Figure 3.14 Example of Sliding Filter – 2019 vs 2020

3.3.3.1 Filtering Geography using Maps

In addition to the basic features, the maps in LOCUS dashboard offer a set of advanced interactive features that can be used in combination with the travel segment filters. As mentioned earlier in **Section 3.3.2.1**, users can use the filters on the left panel of the dashboard to select the geography of interest. Alternatively, users have the option to do so using the map toolbar on the dashboard. Users can select geography by clicking or using selection tools available on the map toolbar, as shown in **Figure 3.15**.

The toolbar will only show up when users hover over their mouse pointer on the map. Selection options include selection by a rectangular bounding box, selection by a circular radius, or a lasso selection. When an area is selected on the **Origin Map**, the dashboard will show only those trips originating from the selected geographic areas. Similarly, areas can be selected on the **Destination Map** to filter trips based on the destination area. Similar analogies are applicable to the **Home Neighborhood Map** and **Regular Activity Location Neighborhood Maps** on the *"Commuting Patterns"* page.

By zooming in and out, users are able to isolate specific areas of interest. To enable the zoom feature, users can use their mouse wheel, or the **+** and **−** button on map toolbar as shown in **Figure 3.15.**

<div align="center">

Figure 3.15 Filtering Geography using Map Toolbar

</div>
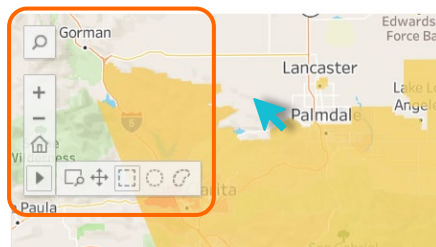
To clear map-based filters, users may click on the blank space of the map as show in **Figure 3.16**. However, any tabular filters chosen by the users will continue to stay active.

<div align="center">

Figure 3.16 Clearing Geographic Selection on Maps

</div>
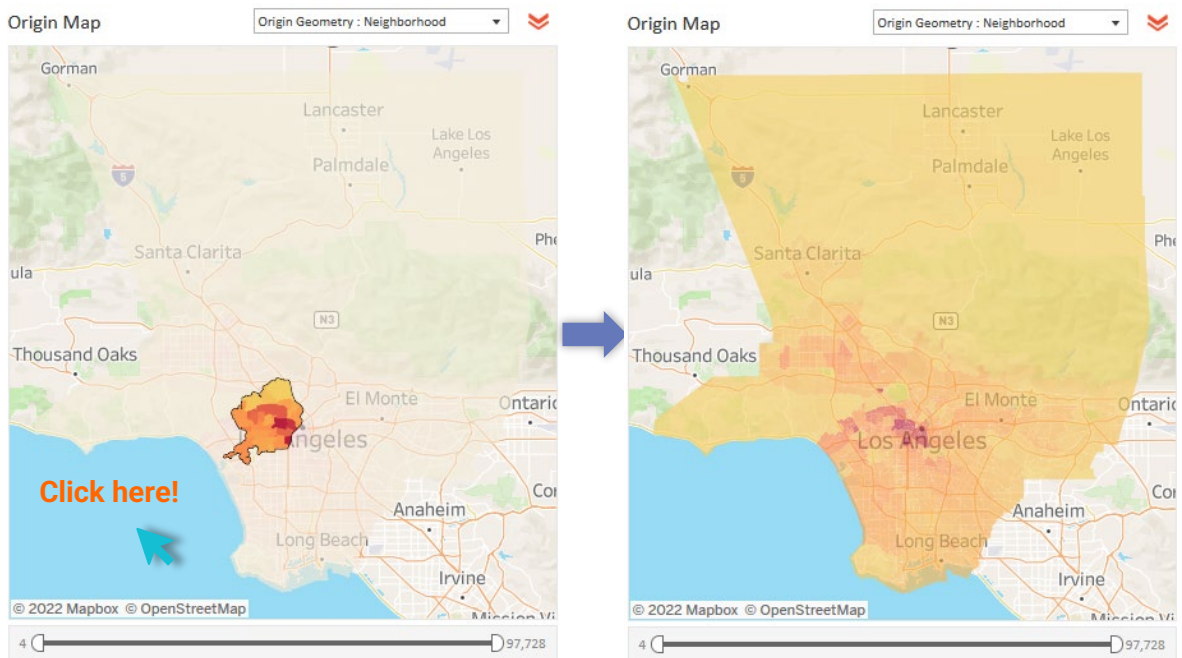
### 3.3.4 P4 - Trip Segment and Commuting Patterns Charts

The dashboard includes several charts that summarize key characteristics of the trips (*"Person Travel"* and *"Truck Travel"* pages) and commuting patterns (*"Commuting Patterns"* page) in the selection set made by users.

Person Travel

As shown in *Figure 3.17*, five charts in this panel show different travel characteristics as listed below:

- Trips by Travel Mode
- Trips by Trip Purpose;
- Trips by Time of Day;
- Trips by Equity Group;
- Trips by Trip Length in Miles

Figure 3.17 Trips by Various Travel Segments – "Person Travel"
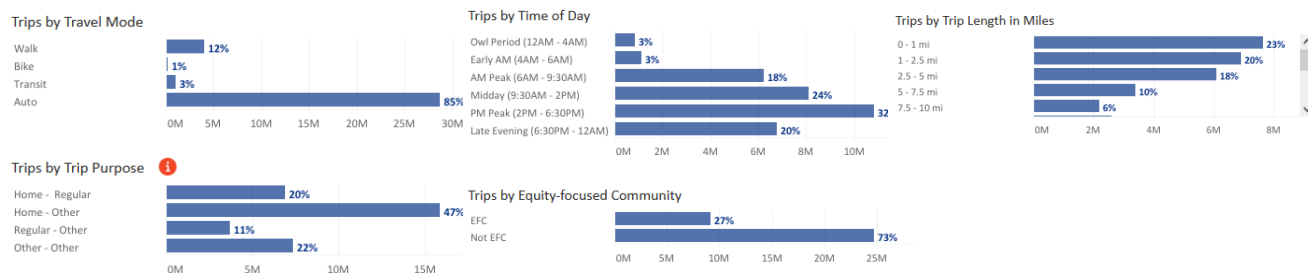
By clicking the orange chevron ⌄ button as shown below in *Figure 3.18* on the top right corner of the panel, users can reveal the distributions by travel mode (this is a great way to see mode shares of trips in each of the travel segments). To hide this chart and return to the default state, users can click on the ⌃ button in the same place.
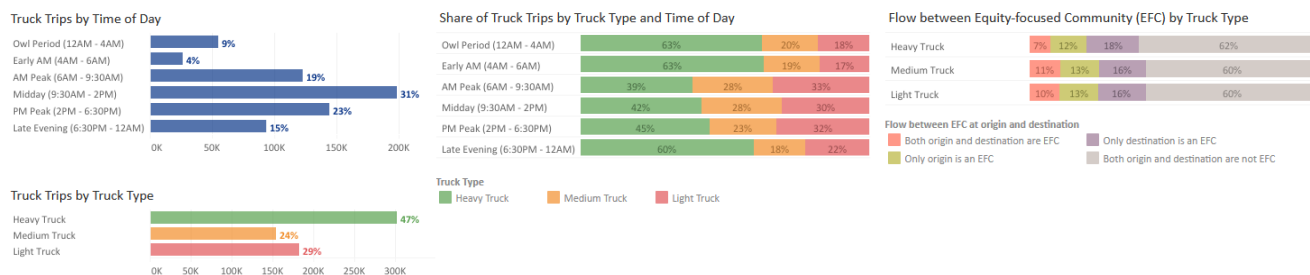

Figure 3.18 Showing Modal Split of Trips
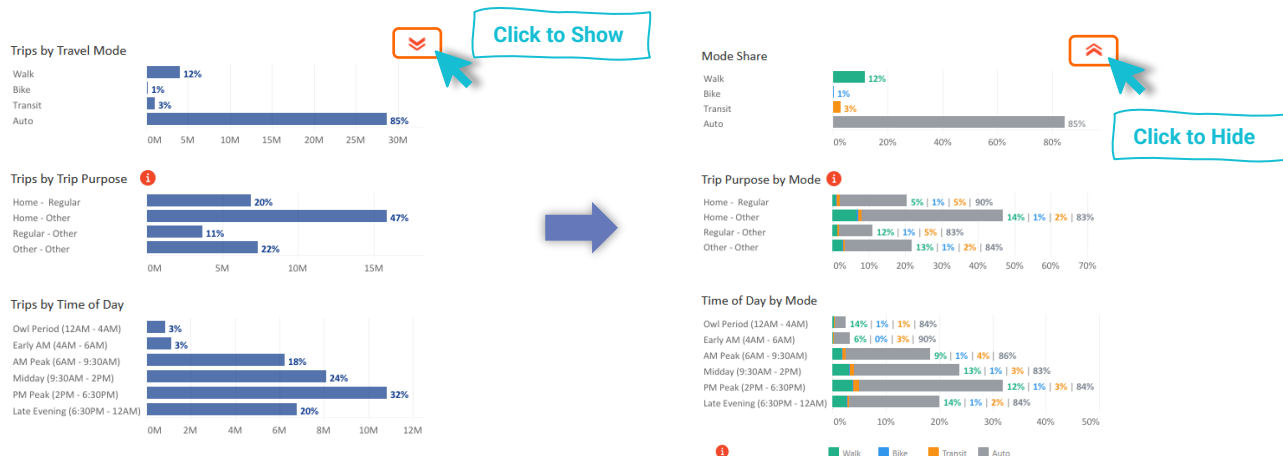
Truck Travel

As shown in **Figure 3.19**, four charts in this panel show different travel characteristics as listed below:

- Trips by Time of Day;
- Trips by Truck Type;
- Trips by Truck Type and Time of Day;
- Trips by Truck Type and Flow between Equity Communities;

### Figure 3.19 Trips by Various Travel Segments – "Truck Travel"

Commuting Patterns

As shown in **Figure 3.20**, three charts in this panel show commuting patterns (share of commuters commuting to regular activity location) by different commuter segments as listed below:

- Commuter Share by Day of Week;
- Commuter Share by Equity Community and Day of Week;
- Commuter Share by Commuting Distance and Day of Week;

Figure 3.20 Trips by Commuter Segments – "Commuting Patterns"
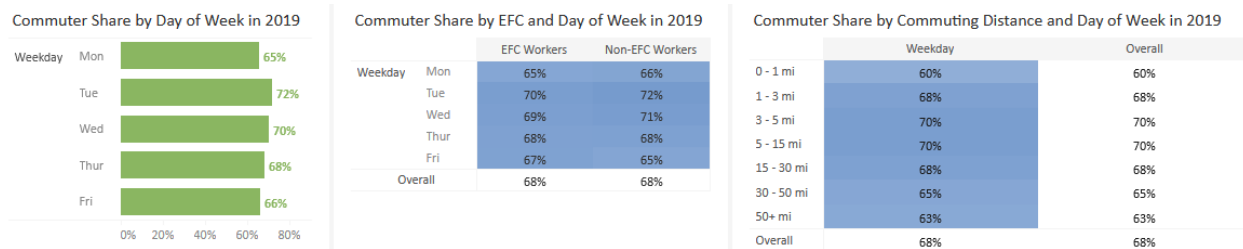
3.3.5 P5 – Origin Destination Flows & Change in Commuting Patterns

#### 3.3.5.1 Origin Destination Flow Table ("Person Travel" & "Truck Travel")

Figure 3.21 shows the share of trips by top OD (Origin/Destination) pairs, with the ability to to select the number of OD pairs to show in the chart, sorted in order of decreasing trips. Users can type in any whole number in the **Top OD Pairs** field and press **Enter** to use this selection.

Figure 3.21 Select Top N Pairs in Trips by OD Pairs Chart
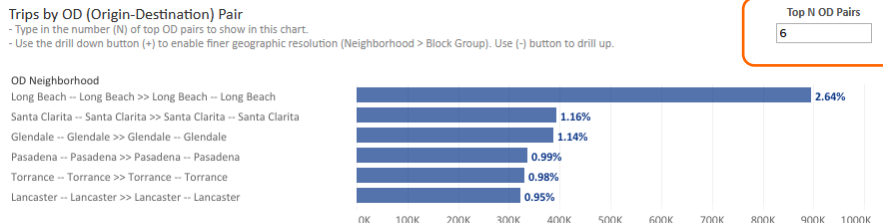
On the O-D chart, users can change the geographic resolution by clicking the (**+**) or (**-**) on the column header of the O-D pairs. The (**+**) or (**-**) will show up once users hover over the column headers as shown in *Figure 3.22*. The geographic resolutions that are available are the Neighborhood and Block Group level OD pairs.

Figure 3.22 Changing Geographic Resolution in Trips by OD Pairs Chart
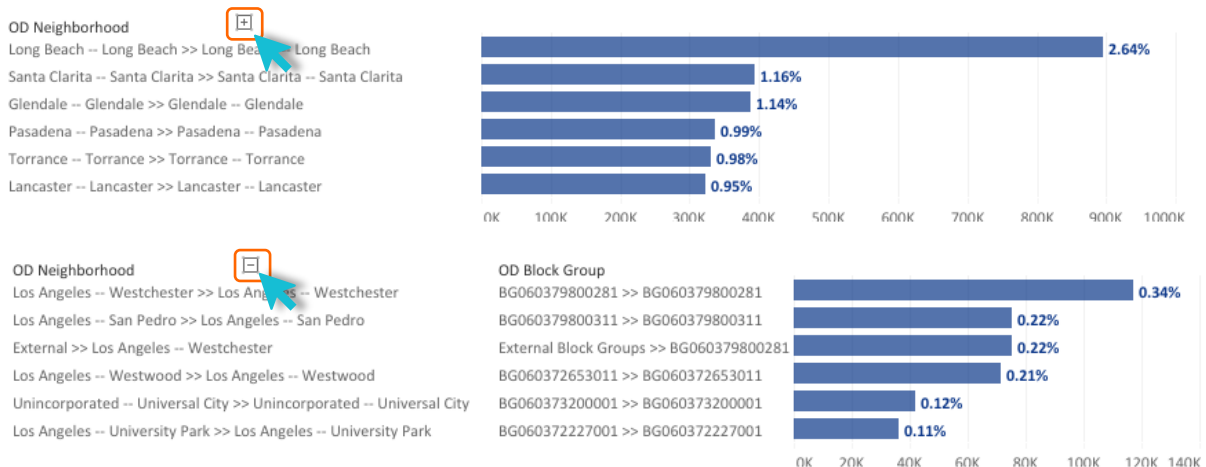
Quick Tips

• When the **Trips by OD Pairs** chart is set to show statistics at the block group level, the dashboard requires additional time for calculation which may result in extended loading or refresh time. Users are recommended to revert the geographic resolution to the neighborhood level to enable faster response.

3.3.5.2 Change in Commuting Patterns ("Commuting Patterns")

Figure 3.23 shows the two charts capturing the changes in commuter shares between 2019 and 2020, by **Day of Week** and *Distance to Workplace (Commuting Distance)*. These charts capture the pandemic-related impacts on the commuting patterns of commuters headed to workplaces between the two years.

Figure 3.23 Change in Commuter Shares Charts

Change in Commuter Shares between 2019 and 2020

By Day of Week

Weekday					Saturday	Sunday
Mon	Tue	Wed	Thur	Fri	Sat	Sun
-9%	-12%	-10%	-10%	-10%	4%	4%

By Distance to Workplace

0 - 1 mi	1 - 3 mi	3 - 5 mi	5 - 15 mi	15 - 30 mi	30 - 50 mi	50+ mi
-8%	-5%	-6%	-6%	-5%	-6%	-11%

Saving Data and Images

4

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.

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.

Figure 4.1 Saving Dashboard Images – Tableau Online
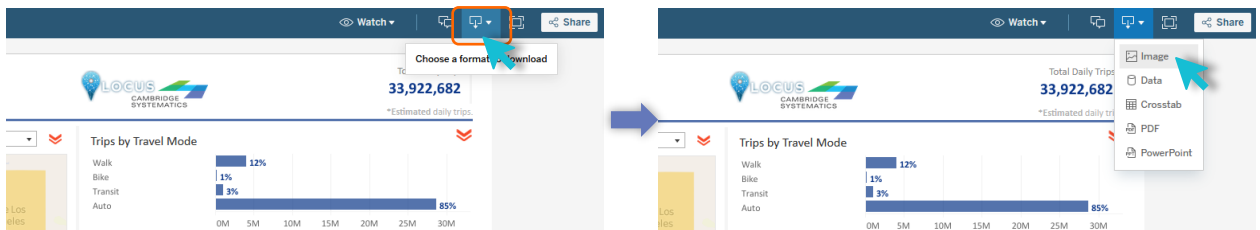
Figure 4.2 Saving Dashboard Images – Tableau Reader

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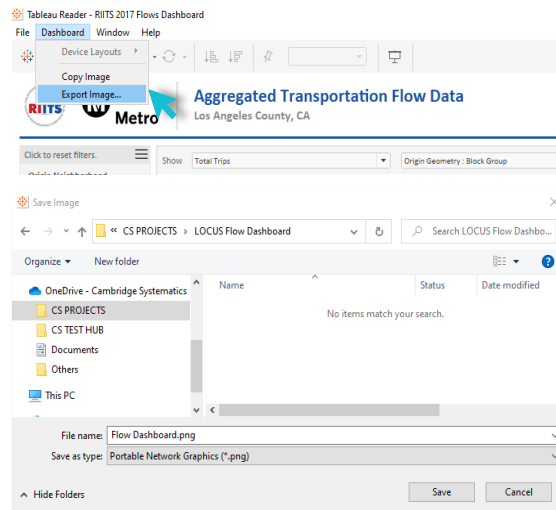
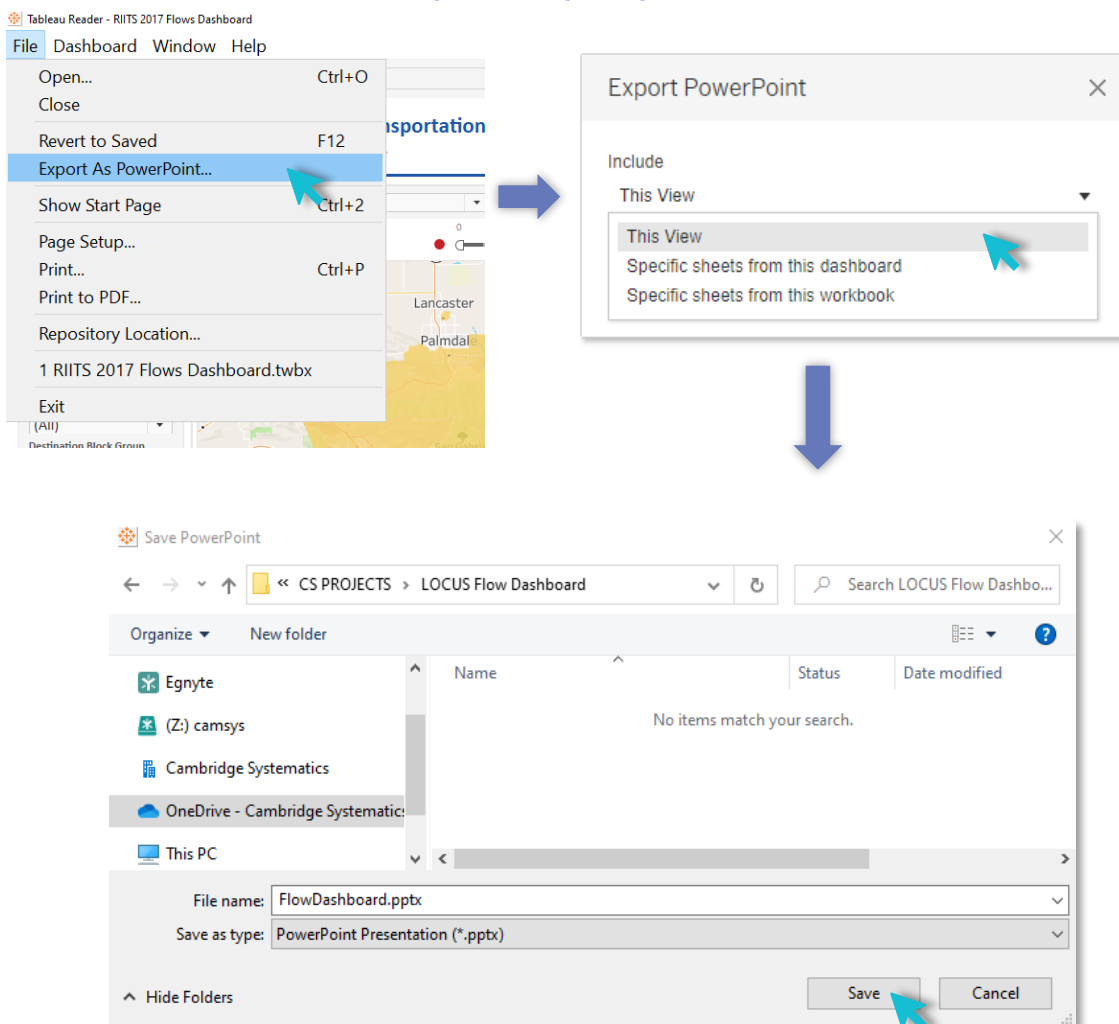## 4.2 Exporting as PowerPoint

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.

<div align="center">

Figure 4.3 Exporting as PowerPoint

</div>

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.

Figure 4.4 Exporting as PDF
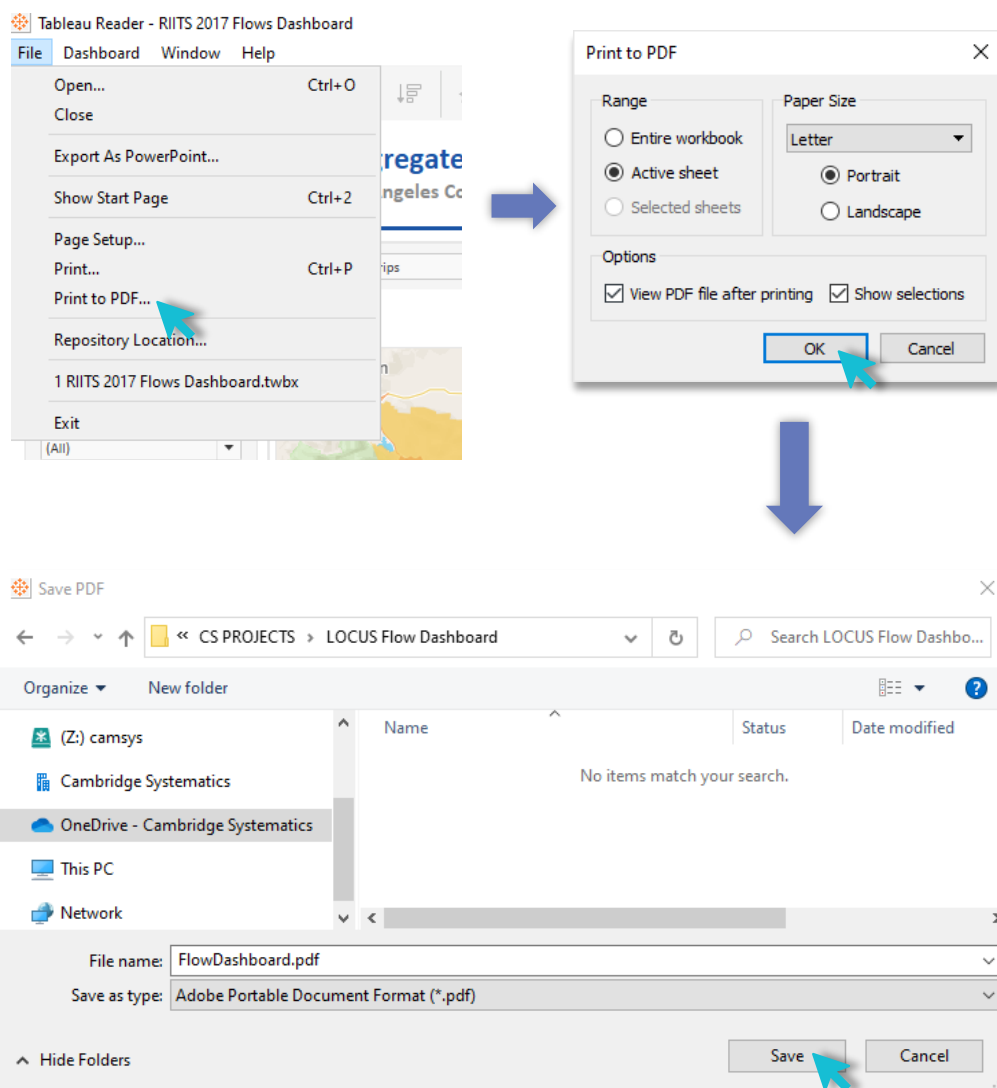
4.4 Saving a Chart or Table

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*.

Figure 4.5 Saving Image of a Specific Chart/Table
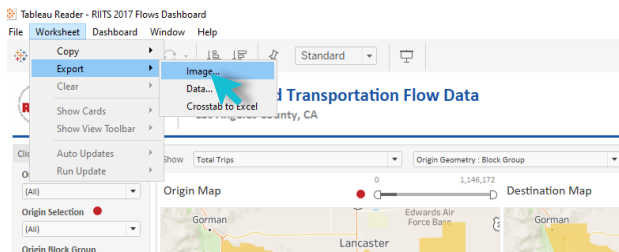
Cross-tabulation can also be generated by selecting *Crosstab to Excel* option. This procedure will generate the crosstab in an Excel sheet, but the file is *NOT* automatically saved. Users must save the file in Excel software to store the data on their local system. The process is shown in *Figure 4.6 –* top image shows the steps for Tableau Reader user and bottom image shows the steps for Tableau Online, select Crosstab from the download options and select the desired sheet in the pop-up window.

Figure 4.6 Saving Cross-tabulations in Excel for Tableau Reader User and Tableau Online User
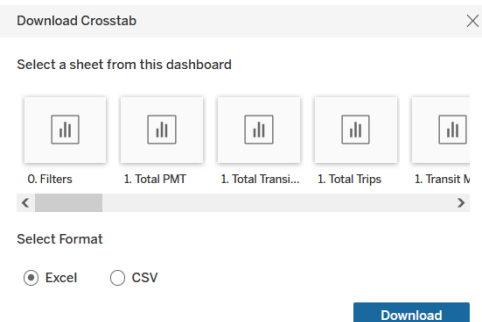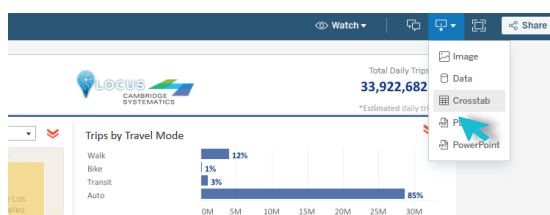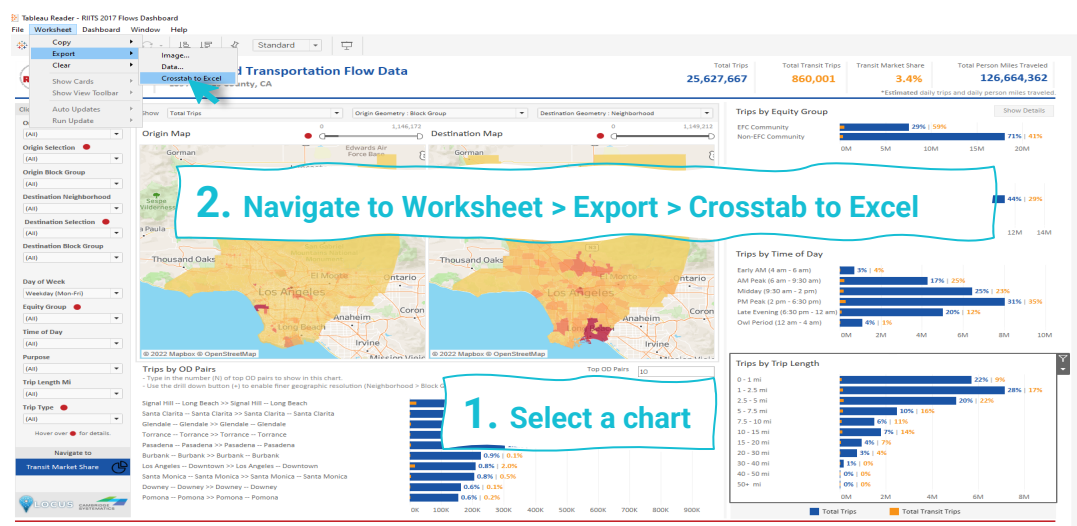
**Figure 4.7 Cross-tabulation Exported as Table in Excel**

As an alternative, Tableau Online users can also click on a chart of interest, open the summary data in an interactive browser window, and copy/download the data using the steps shown in *Figure 4.8.* Users first need to click in any of whitespaces on the chart and then navigate to *Data* under the download options. The crosstab pops up in a browser window that can be copied onto the clipboard or downloaded as CSV.

Figure 4.8 Opening Data in an Interactive Browser Window and Downloading as CSV
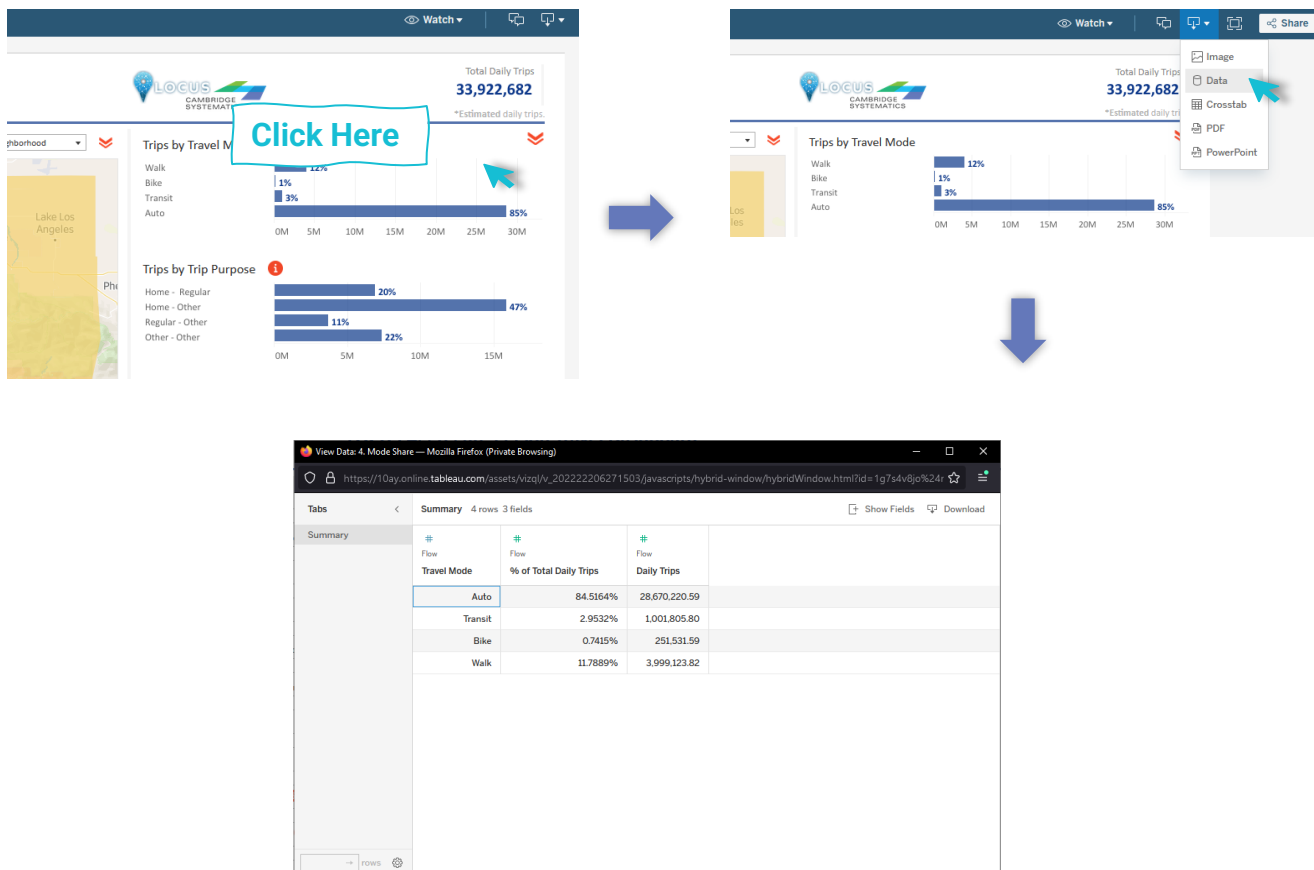
Additional Features

This section highlights additional features of the Tableau dashboard that are available at the user's disposal. Note that some of these are available only in the Tableau Online version of the dashboard.

1. Saving Custom Views (Only Tableau Online)
2. Sharing Views with Authorized Users (Only Tableau Online)
3. Reset View (Only Tableau Online)
4. Pause Live Updates (Only Tableau Online)
5. Undo/Redo Button (Both Tableau Reader and Tableau Online)
6. Keep Only/Exclude (Only Tableau Reader)

5.1 Saving Custom Views (Only Tableau Online)

This feature is available on the utilities ribbon just above the dashboard canvas (see **Figure 5.1**). It allows users to save and bookmark an ongoing session as a **custom view** that the user can retrieve at any point. One instance where this feature would be helpful is when a user wants to generate summaries for different travel markets and wants to access the results without having to set the filters every time. Users can also toggle between different **custom views** and the **original view** and set a custom view as the **default view** that would open every time a new session of the dashboard is loaded.

Figure 5.1 Saving Custom Views
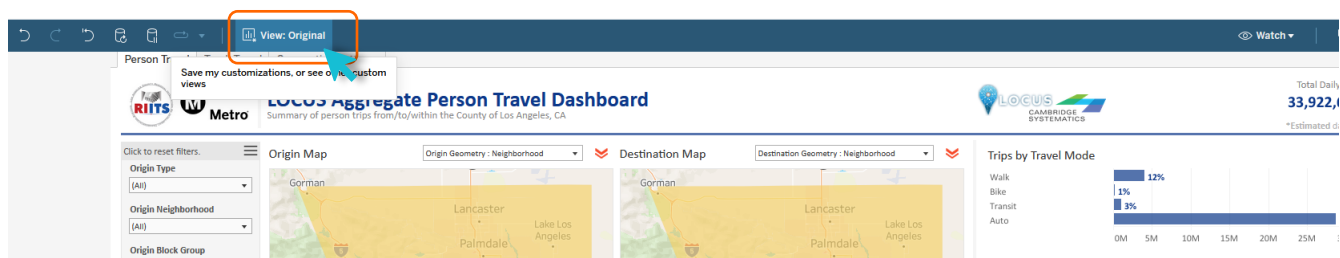
Check this to set as Default View

Click on the Views Option and see the new view generated. Click on desired view to load that view.

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5.2 Sharing Views with Authorized Users (Only Tableau Online)

This features allows users to share the active view with other authorized users. Users can find the authorized usernames by typing names or emails into the textbox. **Only authorized users can view the shared links.**

Figure 5.2 Sharing Views with Authorized Users
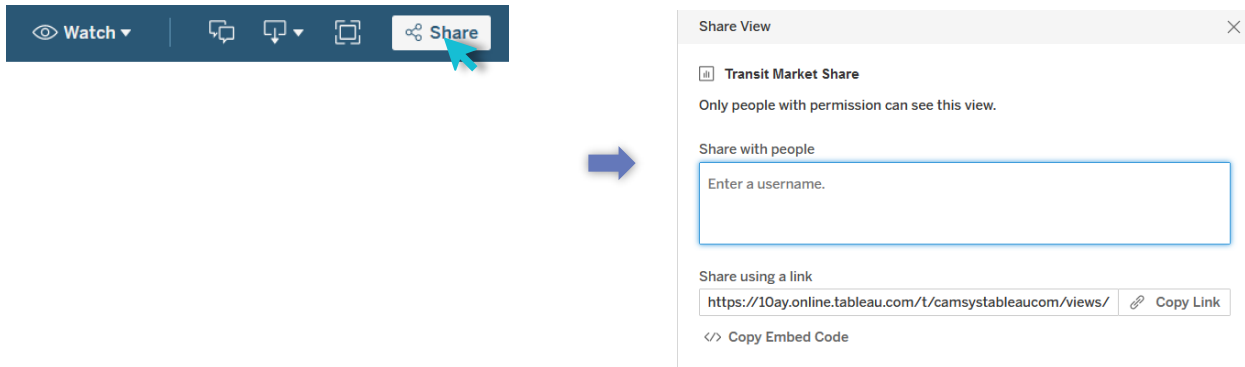
5.3 Reset View (Tableau Online)

This Tableau Online feature allows users to revert all changes made to the dashboard in the current session to the default settings of the active view (can be the original view or custom view selected by the user). To deploy, click on the icon shown on the utilities ribbon as shown below in *Figure 5.3.*

Figure 5.3 Reset View Button
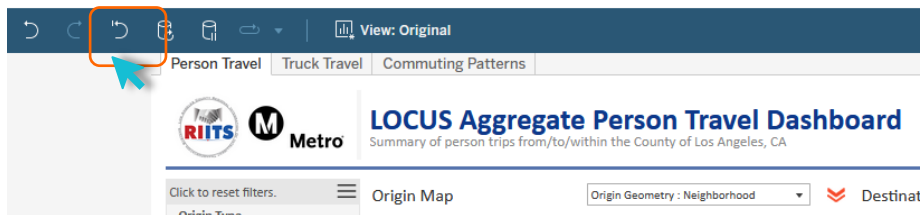
5.4 Pause Live Updates (Tableau Online)

This Tableau Online feature allows users to pause live querying and rendering of dashboard every time a filter is changed. This is super helpful in allowing users make all filter selections before implementing all the changes in one go. *Figure 5.4* shows the sequence of steps to use this feature.
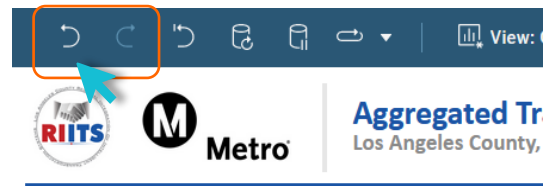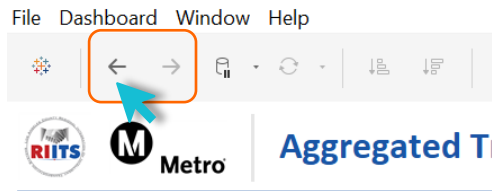
Figure 5.4 Pause and Resume Live Updates
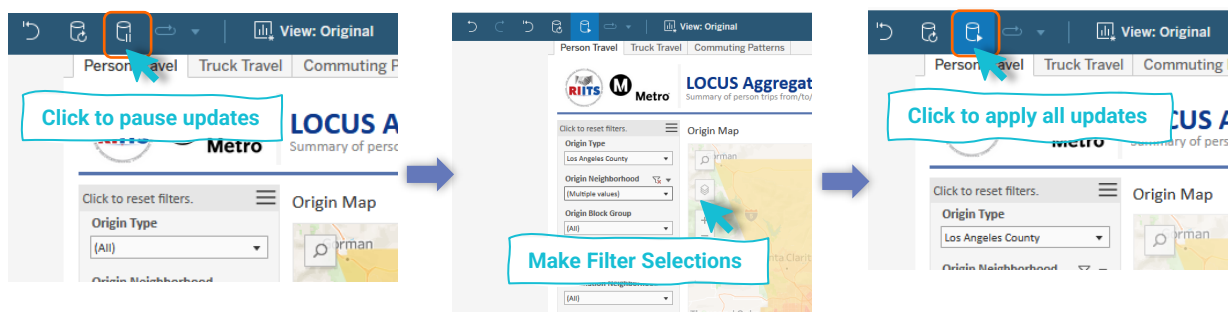
5.5 Undo/Redo Button (Both Tableau Reader and Tableau Online)

This feature allows users to undo/redo dashboard actions (filter, map actions, parameter selections, etc). Unlike the Reset View feature in Tableau Online, this option works on one action at a time.

Figure 5.5 Undo/Redo Buttons – Tableau Reader and Tableau Online

5.6 Keep Only/Exclude (Only Tableau Reader)

This feature is available on Tableau Reader only and allows the users to make filter selections by clicking on chart and map elements. To activate this feature, right click on any chart element and navigate to the "Keep Only" or "Exclude" option. **Figure 5.6** shows this feature in action. To clear the selections for most of the cases (see exception below), use the reset buttons described in **Section 3.3.2.**

Note: Any "Keep Only/Exclude" selections made on the maps are out of scope of the reset filter buttons or the map-based reset by clicking outside the selection area. To clear the selections, use the UNDO button as shown in **Figure 5.5.**

Since this feature can be confusing in scope, **users are recommended to avoid the "Keep Only/Exclude" feature and preferably use the filters panel and/or map selections.**

Figure 5.6 Keep Only Filtering in Tableau Reader