



## **AN OPEN SOURCE TOOL FOR THE VISUALIZATION, ANALYSIS AND REPORTING OF REGIONAL AND STATEWIDE TRANSIT NETWORKS**

Agreement # 29725

### **USER GUIDE**

Prepared for  
Oregon Department of Transportation

**Revision Date: 1/8/2015**

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# 1.0 TRANSIT NETWORK ANALYSIS TOOL USER GUIDE

The information included in this document is intended to familiarize a user with the features of the *Transit Network Analysis* (TNA) software tool.

## 1.1 ACCESSING THE TNA SOFTWARE TOOL

The TNA software tool has been developed to work optimally with the Mozilla Firefox and Google Chrome browsers. The TNA software tool can be accessed by typing (or by copying and pasting) the following case sensitive URL in a browser's address bar:

<http://tnasoftware.osu3.com/TNAtoolAPI-Webapp>

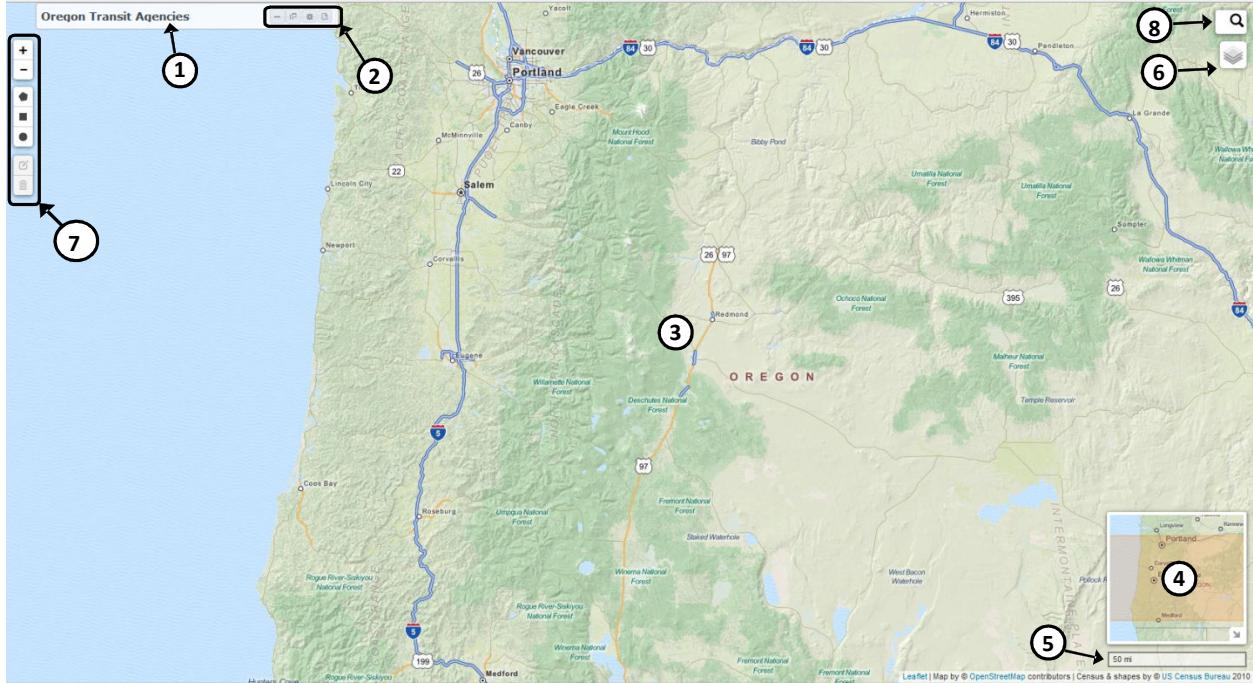
A convenient way to return the TNA software tool to its default form is to simply reload it by pressing the reload symbol at the end of the browser's address bar.

## 1.2 GRAPHICAL USER INTERFACE OF THE TNA SOFTWARE TOOL

Figure 1.1 depicts the graphical user interface (GUI) of the TNA software tool, which is composed of the following components:

1. A main map interface to visualize several network-related features (e.g., transit stop locations, routes, service area, etc.) of Oregon transit agencies. Zooming capabilities enable different levels of visualization for one or multiple Oregon transit agencies at a time.
2. The Oregon Transit Agencies (OTAs) floating dialog box lists all the Oregon transit agencies with an available General Transit Feed Specification (GTFS) feed. The OTAs floating dialog box can be moved freely anywhere within the main map interface.
3. Three button controls are displayed on the right-hand side of the OTAs floating dialog box. The functionality of these button controls (from left to right) is as follows:
  - a) **Minimization Button.** Minimizes the OTAs floating dialog box to the bottom-left corner of the main map interface when clicked. Once minimized, the “**Restore**” button (i.e., arrow pointing up) must be clicked to return the OTAs floating dialog box to the top-left corner of the main map interface.
  - b) **Transit Agencies List Button.** Extends/Collapses the list of Oregon transit agencies.
  - c) **Reports Button.** Opens/Closes a drop down menu that displays the report categories available in the TNA software tool.
4. A map-in-map feature located at the lower right corner of the main GUI. The map-in-map feature utilizes an orange rectangle to indicate which region of the state of Oregon (or other large geographical area) is being displayed in the main map interface.
5. A bar that shows the scale of the main map interface. The scale displayed by this bar adjusts to changes in zoom levels.
6. A layer control icon to select among different map tiles and layers.

7. Three button control groups to (from top to bottom) (1) zoom in and out from a selected point of the main map interface, (2) select areas of interest in the main map interface, and (3) to edit/clear areas of interest in the main map interface.
8. A location search control for quick navigation to specific areas of interest.



**Figure 1.1: The graphical user interface of the TNA software tool**

### 1.3 MAIN MAP INTERFACE

The main map interface accounts for the largest portion of the GUI of the TNA software tool. Also, a map-in-map component is available, as shown in Figure 1.1. Navigation to a specific region in the main map interface can be accomplished by:

1. Scrolling manually with the up, down, left, and right arrow keys.
2. “Grabbing” the map with the mouse by pressing and holding the left-mouse button and dragging the mouse to reposition the map.
3. Utilizing the map-in-map component by “grabbing and dragging” the map area within the map-in-map display.

The zoom level of the main map interface can be changed by:

1. Double clicking on the main map interface. This action will only increase the zoom level around the location clicked on the main map interface.
2. Clicking the zoom in (+) or zoom out (-) selection tools (see item 7 in Figure 1.1).
3. Rotating the mouse wheel forward to zoom in or backwards to zoom out.

## 1.4 THE OREGON TRANSIT AGENCIES FLOATING DIALOG BOX

The following sections describe the main features of the Oregon Transit Agencies (OTAs) floating dialog box.

### 1.4.1 Changing the Location, State, and Size of the Floating Dialog Box

The OTAs floating dialog box is displayed on the upper left corner of the main map interface in a collapsed form when the TNA software tool is first loaded (see Figure 1.1). However, the OTAs floating dialog box can be moved anywhere within the main map interface area. Once the hand-shaped mouse cursor is placed over the OTAs floating dialog box, a four-arrow shaped cursor is displayed instead, as depicted in Figure 1.2. The OTAs floating dialog box can now be “grabbed and dragged” by pressing and holding the left-mouse button.

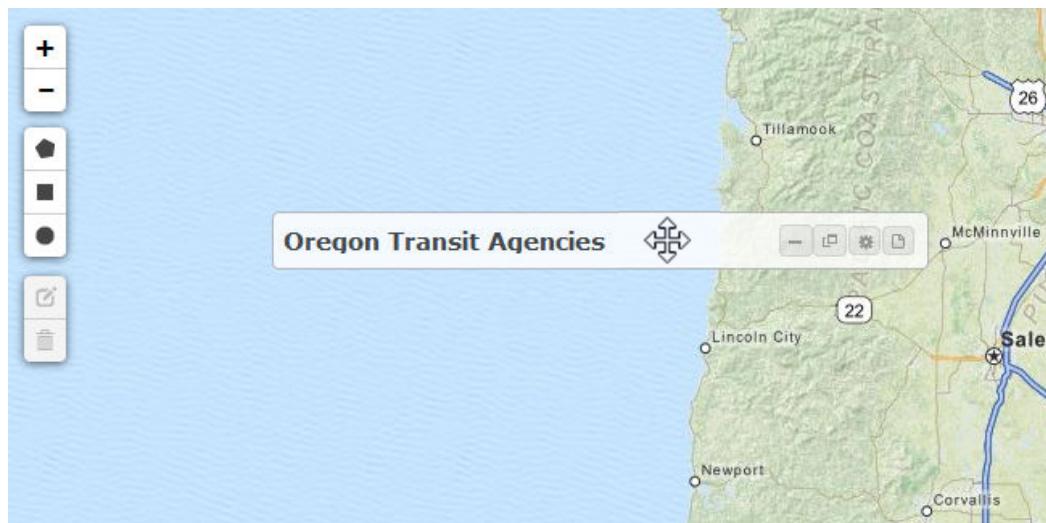
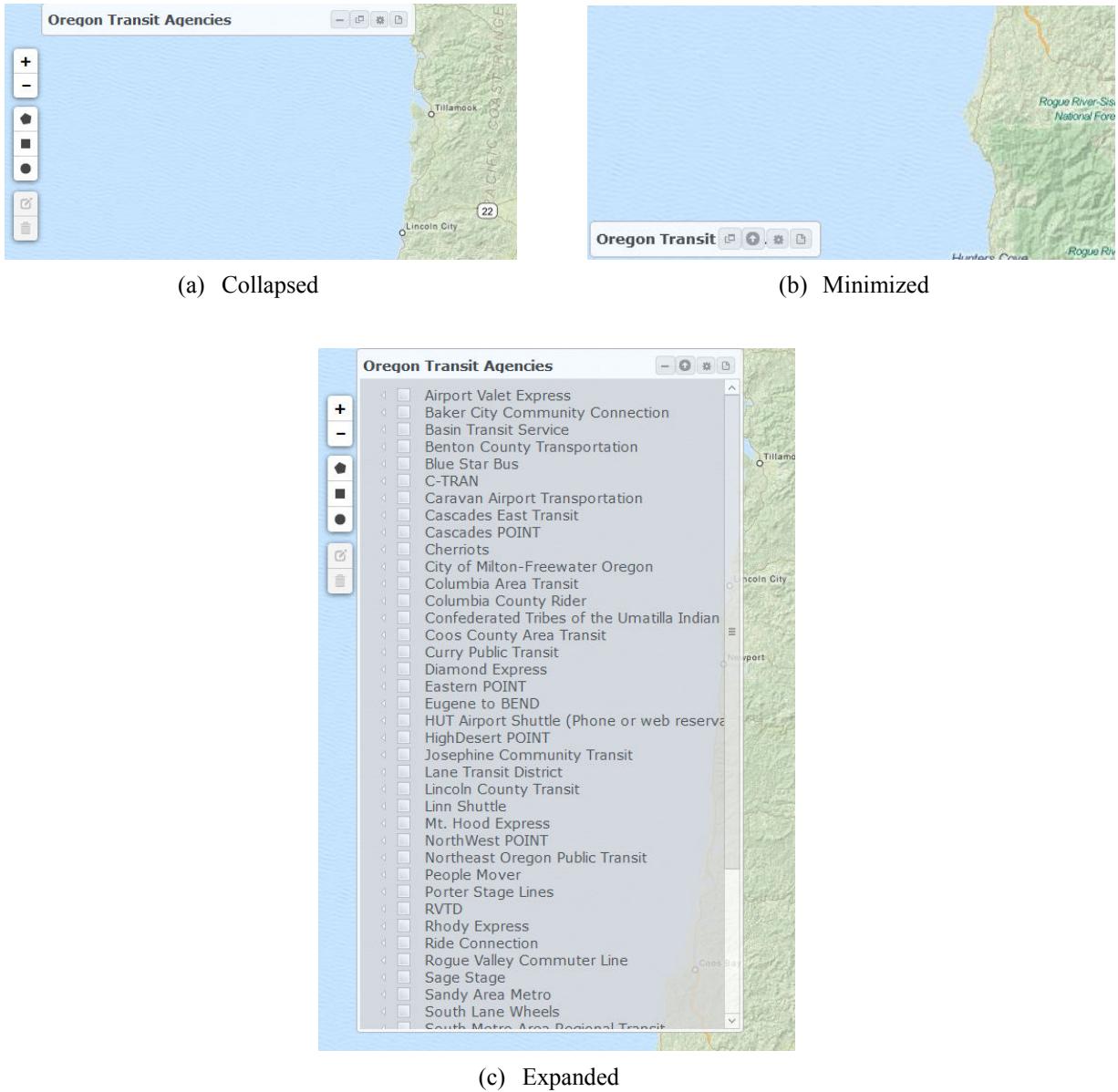


Figure 1.2: Moving the OTAs floating dialog box

The OTAs floating dialog box can also be minimized, extended, and collapsed again using the three control buttons located on the top right-hand side of the OTAs floating dialog box. Figure 1.3 depicts the different states of the OTAs floating dialog box.



**Figure 1.3: Different states of the OTAs floating dialog box**

Once extended, the default size of the OTAs floating dialog box can be modified. To increase its size, the user must place the mouse cursor on the right-hand side border of the OTAs floating dialog box. Then, the user must press and hold the left-mouse button and drag the edge of the OTAs floating dialog box to the new desired size.

Figure 1.4 depicts a resized OTAs floating dialog box. The OTAs floating dialog box can be resized when the name of a transit agency (or a route name) is too long to fit within the default width. Conversely, the width of the extended OTAs floating dialog box can be reduced if a larger main map interface is desired.

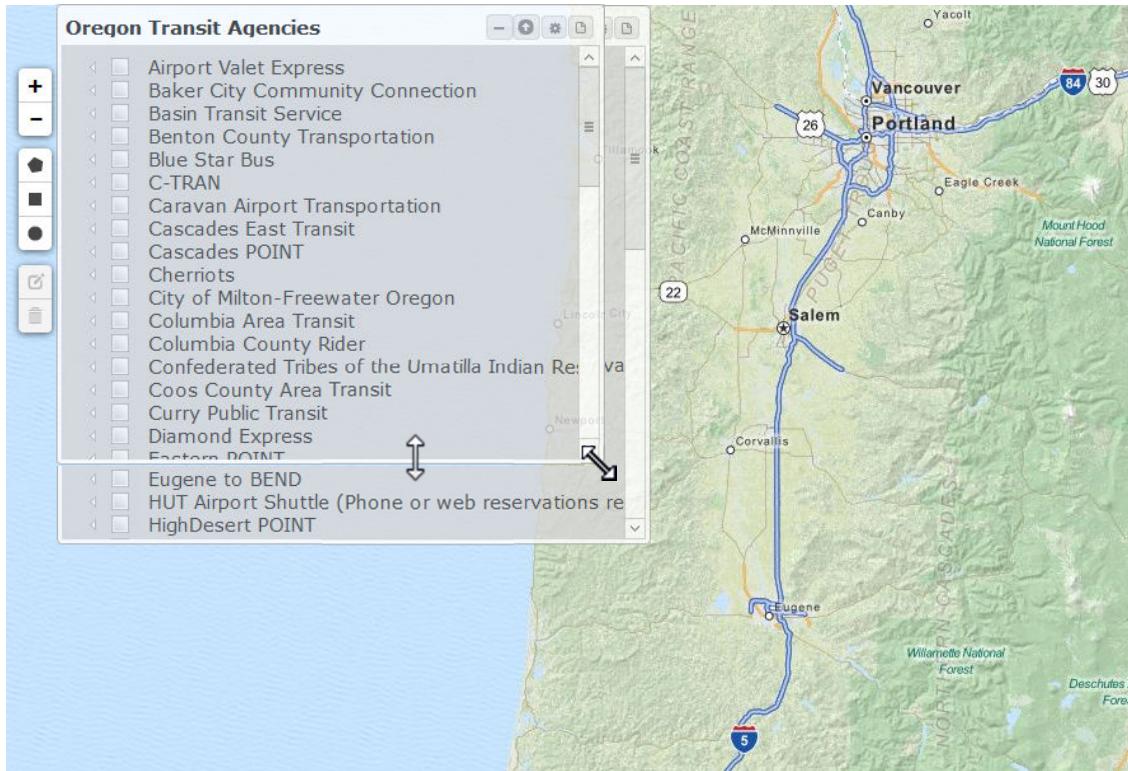


Figure 1.4: Modifying the size of the extended OTAs floating dialog box

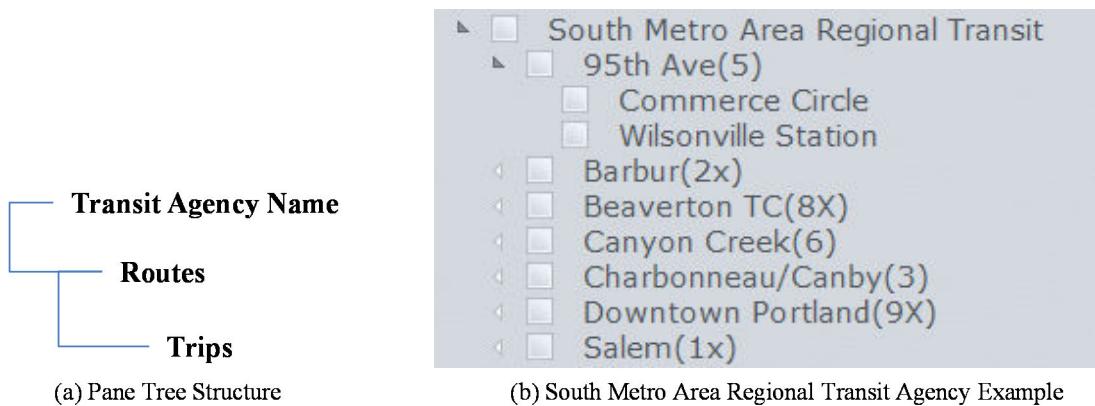
#### 1.4.2 Structure of the Extended OTAs Floating Dialog Box

The extended OTAs floating dialog box uses a hierarchical structure to organize the information pertaining to the different Oregon transit agencies, as depicted Figure 1.5a. The white arrow icons (↗) must be clicked to display the routes of a specific transit agency in the OTAs floating dialog box. Figure 1.5b shows an example for the South Metro Regional Transit agency, which operates a total of nine routes (in the GTFS data utilized). Clicking the white arrow icon next to the transit agency name will reveal the routes, and clicking the white arrow icon next to a route name will reveal the trips for that route<sup>1</sup>. In the South Metro Regional Transit agency example, the “95th Ave” route is expanded to show two different trips. If a route name is present in the transit agency’s GTFS data, it will be displayed. The characters enclosed in parentheses at the end of route names represent “route short names” (e.g., “5” or “2x”).

The different levels of the transit agency information can be collapsed (i.e., hidden) by clicking on the corresponding black arrow icons (↘).

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<sup>1</sup> Only the trips that have a different visual shape (defined by the stops and the sequence in which they are visited) are listed.



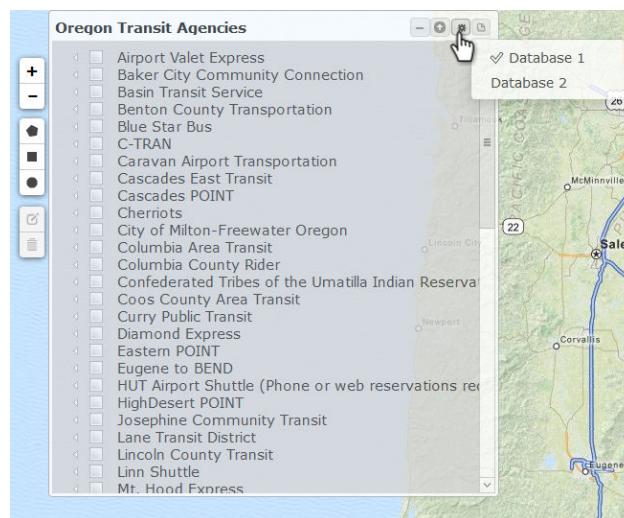
**Figure 1.5: The hierarchical structure of the extended OTAs floating dialog box**

### 1.4.3 Selecting a Database for Visualization

The OTAs floating dialog box includes a button for the selection of a specific database from which GTFS and population data are extracted for visualization in the main map area, and for report generation. By default, the OTAs floating dialog box is always initialized with the database that contains the most recent GTFS data.

Figure 1.6 depicts the location of the “Databases” button on the OTAs floating dialog box that must be clicked to select a different database. Using the multi-database feature, different instances of the TNA software tool (each using a separate database) can be opened in separate browser windows allowing a user to compare the structure of transit networks both visually and through the reporting capabilities of the TNA software tool.

The ability to select different databases is also available through different reports that can be produced by the TNA software tool (see section 1.9).



**Figure 1.6: The "Databases" button on the Oregon Transit Agencies floating dialog box**

## 1.5 SELECTING TRANSIT AGENCIES FOR VISUALIZATION

A transit agency (or multiple transit agencies) can be selected for visualization on the main map interface by clicking on their corresponding check boxes, as depicted in Figure 1.7. Transit agencies will be assigned one of six colors (i.e., green, pink, teal, red, purple, and brown) as they are selected. The color assigned to a transit agency on the extended OTAs floating dialog box will also be used to represent the stop clusters displayed on the main map interface. A user can change the color assigned to a transit agency by unselecting and reselecting the transit agency.

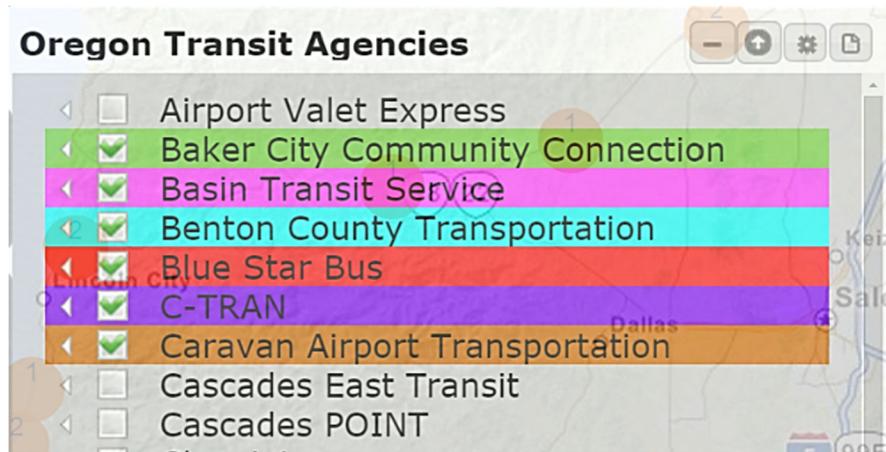
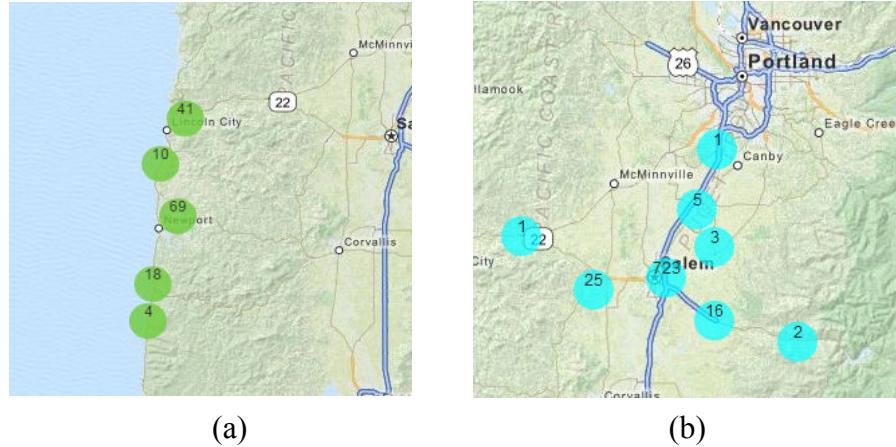


Figure 1.7: Selecting transit agencies for visualization

### 1.5.1 Stops Clusters

In the TNA software tool, the location and size (i.e., total number of stops) of the network of a transit agency is represented on the map in the form of *stops clusters*. The symbol for a stops cluster is a circle of the same color as that assigned to the selected transit agency in the extended OTAs floating dialog box. The number shown inside a stops cluster (or the summation of the numbers, if several stops clusters are displayed for a single agency) represents the total number of stops operated by the transit agency.

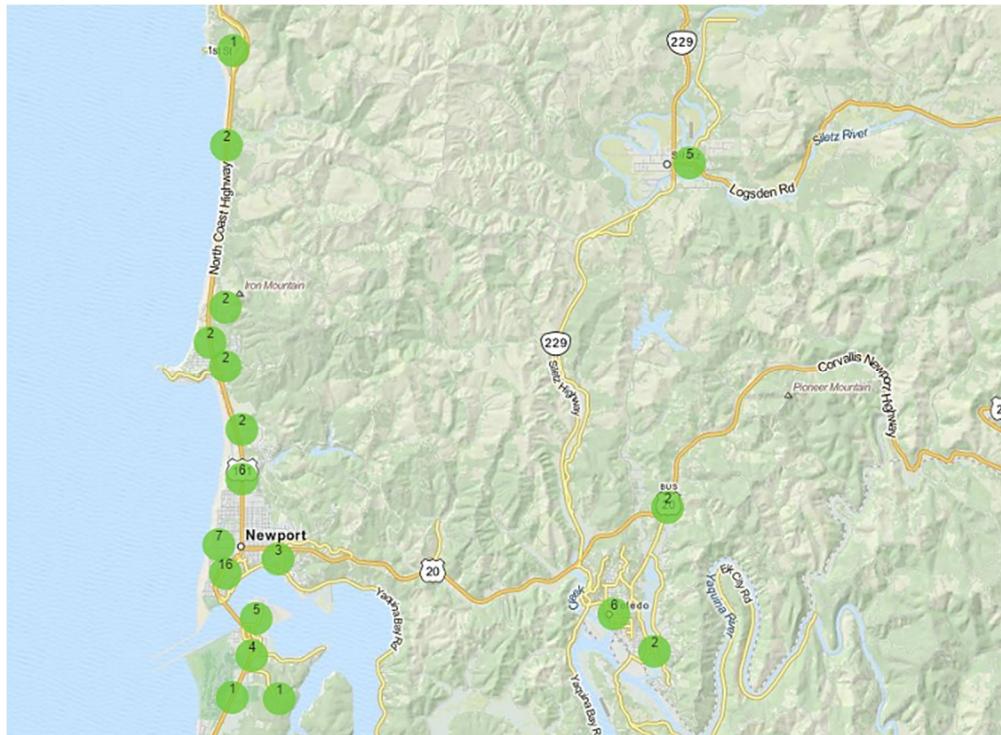
For example, Figure 1.8a depicts the stops clusters of the Lincoln County Transit agency when this transit agency is first selected on the extended “Oregon Transit Agencies” floating dialog box. The Lincoln County Transit agency operates a total of 142 stops (i.e., the sum of the numbers displayed inside the five stops clusters). Figure 1.8b depicts the stops clusters representation for Cherriots (the Salem-based transit agency) when it is first selected on the extended OTAs floating dialog box. Eight stops clusters are displayed representing a total of 776 stops.



**Figure 1.8: Examples of stops clusters for two different transit agencies**

### 1.5.2 Zooming In on Stops

When a user points and clicks on a stops cluster, the stops cluster is split into smaller clusters (i.e., stop clusters representing fewer stops) and the zoom level is increased. Figure 1.9 depicts an example for the 69-stops cluster of the Lincoln County Transit agency shown in Figure 1.8a. The 69-stops cluster has been split into 18 smaller stops clusters that have as little as one and as many as 16 stops per stops cluster. Clicking on stops clusters that display a number larger than one (i.e., contain more than one transit stop) will automatically zoom in on that area of the transit agency's service area and the stops cluster will split into smaller stops clusters.



**Figure 1.9: Zooming and partitioning the 69-stops cluster for the Lincoln County Transit Agency**

Stops clusters have additional visualization features and functionality:

- If the mouse cursor is hovered over a stops cluster with more than two stops, a blue outlined area will be displayed. The blue outlined area represents the smallest area that includes all the stops within the stops cluster. This feature is available at all zoom levels for those stops clusters that contain more than two stops. However, the zoom level may have to be adjusted to completely display a particular blue outlined area. Figure 1.10 depicts an example of this feature for a nine-stop cluster operated by the City of Albany/Linn Benton Loop transit agency.
- Once a stops cluster is at its smallest size (i.e., one stop only), the name of the transit agency that operates the stop will be displayed when the mouse cursor is hovered over the one-stop cluster.
- Clicking on a one-stop cluster opens the dialog box depicted in Figure 1.11. The dialog box contains information that is used to generate an on-map report (see section 1.6). The dialog box can be closed by clicking on the “X” located on its upper right corner. The specific information displayed by the dialog box includes the following:
  - Stop name, as reported by the transit agency’s GTFS feed.
  - Stop location, displayed as latitude and longitude coordinates.
  - The current date as the default value. However, a calendar is displayed by clicking inside the textbox so that a different date can be selected if needed. The selected date is needed for the on-map report.
  - Population search radius to allow the user to specify a radius around the stop to perform population-based queries. The default value for the radius is 0.1 miles.

The dialog box also includes a button labeled “Open Street View” which is only functional within the Google Aerial map layer. The functionality provided by this button in the dialog box is further explained in Section 1.8.

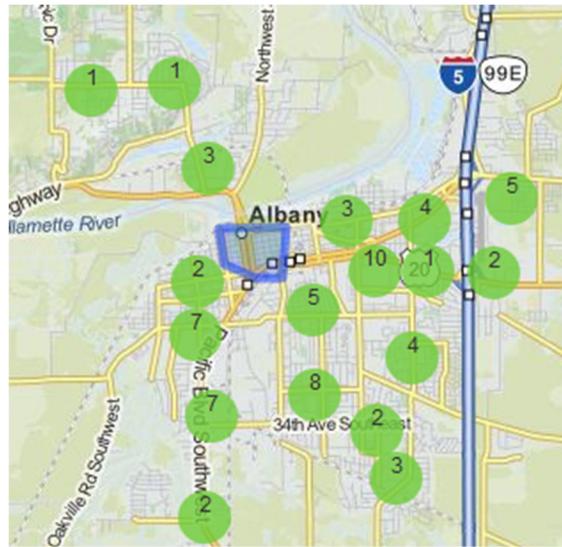


Figure 1.10: Service area envelope of a nine-stop

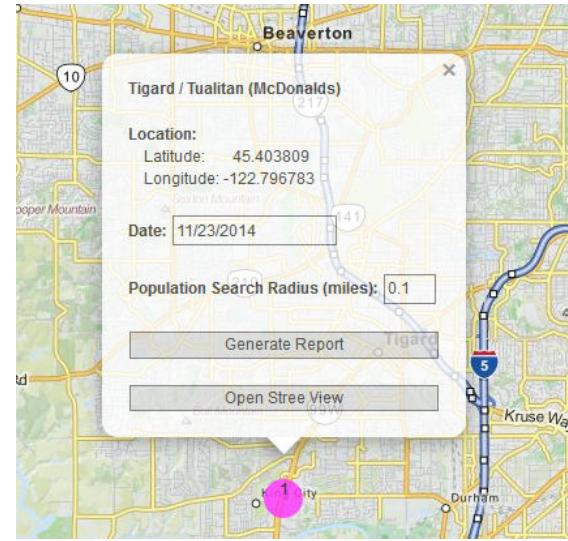


Figure 1.11: Single stop cluster dialog box

### 1.5.3 Displaying Routes and Trips

A route is defined as a collection of stops, and a trip is sequence of a route's stops that are visited by an agency at particular times. A route may have multiple trips that differ by the time stops are visited, and/or the subset of stops visited. The TNA software tool provides different options for the visualization of the routes and trips operated by a transit agency. The following sections detail the steps needed to enable each of these visualization options.

#### 1.5.3.1 Displaying a Single Route and/or Trip

The shape of a single route formed by its stops can be displayed on the main map interface by using the following steps (starting from the initial GUI displayed by the TNA software tool):

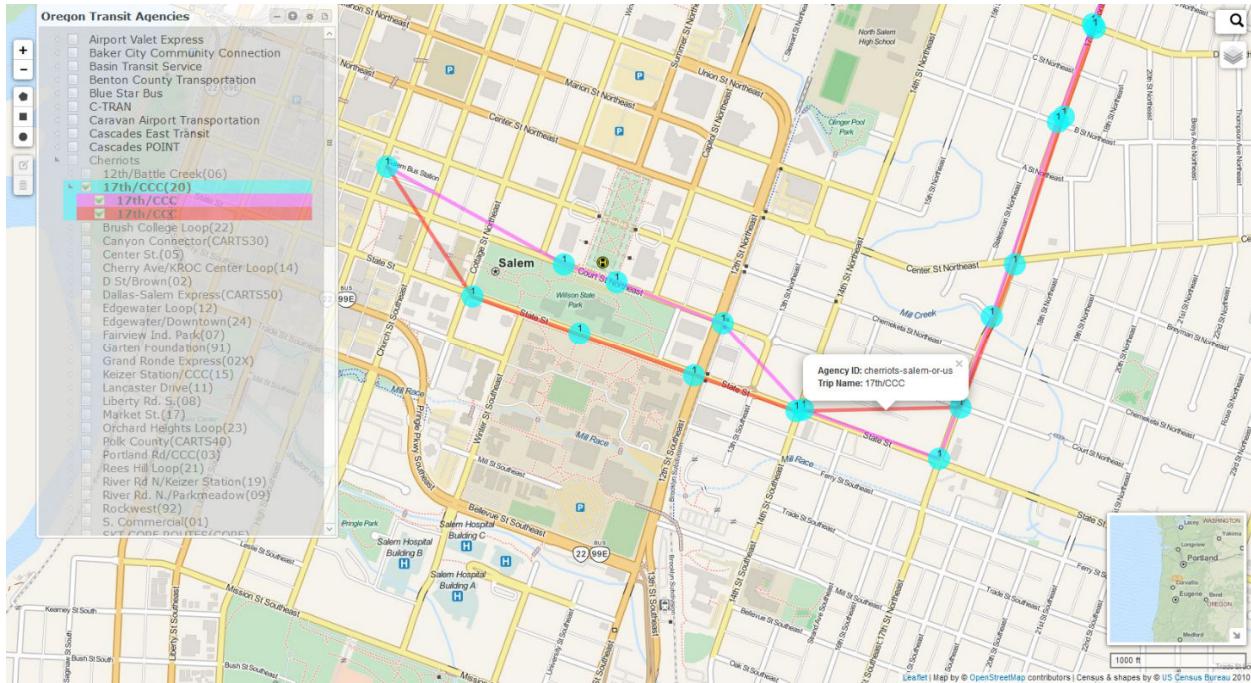
1. Display the list of routes operated by a transit agency by clicking on the white arrow next to the transit agency's name in the extended OTAs floating dialog box.
  - a. Click the check box next to a route name. This action will display the location of the stops cluster (or stops clusters) that belong to this route.
    - i. If a single stops cluster is displayed, click on the stops cluster. This will zoom in and will display the location of all the stops on the route.
  - b. Click the check box next to the trip name. This will display the shape of the trip. The displayed trip may be generated from data provided by the transit agency (agencies that include a *shapes.txt* file in their GTFS feed<sup>2</sup>), or if this data is not provided by the transit agency, the display shows lines joining the stops in the order that they are served. To change the color of the displayed trip shape, continue to click on the check box until the desired color is used.

Clicking on a displayed trip reveals a text box that displays the name of the transit agency that operates the trip (i.e., Agency ID) and, if available in the GTFS feed, the name of the trip. To remove the text box from the GUI, click on the arrow located on the upper right corner of the text box or click on any point of the map outside of the rectangular shape.

Figure 1.12 depicts a portion of a route and the two trips for this route located in Salem. The route is represented the blue one-stop clusters, and the trips by the pink and red lines joining the blue one-stop clusters.

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<sup>2</sup> The *shapes.txt* file is **optional** in the GTFS specification.

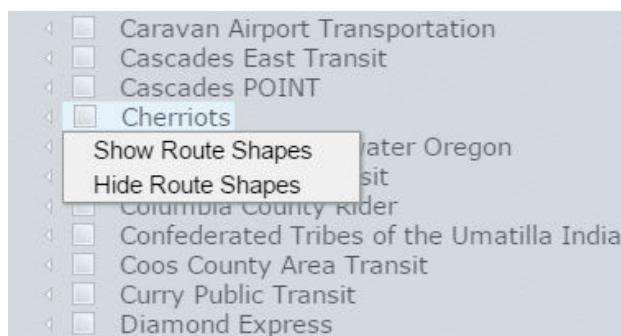


**Figure 1.12: Route and trip visualization example for the Cherriots Transit System**

### 1.5.3.2 *Displaying Multiple Routes*

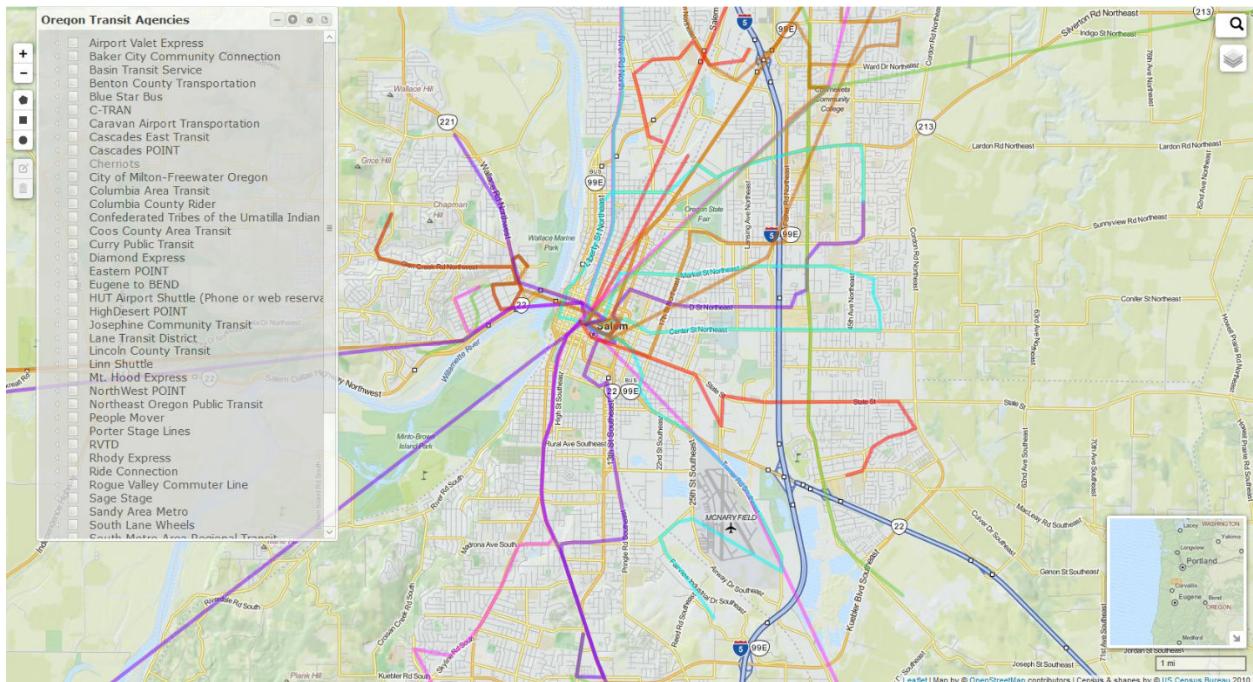
Multiple routes and trips can be selected and displayed. To display multiple routes on the map, the steps described in section 1.5.3.1 should be followed. Alternatively, the longest trip for each route for a transit agency can be displayed (with or without displaying the stops clusters) by using the following steps:

1. Position the mouse cursor on the transit agency of interest in the extended OTAs floating dialog box. This will change the background color of the transit agency's name from gray to light blue, as depicted in Figure 1.13.

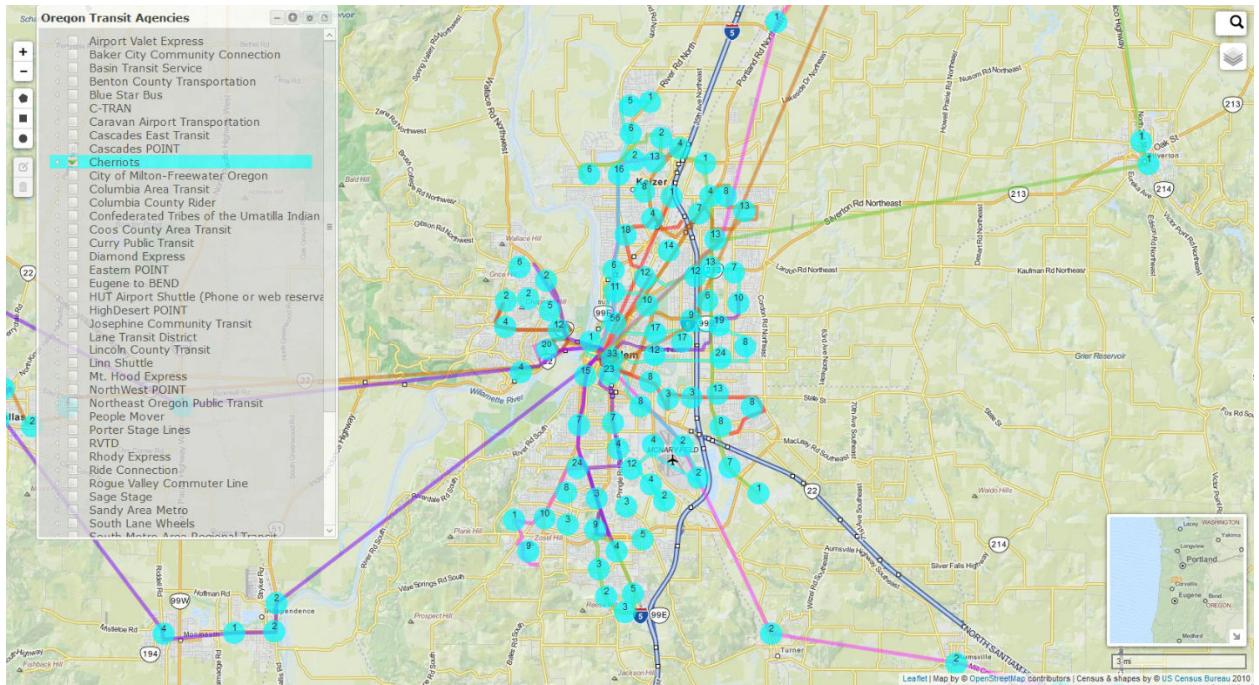


**Figure 1.13: Route selection visualization options with a list box**

2. Right-mouse click on the transit agency name to reveal a list box with the options “Show Route Shapes” and “Hide Route Shapes.” This list box is also depicted in Figure 1.13.
3. Selecting the option “Show Route Shapes” from the list without selecting the check box next to the transit agency name displays the longest trip (without stops clusters) for each route operated by the transit agency, as depicted in Figure 1.14. If the check box next to the transit agency’s name is selected, the route’s stops clusters are displayed as well, as depicted in Figure 1.15.



**Figure 1.14: Displaying all the route shapes (defined by the longest rips) for the Cherriots Transit Agency**



**Figure 1.15: Displaying all the route shapes and stops clusters for the Cherriots Transit Agency**

If the check box next to the name of a transit agency is not selected, and lower level information (i.e., routes or trips) is displayed the color of the font used to display the name of the transit agency changes to a light gray.

## 1.6 ON-MAP REPORTS

The TNA software tool can generate several on-map reports on the main map interface based on a specific geographic area defined by the user. There are two ways a user can define a custom geographic area (i.e., shape and size) on the main map interface:

1. Using the geographic area selection toolbar, and
2. Using the dialog box accessible via a stops cluster representing a single stop (a stop cluster that displays a “1”) (see Figure 1.11).

### 1.6.1 Geographic Area Selection Toolbar

The geographic area selection toolbar consist of two groups of button controls, as depicted in Figure 1.16. The top group includes three button controls referred to collectively as the *draw toolbar*. The bottom group includes two button controls and is referred to as the *edit toolbar*.

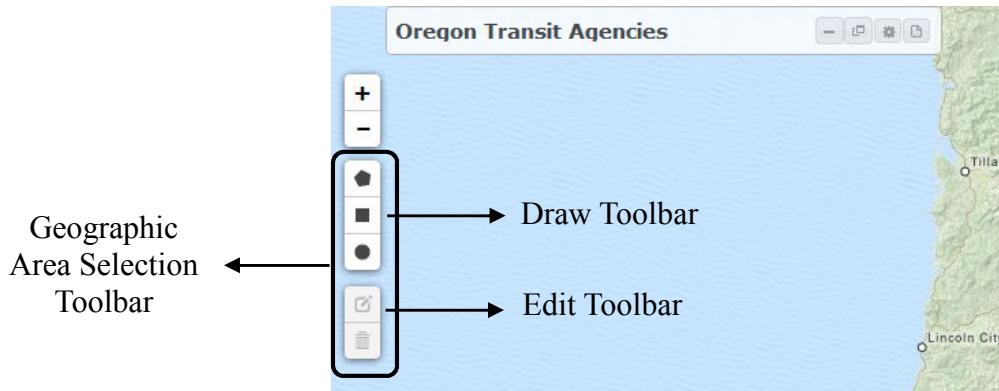


Figure 1.16: Geographic area selection toolbar

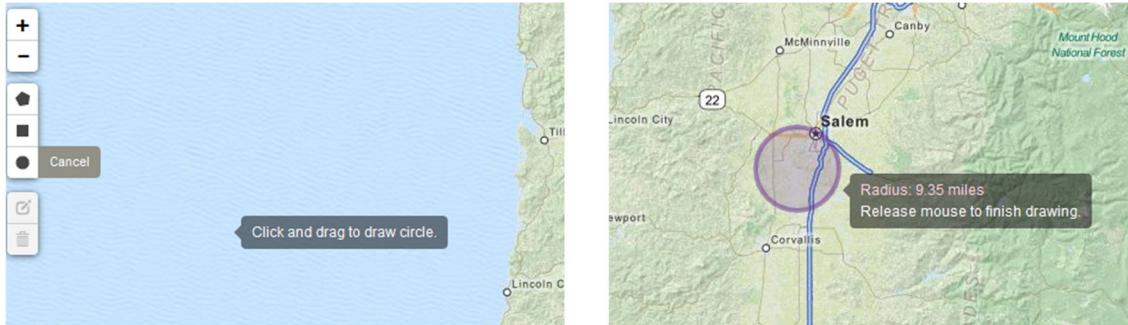
#### 1.6.1.1 Draw Toolbar

The draw toolbar includes the three button controls at the top of the geographic area selection toolbar, as depicted in Figure 1.16. The draw toolbar allows a user to specify a geographic area with a circle, a rectangle, or a polygon.

For circles and rectangles, the corresponding button control on the draw toolbar must be clicked. The shape of the mouse cursor will change to a crosshair with a tooltip attached to it. By pressing and holding the left mouse button, a geographic area with the corresponding shape can be specified by dragging the mouse cursor until the desired size is obtained. The user must release the left mouse button to finalize the selection of the geographic area, which will also display a dialog box as depicted in Figure 1.17c. The dialog box displays the following information:

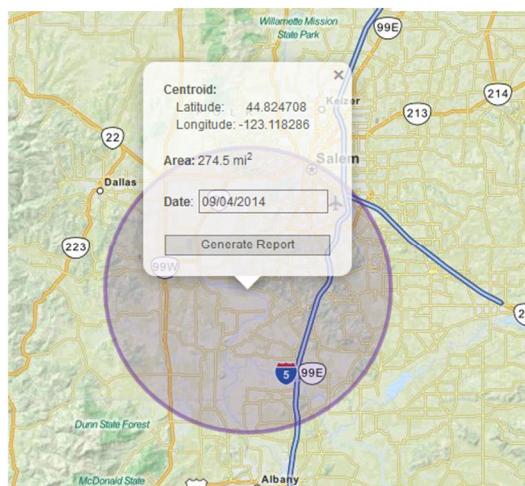
- The centroid of the circular or rectangular area, displayed as latitude and longitude coordinates.
- The total area of the circular or rectangular area in square miles.

- The current date as the default value. However, a calendar is accessible by clicking inside the textbox so that the user can select a different date if needed.
- A button labeled “Generate Report”. Clicking on this button will open another dialog box that displays a summary on-map report.



(a) Pressing the circle button

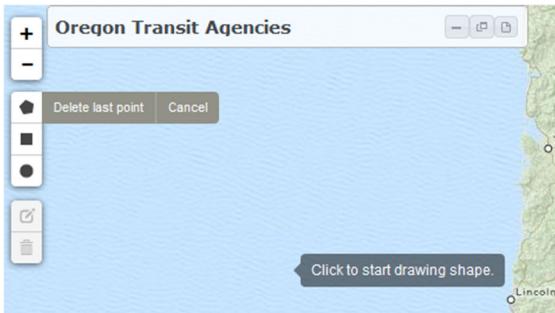
(b) Drawing the circle



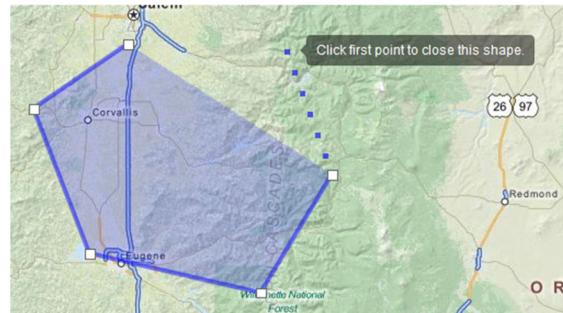
(c) The pop-up menu

**Figure 1.17: Specifying a circular geographic area on the map display**

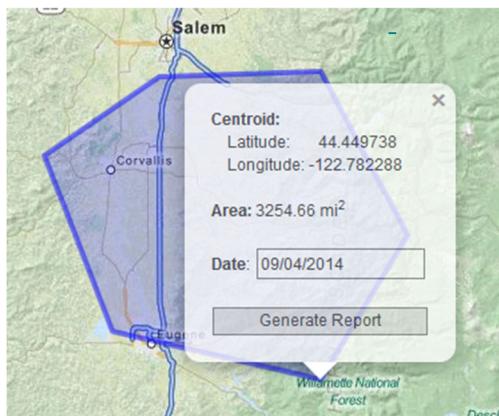
To draw a polygon shape, the top button control of the draw toolbar must be clicked. The shape of the mouse cursor will change to a crosshair with a tooltip attached to it. The user can set the location of the initial polygon vertex by placing the cursor over a desired geographic location and then clicking the left mouse button. Additional vertices can be set by repeating this procedure. To finalize the polygon, the user must click again on the location of the first vertex, which will also display a dialog box, as depicted in Figure 1.18c.



(a) Pressing the polygon button



(b) Drawing the polygon



(c) The pop-up menu

**Figure 1.18:** Drawing a polygonal area

### 1.6.1.2 Edit Toolbar

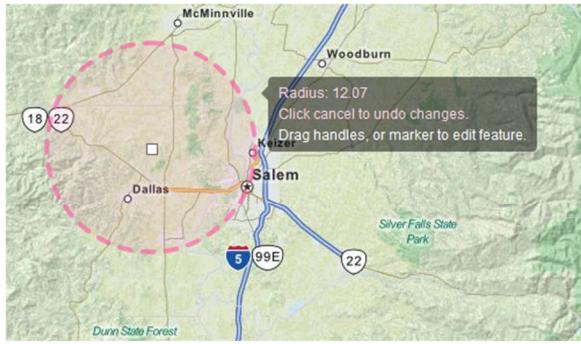
The edit toolbar is used to modify the size and/or position of a previously drawn circular, rectangular, or polygonal shape. The specific edit functionalities depend on the type of shape. The edit toolbar also provides a “trash can” button to dispose of a previously drawn shape from the main map interface.

Using the edit button, the user is able to move or resize a previously drawn circle. To move a circle, place the mouse cursor over the center of the shape. When the mouse cursor changes from a pointing hand to a four-arrow shaped cursor, press and hold the left mouse button and drag the circle to the new location and release the left mouse button. To resize a circle, place the mouse cursor over the small white handle located on the upper right hand side of the perimeter of the circle. Press and hold the left mouse button change the size of the circle, as depicted in Figure 1.19. To finalize the change, press the “Save” option located next to the edit button (a “Cancel” option is also available).

Similar actions must be taken to change the size or position of a rectangular or a polygonal shape. The main differences (when compared to a circular shape) are the number of small white handles available to make shape changes. These differences are depicted in Figure 1.20 and Figure 1.21.

The second button on the edit toolbar is the delete button (i.e., trash can icon). Clicking on the delete button will remove a previously drawn shape and all the on-map reports for that

shape from the main map interface. Drawing a new shape will also remove the previously drawn shape and report.



(a) Enlarging a circular shape



(b) Moving a circular shape

**Figure 1.19: Modifying a circular shape**

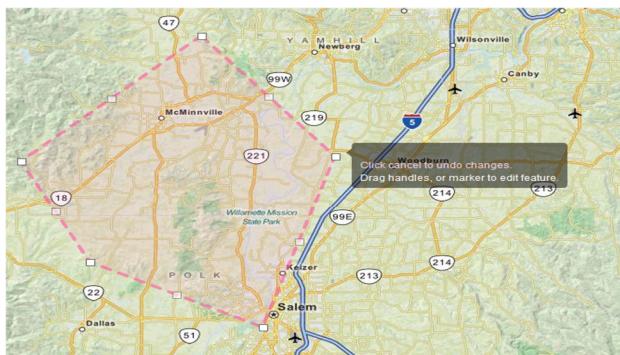


(a) Enlarging the rectangle

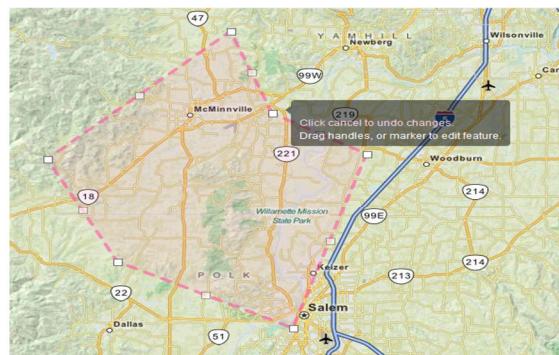


(b) Moving the rectangle

**Figure 1.20: Modifying a rectangular shape**



(a) Moving the vertices



(b) Adding new vertices

**Figure 1.21: Modifying a polygonal shape**

## 1.6.2 Stops Cluster Dialog Box

The second approach for generating on-map reports for a circular geographic area is to use the dialog box of an individual stop (i.e., a stops cluster that displays a “1”), as depicted in Figure 1.22. Clicking on an individual stops cluster will display a dialog box. The user can now enter a value for the desired radius in the “Population Search Radius” textbox. After entering the desired radius, press the “Generate Report” button to draw a circle around the stop with the specified radius and generate an on-map report about this circular geographical area. The circular geographic area can also be edited or removed the using the draw toolbar.

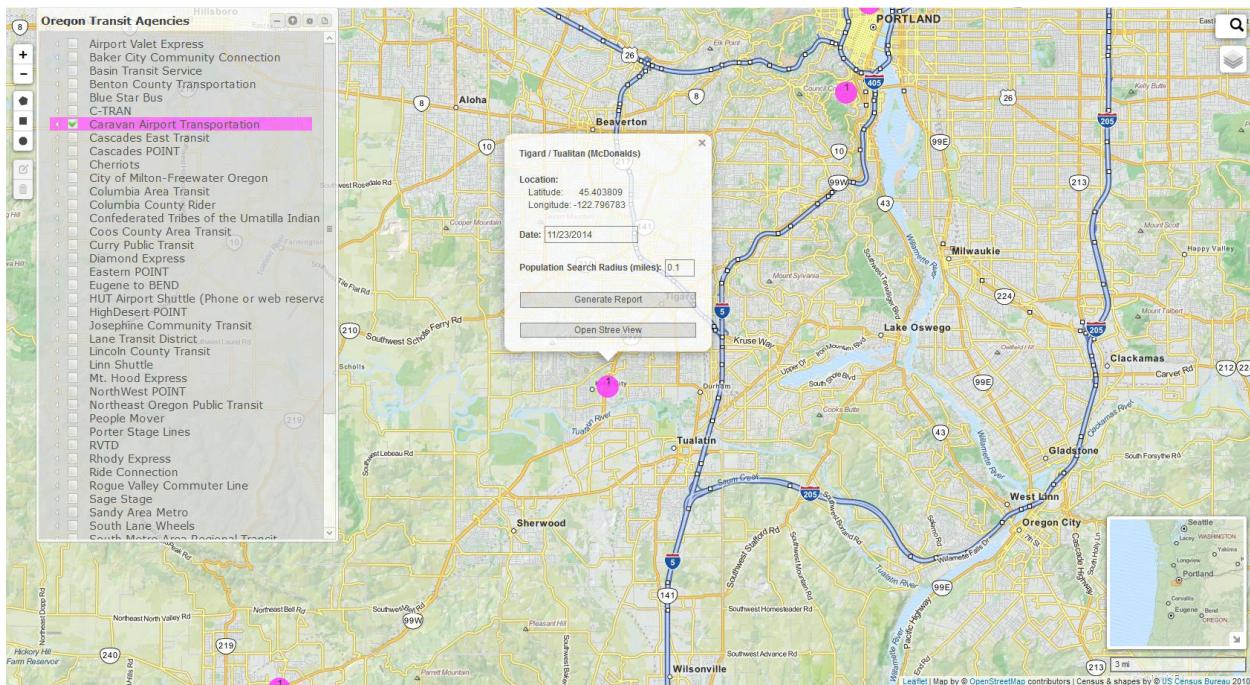
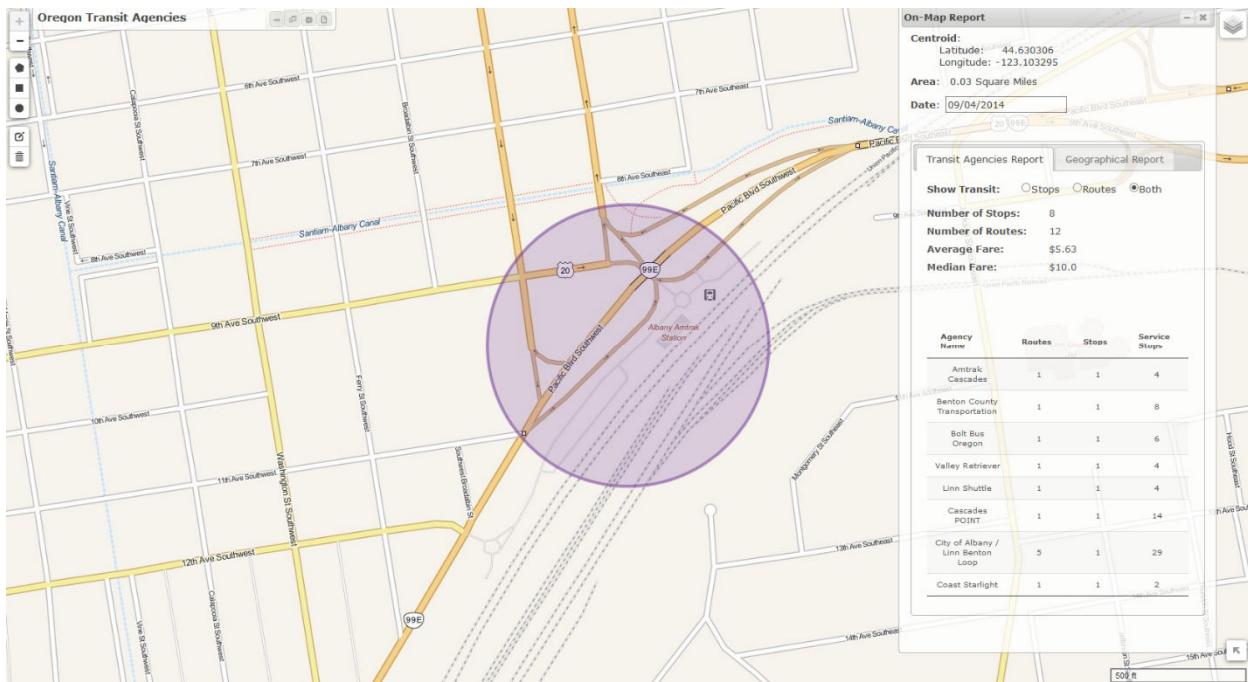


Figure 1.22: Individual stops' pop-up menu

## 1.6.3 On-Map Report Data

After the “Generate Report” button is pressed, a new dialog box with the on-map report data will be displayed, as depicted in Figure 1.23. The on-map report shows the centroid coordinates (i.e., latitude and longitude) of the map region enclosed by the drawn shape, its area (in square miles), and a date (the current date is the default value). By clicking inside the date textbox, the user can access a calendar to change the date or dates.



**Figure 1.23: On-map report dialog box**

The on-map report displays two tabs labeled “Transit Agencies Report” and “Geographical Report.” The information contained in each tab is explained in the following sections.

#### 1.6.3.1 *Transit Agencies Report Tab*

The “Transit Agencies Report” tab includes information about the transit agencies that have an active stop within the specified geographic area on the specified date. The top part of the “Transit Agencies Report” tab displays the following information:

- **Number of Stops:** Total number of active stops in the specified area on the specified date.
- **Number of Routes:** Total number of routes that have active stops.
- **Average Fare:** Average fare price over all the routes that have active stops.
- **Median Fare:** Median fare price over all the routes that have active stops.

As Figure 1.23 shows, the information in the bottom part of the “Transit Agencies Report” tab is organized in a table. The columns of this table show the following agency-specific information for transit agencies that have at least one active stop within the specified area on the specified date:

- **Agency Name:** The name of the transit agency.
- **Routes:** Number of routes that have active stops for each agency.
- **Stops:** Number of active stops of each agency.

- **Service Stops:** Total number of trips scheduled at the active stops for each transit agency.

Clicking on a row of the table included in the bottom part of the “Transit Agencies Report” tab will display the agencies route stops and shapes (defined by the longest trips) that fall within the specified area on the main map interface. The user can display information for multiple agencies by selecting more than one row. Route stops and shapes belonging to each agency will be displayed using different colors, as shown in Figure 1.24. Clicking on any of the stops or route shapes that are displayed on the map will open up a pop-up menu that displays information about the corresponding object. The information displayed for stops includes the following:

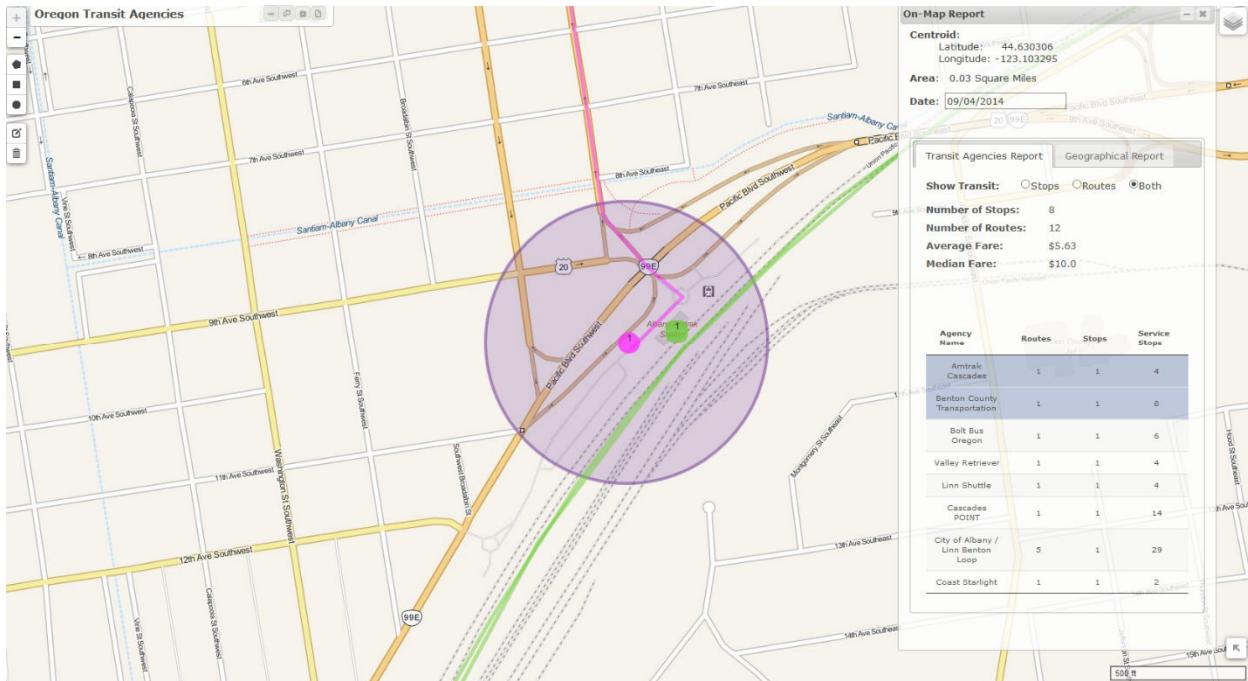
- **Stop ID:** The ID of the corresponding stop.
- **Stop Name:** The name of the stop.
- **Agency:** The ID of the transit agency to which the stop belongs.
- **Serving Routes ID(s):** The ID(s) of the route(s) that serve the stop on the specified date.

The information displayed for routes includes the following:

- **Route ID:** The ID of the corresponding route.
- **Route Name:** The name of the route.
- **Agency:** The ID of the transit agency to which the route belongs.
- **Length:** The length of the route.
- **Fare Price:** The fare price of the route if available in GTFS feed.
- **Run Frequency:** Number of times the route is served during the specified date.

Clicking on a previously selected row removes all the stops and route shapes belonging to that transit agency from the map.

The objects to display on the main map interface are selected by using the radio buttons inside the dialog box above the tables. The options include displaying only stops, only route shapes, or both.



**Figure 1.24: Selecting transit agencies from the on-map report table**

### 1.6.3.2 Geographical Reports

The top part of the “Geographic Report” tab displays demographic information about the selected geographic area including:

- **Population:** Total population within the specified geographic area based on the 2010 U.S. Census Bureau data.
- **Number of Census Blocks:** Total number of census blocks whose internal points (i.e., centroids) are located within the geographic specified area.
- **Number of Census Tracts:** Total number of census tracts that encompass at least one census block within the specified geographic area.

The bottom part of the “Geographic Report” tab shows county-specific demographic information about the specified geographic area, including:

- **County Name:** The name of the county.
- **Census Tracts:** Number of census tracts that hold at least one census block within the area for each county.
- **Census Blocks:** Number of census blocks within the area belonging to each county.
- **Population:** The population within the area belonging to each county based on the 2010 U.S. Census Bureau data.

Clicking on a row of this table will display the internal points of the corresponding census tracts and census blocks. Multiple rows of this table may be selected at the same time. As

shown in Figure 1.25, internal points for census tracts and census blocks are represented with different colored icons. The icon for a census tract is represented with a group of three green human torsos, whereas the icon for a census block is represented with a black human figure.

Clicking on a census block icon will open up rectangular shape text box with the following information:

- **Block ID:** The ID of the corresponding census block.
- **Population:** The population of the census block based on the 2010 U.S. Census Bureau data.
- **County:** The name of the county to which the census block belongs.
- **Land Area:** The land area of the census block.

Clicking on a census tract icon will open up rectangular shape text box with the following information:

- **Tract ID:** The ID of the corresponding census tract.
- **Population:** The population of the census tract based on the 2010 U.S. Census Bureau data.
- **County:** The name of the county to which the census tract belongs.
- **Land Area:** The land area of the census tract.

Clicking on a previously selected row removes the census block and tract internal points belonging to that county from the display.

The objects to display on the main map interface can be selected with the radio buttons inside the dialog box above the tables. Internal points for only census blocks, only census tracts, or both can be displayed.

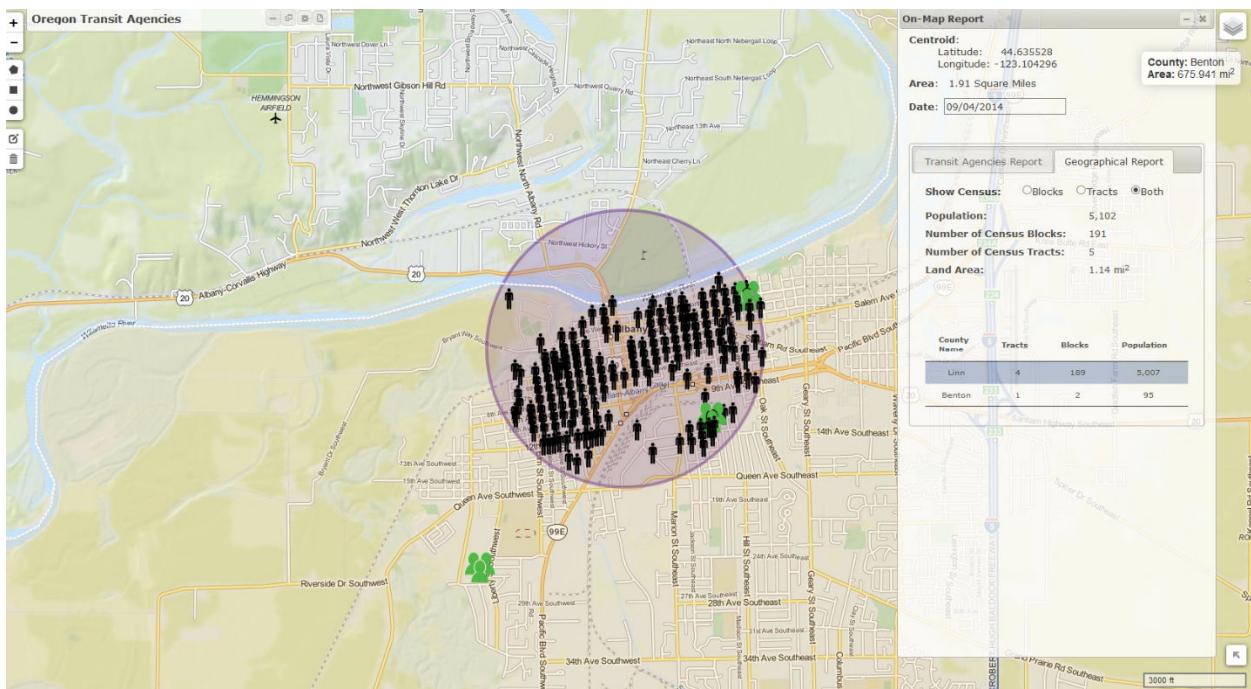
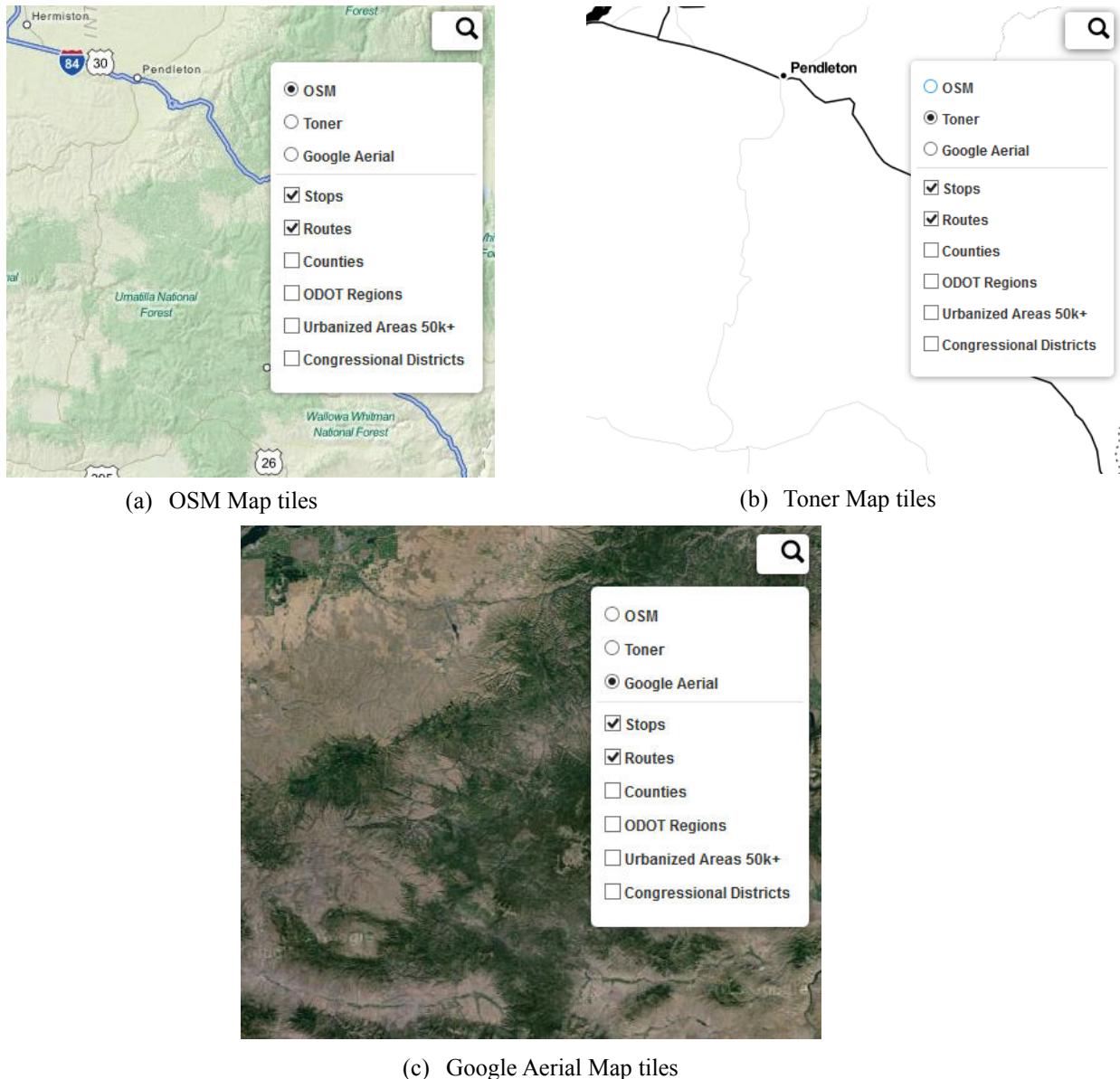


Figure 1.25: Selecting counties from the on-map report table

## 1.7 LAYER CONTROL

Positioning the cursor over the layer control icon (label 6 in Figure 1.1) will display a menu of available map tiles (the first three radio buttons on the menu) and map layer options (the three check boxes on the menu). Figure 1.26 shows the different map tile selections. Only one map tile option may be selected.



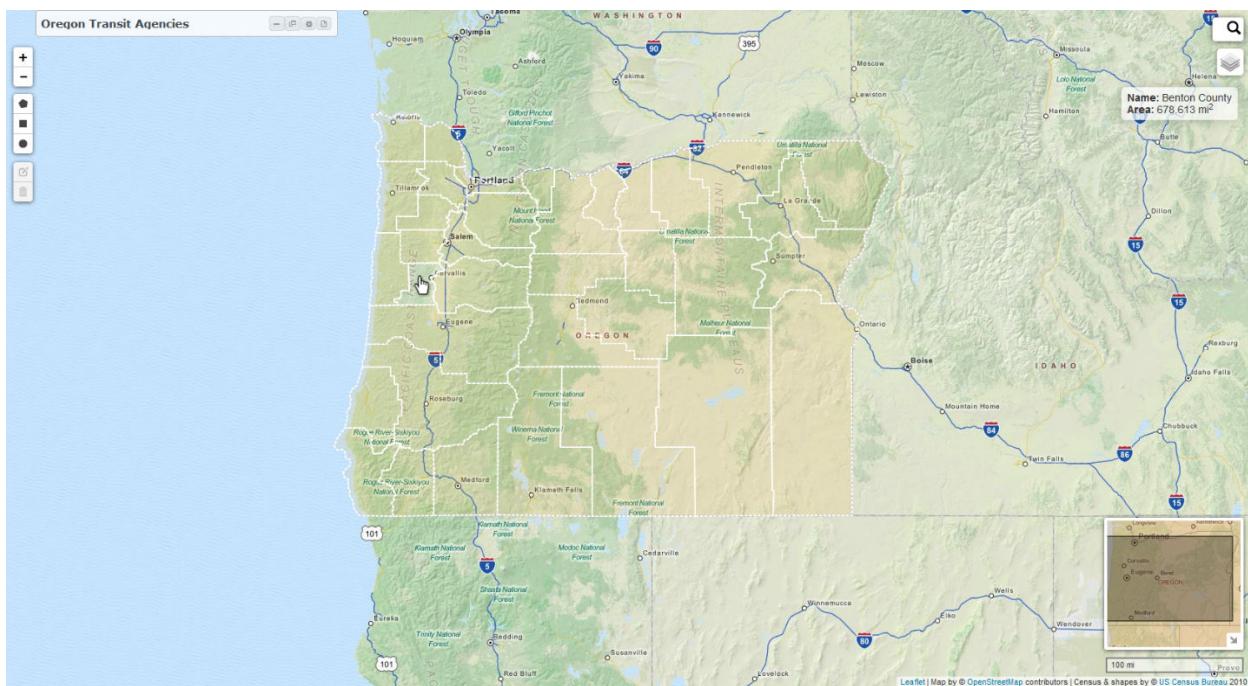
**Figure 1.26: Different map tile selections**

OpenStreetMaps (OSM) map tiles were obtained from the OSM project. The OSM project provides openly licensed maps of the world free of charge. OSM tiles display captioned geographic features, as well as roads and highways. The “Toner” map layer is a black and white version of the OSM layer suitable for printing.

The “Google Aerial” map tile displays Google Earth satellite images through the Google Maps API. This API is free under certain terms and conditions that are met in the current version of the TNA software tool.

The map layer options on the layer control menu control which transit information is displayed. “Stops” and “Routes” layers are selected by default so that all stops and route shapes (defined by trips) are displayed as they are selected on the extended OTAs floating dialog box. Unchecking the “Stops” and/or “Routes” layers will remove them from the GUI.

Checking the “Counties” layer will display the outline of all Oregon counties, as depicted in Figure 1.27. When the counties layer is checked, positioning the cursor over each county will highlight the outline of that county and the name and area of the highlighted county will be displayed just below the layer control button.



**Figure 1.27: Counties layer**

Checking either the “ODOT Regions”, “Urbanized Areas 50k+”, or “Congressional Districts” layer will provide the user with the same features and functionalities as the “Counties” layer. When the “Urbanized Areas 50k+” layer is selected, the boundaries of the urbanized areas that have a population of more than fifty thousand will be displayed.

## 1.8 GOOGLE STREET VIEW

As covered in Section 1.5.2 and Figure 1.11, the dialog box that appears when a one-stop cluster is clicked also includes a button labeled “Open Street View”, which is only available within the Google Aerial map layer.

When the “Google Aerial” map layer is active, clicking on the “Open Street View” button enables the Google street view mode (if images are available around the location of the corresponding stop). Navigating through the street view images is accomplished using the available control buttons shown on the image.

Clicking the ‘X’ button at the upper right corner of the screen exits the Google street view mode and returns to the “Google Aerial” map layer view. An example of the Google street view mode is depicted in Figure 1.28.



Figure 1.28: Google Street View mode

## 1.9 REPORTS

Several reports are available through the TNA software tool by clicking on the “Reports” button which is located on the upper right corner of the OTAs floating dialog box, as depicted in Figure 1.29.

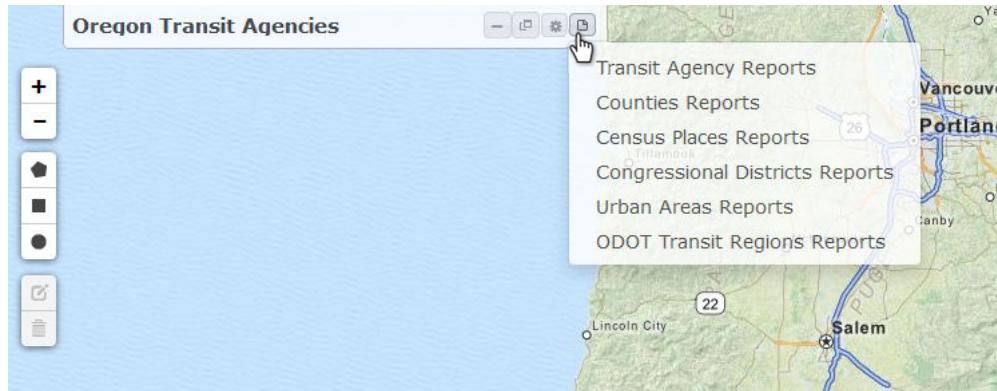


Figure 1.29: Reports available through the TNA software tool

Once the “Reports” button is clicked, a dropdown list displays the following available report categories:

- Transit Agency Reports
- Counties Reports
- Census Places Reports
- Congressional Districts Reports
- Urban Areas Reports
- ODOT Transit Regions Reports

The ability to select different databases described in section 1.4.3 is available on all the report interfaces of the TNA software tool. By default, the TNA software tool is always initialized with the database that contains the most recent GTFS feeds. Therefore, the user must click on the drop down list located on the upper right corner of all the report interfaces to select a different database to generate the desired report.

It is also important to mention that all the population metrics included in the various reports of the TNA software tool are based on 2010 U.S. census bureau data.

The following sections describe in more detail the objective of each report category and the metrics contained by specific reports.

## 1.9.1 Transit Agency Reports

The category “Transit Agency Reports” includes the following five reports:

1. “Transit Agency Summary” report.
2. “Transit Agency Extended” report.
3. “Routes” report.
4. “Stops” report.
5. “Schedule” report.

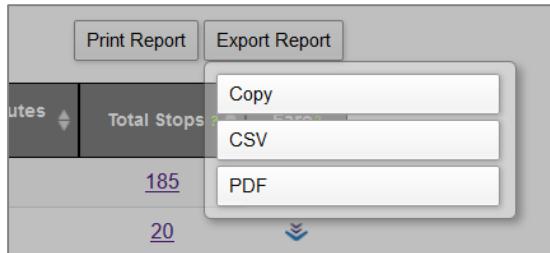
The “Transit Agency Extended” report, “Routes” report, and “Stops” report can be accessed by clicking on hyperlinks available in the “Transit Agency Summary” report. The “Schedule” report is accessible through the “Routes” reports.

Figure 1.30 uses the “Baker City Community Connection” transit agency to illustrate how to access the “Transit Agency Reports” via hyperlinks. The hyperlink for the **Agency ID** (i.e., 159) must be clicked to access the “Transit Agency Extended” report. Similarly, to access the “Routes” report or the “Stops” report, the hyperlinks for the numbers displayed in the columns labeled **Total Routes** and **Total Stops** (i.e., “1” and “4”, respectively) must be clicked. The hyperlink that appears in the column labeled **Agency Name** opens the official web site of the transit agency. When clicked, the icon  under the column labeled **Fare** displays an extended row in the report that shows the Average Fare, Median Fare, and Fare URL. The Fare URL will open the transit agency's web page with specific fare information (if available).

Agency ID 	Agency Name 	Phone # 	Total Routes 	Total Stops 	Fare 
174	Amtrak Cascades	(800) 872-7245	1	6	
159	Baker City Community Connection	1-800-823-6591	2	12	
	Average Fare: \$3.0				
	Median Fare: \$5.0				
	Fare URL: <a href="http://www.neotransit.org/Baker/BowFare.html">http://www.neotransit.org/Baker/BowFare.html</a>				
131	Basin Transit Service	(541) 883-2877	6	194	

**Figure 1.30: Accessing other reports from the “Transit Agency Summary” report**

All the reports available in the TNA software tool can be viewed in a separate browser window. An individual row of a table can be selected by clicking on it or the user could select several rows at a time by holding down the <Ctrl> key and clicking on the desired rows. All the rows of a table (or just those selected by the user) can be printed as a hard copy, copied to the clipboard, or exported as a *comma-separated values* (CSV) or *portable document format* (PDF) file for further processing in other applications such as Microsoft® Excel. To print or to export any of the reports, the buttons “Print Report” or “Export Report” located on the upper right corner of the browser's window must be pressed.



**Figure 1.31: Buttons to export, print or copy a report**

Figure 1.32 depicts the navigation and search features included in all the reports of the TNA software tool. For ease of navigation, all the reports are presented in several pages. Other pages of a report can be displayed by clicking on the navigation buttons located on the lower right corner of the tables. Reports can be sorted based on a specific field (e.g., **Agency Name**) by clicking on the heading of the field of interest. Reports can also be searched to find specific transit agencies (or other data fields) of interest by entering a keyword into the search textbox located on the lower left corner of the tables.

All the columns in every report included in the TNA software tool display a blue information icon ( ⓘ ). If the mouse pointer is hovered over the blue icon, the user will see additional information about a specific metric (e.g., a definition and an explanation of how the metric was calculated) via a tooltip.

mf	City of Milton-Freewater Oregon	541-938-8243	1	29	▼
193	Coast Starlight	(800) 872-7245	1	1	▼
Agency ID ⓘ	Agency Name ⓘ	Phone # ⓘ	Total Routes ⓘ	Total Stops ⓘ	Fare ⓘ
Search: <input type="text"/>					
Showing 1 to 14 of 54 entries					
Previous			1	2	3
			4	Next	

**Figure 1.32: Search box and report page navigation controls**

### 1.9.1.1 *Transit Agency Summary Report*

By default, the “Transit Agency Summary” report is sorted by **Agency Name** (notice the red arrow pointing up next to this heading). The “Transit Agency Summary” report is composed of the following data elements (see Figure 1.33):

- **Agency ID**. This is the identification number of the transit agency as reported in the GTFS feed.
- **Agency Name**. This is the transit agency name reported in the GTFS feed.
- **Phone #**. Main phone number of the transit agency.
- **Total Routes**. Total number of routes operated by the transit agency.
- **Total Stops**. Total number of stops operated by the transit agency.
- **Fare**. Contains fare information as reported by the transit agency in the GTFS feed.

The icon ▼ must be clicked to reveal the following fields:

- **Average Fare:** Weighted average fare based on the number of routes that are associated with each fare price.
- **Median Fare:** Weighted median fare based on the number of routes that are associated with each fare price.
- **Fare URL:** If available, this field points to the fare information published by the transit agency on its web site.

The “Transit Agency Summary” report can be sorted based on any of the above fields by clicking on the corresponding column heading.

Transit Agency Summary Report						Database 1	Close Report
						Print Report	Export Report
Agency ID	Agency Name	Phone #	Total Routes	Total Stops	Fare		
229	<a href="#">Airport Valet Express</a>	661-363-5000	1	4	\$3.0	▼	▲
159	<a href="#">Baker City Community Connection</a>	1-800-823-6591	2	12	\$5.0	▲	▼
Average Fare: \$3.0							
Median Fare: \$5.0							
Fare URL: <a href="http://www.neotransit.org/Baker/BowFare.html">http://www.neotransit.org/Baker/BowFare.html</a>							
131	<a href="#">Basin Transit Service</a>	(541) 883-2877	6	194	\$3.0	▼	▲
148	<a href="#">Benton County Transportation</a>	(541) 754-1748	2	28	\$3.0	▼	▲
169	<a href="#">Blue Star Bus</a>	1-800-247-2272	1	24	\$3.0	▼	▲
C-TRAN	<a href="#">C-TRAN</a>	360-695-0123	28	1048	\$3.0	▼	▲
58	<a href="#">Caravan Airport Transportation</a>	(541) 994-9645	1	21	\$3.0	▼	▲
61	<a href="#">Cascades East Transit</a>	(541) 385-8680	16	206	\$3.0	▼	▲
179	<a href="#">Cascades POINT</a>	(800) 872-7245	1	7	\$3.0	▼	▲
cherriots-salem-or-us	<a href="#">Cherriots</a>	503-588-2877	34	773	\$3.0	▼	▲
mf	<a href="#">City of Milton-Freewater Oregon</a>	541-938-8243	1	29	\$3.0	▼	▲
37	<a href="#">Columbia Area Transit</a>	(541) 386-4202	2	13	\$3.0	▼	▲
57	<a href="#">Columbia County Rider</a>	(503) 366-0159	6	40	\$3.0	▼	▲
ctuir	<a href="#">Confederated Tribes of the Umatilla Indian Reservation</a>	(541) 429-7519	7	71	\$3.0	▼	▲
Agency ID	Agency Name	Phone #	Total Routes	Total Stops	Fare		

Search:

**Figure 1.33: “Transit Agency Summary” report**

### 1.9.1.2 *Transit Agency Extended Report*

The “Transit Agency Extended” report is generated for a single transit agency. The “Transit Agency Extended” report is accessed by clicking on the **Agency ID** field in the “Transit Agency Summary” report. The “Transit Agency Extended” report is composed of the following data elements (see Figure 1.34):

- **Agency ID.** This is the identification number of the transit agency as reported in the GTFS feed.
- **Agency Name.** This is the transit agency name reported in the GTFS feed.
- **Route Miles.** The summation of the longest trip lengths for all routes that the transit agency operates.
- **Route Stops.** Total number of stops operated by the transit agency.
- **Stops Per Route Mile.** Route stops divided by route miles.

- **Population Served By Agency (Unduplicated)**. The summation of unduplicated population within an  $X$ -mile radius (i.e., stop distance) of all stops operated by the transit agency.
- **Service Miles**. Total miles driven by a transit agency over all round trips of a route. Service miles may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Stops**. The number of trips scheduled at a stop in a route. The *service stops* for a route is calculated as its stop count multiplied by the number of visits per stop. Service stops may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Population Served By Service**. Total unduplicated population impacted within an  $X$ -mile radius (i.e., stop distance) of all stops on trips operated by the transit agency. This metric is calculated as *service stops* multiplied by the unduplicated population within an  $X$ -mile radius (i.e., stop distance) of all stops for every trip. *Population Served By Service* may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Hours of Service**. Earliest and latest arrival and departure times of all the stops served by the transit agency.

The “Transit Agency Extended” report includes a button located at the top of the report window that opens a calendar multi-date picker when clicked. Any number of dates can be added by selecting them with the mouse. As dates are selected, they are displayed to the left of the calendar. Selected dates can be removed by simply clicking on the specific date.

Once all dates have been selected and a search radius has been specified, a query can be executed. The values reported by the metrics **Population Served By Agency (Unduplicated)**, **Service Miles**, **Service Stops**, and **Population Served By Service** (shaded in gray in the “Transit Agency Extended” report) will change as more or less dates are selected and/or smaller or larger radii are specified by the user.

Agency ID	Agency Name	Route Miles	Route Stops	Stops Per Route Mile	Population(2010) Served By Agency (Unduplicated)	Service Miles	Service Stops	Population(2010) Served By Service	Hours of Service
101	South Metro Area Regional Transit	119.22	185	1.5517	7,599	1,510.57	3,358	149,043	02:30 PM-08:54 PM

Figure 1.34: “Transit Agency Extended” report

### 1.9.1.3 Routes Report

By default, the “Routes” report is sorted by **Route Name** (notice the red arrow pointing up next to this heading). The “Routes” report is composed of the following data elements:

- **Route ID.** This is the unique route identification number assigned by the transit agency as reported in the GTFS feed.
- **Route Name.** This is the route's short name assigned by the transit agency as reported in the GTFS feed.
- **Route Long Name.** This is the route's long name assigned by the transit agency as reported in the GTFS feed.
- **Route Type.** This field describes the type of transportation used on a route, as follows:
  - 0 – Tram, Streetcar, Light rail. Any light rail or street level system within a metropolitan area.
  - 1 – Subway, Metro. Any underground rail system within a metropolitan area.
  - 2 – Rail. Used for intercity or long-distance travel.
  - 3 – Bus. Used for short- and long-distance bus routes.
  - 4 – Ferry. Used for short- and long-distance boat service.
  - 5 – Cable car. Used for street-level cable cars where the cable runs beneath the car.
  - 6 – Gondola, Suspended cable car. Typically used for aerial cable cars where the car is suspended from the cable.
  - 7 – Funicular. Any rail system designed for steep inclines.
- **Route Length.** Length (in miles) of the longest trip for the given route.
- **Total Stops.** Total number of stops on a route.
- **Unduplicated Population.** Summation of the unduplicated population count within an  $X$  radius (i.e., stop distance) of each stop on a route. The default value for  $X$  is 0.1 miles. However, the value of the radius can be changed by the user on the text box shown on the upper right corner of the report and then pressing the “Submit” button.
- **Service Stops.** The number of stops scheduled on all trips in a route. The metric *service stops* for a route is calculated as its stop count multiplied by the number of visits per stop. Service stops may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Population Served By Route.** Total unduplicated population impacted within an  $X$ -mile radius (i.e., stop distance) of all stops on all trips. The *Population Served by Route* for a route is calculated as route *service stops* multiplied by the unduplicated population within an  $X$ -mile radius (i.e., stop distance) of all stops on all trips.  
*Population Served By Route* may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Miles.** Total miles driven by a transit agency over all round trips of a route. Service miles may be calculated for a specific date or a set of dates specified using a calendar. The number reported is cumulative over the selected dates.

- **More...** The icon  must be clicked to reveal the following field:
  - **Route Description.** If available, this field contains a description of the route (the value is *null* otherwise).

The “Routes” report includes a button located at the top of the report window that, when clicked, opens a calendar multi-date picker. Any number of dates can be added by selecting them with the mouse. As dates are selected, they are displayed to the left of the calendar. Selected dates can be removed by simply clicking on the specific date.

Once all dates have been selected and a search radius has been specified, a query can be executed. The values reported by the metrics **Unduplicated Population**, **Service Stops**, **Population Served By Route**, and **Service Miles** will change as more or less dates are selected and/or smaller or larger radii are specified by the user.

Figure 1.35 depicts an example of the “Routes” report for the South Metro Area Regional transit agency.

Transit Network Analysis Tool Reports										
South Metro Area Regional Transit Routes Report										
1 day(s) selected										
Population Search Radius (miles) 0.1 Submit										
Route ID 	Route Name 	Route Long Name 	Route Type 	Route Length 	Total Stops 	Unduplicated Population (2010) 	Service Stops 	Population (2010) Served by Route 	Service Miles 	More.. 
454	1x	Salem	3	32.19	17	1,333	87	87	320.9	
455	2x	Barbur	3	17.27	60	727	1,250	1,250	658.23	
456	3	Charbonneau/Canby	3	9.81	24	2,157	56	56	38.95	
457	4	Wilsonville Rd	3	13.59	63	156	1,334	1,334	329.17	
458	5	95th Ave	3	3.16	26	1,904	259	259	47.55	
459	6	Canyon Creek	3	3.8	39	1,208	294	294	67.88	
460	7	Wilsonville Station/Villebols Loop	3	4.67	19	1,208	72	4,663	16.5	
1106	8X	Beaverton TC	3	15.84	4	1,491	6	6	31.38	
1110	9X	Downtown Portland	3	18.89	30	1,138	0	0	0.0	
Route ID 	Route Name 	Route Long Name 	Route Type 	Route Length 	Total Stops 	Unduplicated Population (2010) 	Service Stops 	Population (2010) Served by Route 	Service Miles 	More.. 

Search:

Showing 1 to 9 of 9 entries

Previous  1 Next

**Figure 1.35: Routes report for the South Metro Area Regional transit agency**

#### **1.9.1.4    *Stops Report***

The “Stops” report for a transit agency can be accessed in two different ways:

1. From the “Transit Agency Summary” report by clicking on the hyperlink inside the column labeled **Total Stops**. This version of the “Stops” report lists **all** the unique stops operated by the transit agency.
2. From the “Routes” report by clicking on the hyperlink inside the column labeled **Total Stops**. This version of the “Stops” report lists **only** the stops operated by the transit agency on that route. A stop on this route can also exist on another route operated by the transit agency.

By default, the “Stops” report is sorted by **Stop ID** (notice the red arrow pointing up next to this heading). The “Stops” report is composed of the following data elements:

- **Stop ID.** This is the unique stop identification number assigned by the transit agency as reported in the GTFS feed.
- **Stop Name.** This is the stop's name assigned by the transit agency as reported in the GTFS feed.
- **Routes Stop Belongs To.** Unique route ID (or IDs) that the stop belongs to.
- **Population.** Unduplicated population count within an  $X$ -mile radius (i.e., stop distance) of a stop. The default value for  $X$  is 0.1 miles. However, the value of the radius can be changed by the user on the text box shown on the upper right corner of the report and then pressing the “**Submit**” button.

Figure 1.36 depicts an example of a “Stops” report for the South Metro Area Regional transit agency.

Transit Network Analysis Tool Reports			
South Metro Area Regional Transit Stops Report			
Population Search Radius (miles)			0.1
<input type="button" value="Submit"/>			
<input type="button" value="Print Report"/> <input type="button" value="Export Report"/>			
Stop ID 	Stop Name 	Routes Stop Belongs To 	Population (2010) 
14491	Wilsonville Rd at Ashland (Boulder Creek)	[457]	165
14492	Wilsonville Rd at Meadows Pkwy	[457]	254
14493	Wilsonville Rd at Meadows Ln	[457]	0
14494	Wilsonville Rd at Rose Ln	[457]	304
14495	E Towncenter Lp at Civic Center Drive	[455, 457]	0
14496	29350 E. Towncenter Lp	[457]	188
14497	E. Towncenter Lp at Vlahos Dr	[457]	0
14498	29040 Towncenter Lp (Bowling Alley)	[457]	0
14499	Parkway Ct at Towncenter Lp (Regal Cinema)	[455, 457]	0
14500	Parkway Ct at Courtside Dr	[455, 457]	0
14501	Park Place at Sherry's	[457]	0
14502	W. Towncenter Lp at Main St (Bailey's)	[457]	277
14503	Boones Ferry Rd @ Albertsons	[457]	0
14504	Boones Ferry Rd at Bailey St.	[457]	1
Stop ID 	Stop Name 	Routes Stop Belongs To 	Population (2010) 
Search: <input type="text"/> Showing 1 to 14 of 185 entries			
Previous <span style="border: 1px solid #ccc; padding: 2px 5px;">1</span> 2 3 4 5 ... 14 Next			

**Figure 1.36: “Stops” report for the South Metro Area Regional Public transit agency**

### 1.9.1.5 Schedule Report

The “Schedule” report for a transit agency can be accessed from the “Routes” report by clicking on the hyperlink inside the column labeled **Route ID**. There might be one or two timetables displayed by the schedule report depending on the number of directions defined for a route. The “Schedule” report also displays the fare price associated with a route (top left corner of the report) as well as the specific date for which the timetable is generate (button labeled with a date at the top of the report). An example of a “Routes” report is depicted in Figure 1.37.

The screenshot shows a web-based transit schedule report for TriMet Route 11. At the top, it says "Transit Network Analysis Tool Reports" and "TriMet: Route 11 schedule". It indicates the "Fare Price: \$N/A" and the date "11/24/2014". On the right, there are buttons for "Database 1" and "Close Report", and "Print Report" and "Export Report". Below this, there's a "Show/hide columns" button and a dropdown menu listing stops: "From: N Richmond & Syracuse" and "To: N Fessenden & Allegheny". The main part of the screen is a table showing bus departures from N Fessenden & Allegheny to N Marine & Pier 99 St. The table has four columns: "Allegeny" (stop 06), "N Columbia Blvd & Burgard" (stop 05), "N Lombard & Simmons" (stop 06), and "N Marine & Pier 99 St" (stop 07). The table lists times for each stop: 06:14, 06:22, 06:33; 07:13, 07:20, 07:32; 08:13, 08:20, 08:32; 15:13, 15:21, 15:34; 16:06, 16:14, 16:27; 17:00, 17:09, 17:22; 17:56, 18:04, 18:14; and 18:48, 18:56, 19:06. At the bottom, there are buttons for each stop: "N Richmond & Syracuse", "N Fessenden & Allegheny", "N Columbia Blvd & Burgard", "N Lombard & Simmons", and "N Marine & Pier 99 St". A search bar and a note "Showing 1 to 8 of 8 entries" are at the very bottom.

Allegeny	N Columbia Blvd & Burgard	N Lombard & Simmons	N Marine & Pier 99 St
06	06:14	06:22	06:33
05	07:13	07:20	07:32
06	08:13	08:20	08:32
05	15:13	15:21	15:34
08	16:06	16:14	16:27
02	17:00	17:09	17:22
08	17:56	18:04	18:14
01	18:48	18:56	19:06

Figure 1.37: Schedule report shown for Route 11 of the TriMet Transit Agency

In order to improve the visualization of timetables, every column may include information for as many as 10 stops. If more than 10 stops actually exists, a button labeled “Show/Hide Columns” will be displayed on the top left corner of the timetable. This button must be pressed to show or hide these additional columns. Once the button “Show/Hide Columns” is pressed, a dropdown list is provided with available options.

The “Schedule” report also contains a button located at the top of the report window that opens a calendar single-date picker when clicked. By default, this button is set to the current date. Therefore, the default schedule displayed correspond to this date. Once another date is selected, the report will automatically reload and the new schedule table will be displayed.

## 1.9.2 Counties Reports

Four geographical reports are available in this category:

1. “Counties Summary” report.
2. “County Extended” report.
3. “Census Tracts Summary” report.
4. “Census Tract Extended” report.

The “County Extended” report, the “Census Tracts Summary” report, and the “Census Tract Extended” report can be accessed by clicking on hyperlinks available in the “Counties Summary” report.

Figure 1.38 depicts the “Counties Reports”. The hyperlink for the **Geo ID** must be clicked to access the “County Extended” report. Similarly, to access the “Routes” report, the “Stops” report, and the “Census Tracts” report, the hyperlinks for the numbers displayed in the columns labeled **Total Routes**, **Total Stops**, and **Tracts**, must be clicked.

Transit Network Analysis Tool Reports										
Counties Summary Report										
Geo ID	Name	ODOT Region ID	ODOT Transit Region	Population (2010)	Land Area	Water Area	Total Routes	Total Stops	Tracts	
<a href="#">41001</a>	Baker County	5	Region 5	16,134	3,068.36	20.01	<a href="#">2</a>	<a href="#">10</a>	<a href="#">6</a>	
<a href="#">41003</a>	Benton County	2b	Region 2b	85,579	675.94	2.67	<a href="#">4</a>	<a href="#">26</a>	<a href="#">18</a>	
<a href="#">41005</a>	Clackamas County	1	Region 1	375,992	1,870.32	12.29	<a href="#">41</a>	<a href="#">1325</a>	<a href="#">80</a>	
<a href="#">41007</a>	Clatsop County	2a	Region 2a	37,039	829.05	255.33	<a href="#">9</a>	<a href="#">82</a>	<a href="#">12</a>	
<a href="#">41009</a>	Columbia County	2a	Region 2a	49,351	657.36	30.97	<a href="#">7</a>	<a href="#">27</a>	<a href="#">10</a>	
<a href="#">41011</a>	Coos County	3	Region 3	63,043	1,596.17	210.19	<a href="#">8</a>	<a href="#">65</a>	<a href="#">14</a>	
<a href="#">41013</a>	Crook County	4	Region 4	20,078	2,079.08	8.18	<a href="#">2</a>	<a href="#">6</a>	<a href="#">4</a>	
<a href="#">41015</a>	Curry County	3	Region 3	22,364	1,627.46	360.88	<a href="#">3</a>	<a href="#">7</a>	<a href="#">6</a>	
<a href="#">41017</a>	Deschutes County	4	Region 4	157,733	3,018.18	36.58	<a href="#">19</a>	<a href="#">214</a>	<a href="#">24</a>	
<a href="#">41019</a>	Douglas County	3	Region 3	107,667	5,036.07	97.69	<a href="#">9</a>	<a href="#">197</a>	<a href="#">23</a>	
<a href="#">41021</a>	Gilliam County	4	Region 4	1,871	1,204.81	18.03	<a href="#">0</a>	<a href="#">0</a>	<a href="#">1</a>	
<a href="#">41023</a>	Grant County	5	Region 5	7,445	4,528.54	0.73	<a href="#">1</a>	<a href="#">4</a>	<a href="#">2</a>	
<a href="#">41025</a>	Hарney County	5	Region 5	7,422	10,133.16	93.24	<a href="#">1</a>	<a href="#">4</a>	<a href="#">2</a>	
<a href="#">41027</a>	Hood River County	4	Region 4	22,346	521.95	11.24	<a href="#">2</a>	<a href="#">6</a>	<a href="#">4</a>	

Figure 1.38: “Counties Summary” report

### **1.9.2.1    *Counties Summary Report***

By default, the “Counties Summary” report is sorted based on the column **Name** (notice the red arrow pointing up next to this heading) which lists the names of the different counties in the state of Oregon. The “Counties Summary” report is composed of the following data elements (see Figure 1.38):

- **Geo ID.** Identification (ID) number associated with the geographic area.
- **Name.** Name of the geographic area.
- **ODOT Region ID.** ODOT transit region ID associated with the geographic area.
- **ODOT Transit Region.** ODOT transit region name associated with the geographic area.
- **Population.** Total population of the geographic area.
- **Land Area.** Total land area of the geographic area in square miles.
- **Water Area.** Total water area of the geographic area in square miles.
- **Total Routes.** Total number of routes serving stops in the given geographic area.
- **Total Stops.** Total number of stops within the given geographic area.
- **Tracts.** Total number of census tracts within the geographic area.

The “Counties Summary” report can be sorted based on any of the above fields by clicking on the corresponding column heading.

### **1.9.2.2    *County Extended Report***

The “County Extended” report is generated for a single county. The “County Extended” report is accessed by clicking on the **Geo ID** field in the “Counties Summary” report. The “County Extended” report is composed of the following data elements (see Figure 1.39):

- **Geo ID.** Identification (ID) number associated with the geographic area.
- **Name.** Name of the geographic area.
- **Fare.** Average and medium fare of the available services within the geographic area.  
When  is clicked, an extended row will be displayed that shows the Average Fare and Median Fare (if available).
- **Route Miles.** The summation of longest trip lengths for routes within the county.
- **Stops Per Square Mile.** Stop count in the county divided by the area of the county (in square miles).
- **Stops Per Service Mile.** Stop count in the county divided by service miles.
- **Service Miles.** Total miles driven over all round trips of routes within the county.  
Service miles may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Miles Per Square Mile.** Service miles divided by the area of the county (in square miles).
- **Miles of Service Per Capita.** Service miles divided by the population of the county.
- **Population Served (Unduplicated).** Summation of unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the county.

- **Percent of Population Served.** Summation of unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the county divided by the total population of the county.
- **Population Unserved.** 100 minus percent of population served.
- **Service Stops.** Total stops within the county multiplied by the number of times each stop is being served for the given date(s). The number reported is cumulative over the selected dates.
- **Population Served By Service.** Total unduplicated population impacted within an X-mile radius (i.e., stop distance) of all stops within the county. This metric is calculated as *service stops* multiplied by the unduplicated population within an *X*-mile radius (i.e., stop distance) of all stops within the county for every trip. *Population Served By Service* may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Days.** Set of days (selected by the user) in which at least one trip within the given geographic area is taken place.
- **Connected Communities.** List of geographic areas of the same type that are connected to the area of interest through routes.
- **Hours of Service.** Earliest and latest arrival and departure times of the transit stops within the given geographic area.

The "County Extended" report includes a button located at the top of the report window that opens a calendar multi-date picker when clicked. Any number of dates can be added by selecting them with the mouse. As dates are selected, they are displayed to the left of the calendar. Selected dates can be removed by simply clicking on the specific date.

Once all dates have been selected and a search radius has been specified, a query can be executed. The values reported by the metrics **Stops Per Service Mile**, **Service Miles**, **Service Miles Per Square Mile**, **Miles of Service Per Capita**, **Population Served (Unduplicated)**, **Percent of Population Served**, **Population Unserved**, **Service Stops**, **Population Served By Service**, **Service Days**, and **Hours of Service** will change as more or less dates are selected and/or smaller or larger radii are specified by the user.

Transit Network Analysis Tool Reports												
Tillamook County Extended Report				1 day(s) selected				Population Search Radius (miles) 0.1 Submit				
<a href="#">Print Report</a> <a href="#">Export Report</a>												
Geo ID	Name	Fare	Route Miles	Stops Per Square Mile	Stops Per Service Mile	Service Miles	Service Miles Per Square Mile	Miles of Service Per Capita	Population Served (Unduplicated)	Percent of Population Served	Population Unserved	Service Stops
41057	Tillamook County	\$0.00	193.56	0.06	0.06	1,171.05	0.01	0.05	2,994	11.86	88.14	686

Figure 1.39: County Extended report for Tillamook County

### 1.9.2.3 Census Tracts Summary Report

By default, the “Census Tracts Summary” report is sorted by **Geo ID** (notice the red arrow pointing up next to this heading) and is composed of the following data elements (see Figure 1.40):

- **Geo ID.** Identification (ID) number associated with the geographic area.
- **Name.** Name of the geographic area.
- **Population.** Total population of the geographic area.
- **Land Area.** Total land area of the geographic area in square miles.
- **Water Area.** Total water area of the geographic area in square miles.
- **Total Routes.** Total number of routes serving stops in the given geographic area.
- **Total Stops.** Total number of stops within the given geographic area.
- **Blocks.** Total number of census blocks within the geographic area.

The “Census Tracts Summary” report can be sorted based on any of the above fields by clicking on the corresponding column heading.

Transit Network Analysis Tool Reports							Database 1	Close Report
Census Tracts Summary Report: Tillamook County							Print Report	Export Report
Geo ID	Name	Population (2010)	Land Area	Water Area	Total Routes	Total Stops		
<a href="#">41057960100</a>	Census Tract 9601	3,553	212.36	6.16	3	6		
<a href="#">41057960200</a>	Census Tract 9602	2,471	21.9	3.19	1	3		
<a href="#">41057960300</a>	Census Tract 9603	2,352	148.97	3.03	1	2		
<a href="#">41057960400</a>	Census Tract 9604	7,664	282.07	0.01	5	24		
<a href="#">41057960500</a>	Census Tract 9605	2,134	12.81	11.25	3	15		
<a href="#">41057960600</a>	Census Tract 9606	2,152	34.53	7.52	1	5		
<a href="#">41057960700</a>	Census Tract 9607	2,440	253.92	6.81	1	5		
<a href="#">41057960800</a>	Census Tract 9608	2,484	136.02	4.51	1	6		
<a href="#">41057990100</a>	Census Tract 9901	0	0.0	187.71	0	0		

Figure 1.40: Census Tracts Summary report for the census tracts within Tillamook County

### 1.9.2.4 Census Tract Extended Report

The "Census Tract Extended" report is generated for a single census tract. The "Census Tract Extended" report is accessed by clicking on the **Geo ID** field in the "Census Tracts Summary" report. The "Census Tract Extended" report is composed of the following data elements (see Figure 1.41):

- **Geo ID.** Identification (ID) number associated with the geographic area.
- **Name.** Name of the geographic area.

- **Fare.** Average and medium fare of the available services within the geographic area. When  is clicked, an extended row will be displayed that shows the Average Fare and Median Fare (if available).
- **Route Miles.** The summation of longest trip lengths for routes within the tract.
- **Stops Per Square Mile.** Stop count in the tract divided by the area of the tract (in square miles).
- **Stops Per Service Mile.** Stop count in the tract divided by service miles.
- **Service Miles.** Total miles driven over all round trips of routes within the tract. Service miles may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Miles Per Square Mile.** Service miles divided by the area of the tract (in square miles).
- **Miles of Service Per Capita.** Service miles divided by the population of the tract.
- **Population Served (Unduplicated).** Summation of unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the tract.
- **Percent of Population Served.** Summation of unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the tract divided by the total population of the tract.
- **Population Unserved.** 100 minus percent of population served.
- **Service Stops.** Total stops within the tract multiplied by the number of times each stop is being served for the given date(s). The number reported is cumulative over the selected dates.
- **Population Served By Service.** Total unduplicated population impacted within an X-mile radius (i.e., stop distance) of all stops within the tract. This metric is calculated as *service stops* multiplied by the unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the tract for every trip. *Population Served By Service* may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Days.** Set of days (from the selected days) in which at least one trip within the given geographic area is taken place.
- **Connected Communities.** List of geographic areas of the same type that are connected to the area of interest through routes.
- **Hours of Service.** Earliest and latest arrival and departure times of the transit stops within the given geographic area.

The "Tract Extended" report includes a button located at the top of the report window that opens a calendar multi-date picker when clicked. Any number of dates can be added by selecting them with the mouse. As dates are selected, they are displayed to the left of the calendar.

Selected dates can be removed by simply clicking on the specific date.

Once all dates have been selected and a search radius has been specified, a query can be executed. The values reported by the metrics **Stops Per Service Mile**, **Service Miles**, **Service Miles Per Square Mile**, **Miles of Service Per Capita**, **Population Served (Unduplicated)**, **Percent of Population Served**, **Population Unserved**, **Service Stops**, **Population Served By Service**, **Service Days**, and **Hours of Service** will change as more or less dates are selected and/or smaller or larger radii are specified by the user.

Transit Network Analysis Tool Reports												Database 1	Close Report
Census Tract 9607 Extended Report				1 day(s) selected				Population Search Radius (miles)				0.1	Submit
												Print Report	Export Report
Geo ID ⓘ	Name ⓘ	Fare ⓘ	Route Miles ⓘ	Stops Per Square Mile ⓘ	Stops Per Service Mile ⓘ	Service Miles ⓘ	Service Miles Per Square Mile ⓘ	Miles of Service Per Capita ⓘ	Population Served (Unduplicated) ⓘ	Percent of Population Served ⓘ	Population Unserved ⓘ	Service Stops ⓘ	
41057960700	9607	▼	29.92	0.02	0.04	119.66	0.0	0.05	60	2.46	97.54	24	

Figure 1.41: Census Tract Extended Report for the census tract with Geo ID of 9607

### 1.9.3 Census Places Reports

Two geographical reports are available in this category:

1. “Census Places Summary” report.
2. “Census Place Extended” report.

Figure 1.42 illustrates how to access the “Census Places Reports” via hyperlinks. The hyperlink for the **Geo ID** must be clicked to access the “Census Place Extended” report. Similarly, to access the “Routes” report or the “Stops” report, the hyperlinks for the numbers displayed in the columns labeled **Total Routes** and **Total Stops** must be clicked.

Census Places Summary Report							Print Report	Export Report
Geo ID	Name	Population (2010)	Land Area	Water Area	Total Routes	Total Stops		
<a href="#">4100275</a>	Adair Village city	840	0.23	0.0	<a href="#">1</a>	<a href="#">5</a>		
<a href="#">4100350</a>	Adams city	350	0.36	0.0	<a href="#">1</a>	<a href="#">1</a>		
<a href="#">4100500</a>	Adrian city	177	0.24	0.0	<a href="#">0</a>	<a href="#">0</a>		
<a href="#">4101000</a>	Albany city	50,158	17.54	0.21	<a href="#">6</a>	<a href="#">8</a>		
<a href="#">4101650</a>	Aloha CDP	49,425	7.37	0.0	<a href="#">3</a>	<a href="#">117</a>		
<a href="#">4101700</a>	Alpine CDP	171	0.81	0.0	<a href="#">0</a>	<a href="#">0</a>		
<a href="#">4101800</a>	Alsea CDP	164	0.15	0.0	<a href="#">0</a>	<a href="#">0</a>		
<a href="#">4101850</a>	Altamont CDP	19,257	8.1	0.0	<a href="#">4</a>	<a href="#">57</a>		
<a href="#">4102000</a>	Amity city	1,614	0.6	0.01	<a href="#">1</a>	<a href="#">2</a>		
<a href="#">4102200</a>	Annex CDP	235	2.46	0.0	<a href="#">0</a>	<a href="#">0</a>		
<a href="#">4102250</a>	Antelope city	46	0.48	0.0	<a href="#">0</a>	<a href="#">0</a>		
<a href="#">4102800</a>	Arlington city	586	1.78	0.62	<a href="#">0</a>	<a href="#">0</a>		
<a href="#">4103050</a>	Ashland city	20,078	6.59	0.0	<a href="#">2</a>	<a href="#">47</a>		
<a href="#">4103150</a>	Astoria city	9,477	6.15	3.95	<a href="#">5</a>	<a href="#">29</a>		

Search:

Showing 1 to 14 of 377 entries

Previous [1](#) [2](#) [3](#) [4](#) [5](#) ... [27](#) Next

Figure 1.42: Census Places Summary report

### **1.9.3.1    *Census Places Summary Report***

By default, the “Census Places Summary” report is sorted by **Geo ID** (notice the red arrow pointing up next to this heading). The “Census Places Summary” report is composed of the following data elements (see Figure 1.42):

- **Geo ID.** Identification number (ID) associated with the geographic area.
- **Name.** Name of the geographic area.
- **Population.** Total population of the geographic area.
- **Land Area.** Total land area of the geographic area in square miles.
- **Water Area.** Total water area of the geographic area in square miles.
- **Total Routes.** Total number of routes serving stops in the given geographic area.
- **Total Stops.** Total number of stops within the given geographic area.

The “Census Places Summary” report can be sorted based on any of the above fields by clicking on the corresponding column heading.

### **1.9.3.2    *Census Place Extended Report***

The "Census Place Extended" report is generated for a single census place. The "Census Place Extended" report is accessed by clicking on the **Geo ID** field in the "Census Places Summary" report. The "Census Place Extended" report is composed of the following data elements (see Figure 1.43):

- **Geo ID.** Identification (ID) number associated with the geographic area.
- **Name.** Name of the geographic area.
- **Fare.** Average and medium fare of the available services within the geographic area.  
When  is clicked, an extended row will be displayed that shows the Average Fare and Median Fare (if available).
- **Route Miles.** The summation of longest trip lengths for routes within the census place.
- **Stops Per Square Mile.** Stop count in the census place divided by the area of the census place (in square miles).
- **Stops Per Service Mile.** Stop count in the census place divided by service miles.
- **Service Miles.** Total miles driven over all round trips of routes within the census place. Service miles may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Miles Per Square Mile.** Service miles divided by the area of the census place (in square miles).
- **Miles of Service Per Capita.** Service miles divided by the population of the census place.
- **Population Served (Unduplicated).** Summation of unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the census place.

- **Percent of Population Served.** Summation of unduplicated population within an  $X$ -mile radius (i.e., stop distance) of all stops within the census place divided by the total population of the census place.
- **Population Unserved.** 100 minus percent of population served.
- **Service Stops.** Total stops within the census place multiplied by the number of times each stop is being served for the given date(s). The number reported is cumulative over the selected dates.
- **Population Served By Service.** Total unduplicated population impacted within an  $X$ -mile radius (i.e., stop distance) of all stops within the census place. This metric is calculated as *service stops* multiplied by the unduplicated population within an  $X$ -mile radius (i.e., stop distance) of all stops within the census place for every trip.  
*Population Served By Service* may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Days.** Set of days (from the selected days) in which at least one trip within the given geographic area is taken place.
- **Connected Communities.** List of geographic areas of the same type that are connected to the area of interest through routes.
- **Hours of Service.** Earliest and latest arrival and departure times of the transit stops within the given geographic area.

The "Census Place Extended" report includes a button located at the top of the report window that opens a calendar multi-date picker when clicked. Any number of dates can be added by selecting them with the mouse. As dates are selected, they are displayed to the left of the calendar. Selected dates can be removed by simply clicking on the specific date.

Once all dates have been selected and a search radius has been specified, a query can be executed. The values reported by the metrics **Stops Per Service Mile**, **Service Miles**, **Service Miles Per Square Mile**, **Miles of Service Per Capita**, **Population Served (Unduplicated)**, **Percent of Population Served**, **Population Unserved**, **Service Stops**, **Population Served By Service**, **Service Days**, and **Hours of Service** will change as more or less dates are selected and/or smaller or larger radii are specified by the user.

Transit Network Analysis Tool Reports												
Adair Village city Census Place Extended Report				1 day(s) selected				Population Search Radius (miles) 0.1				
<input type="button" value="Print Report"/> <input type="button" value="Export Report"/>												
Geo ID	Name	Fare	Route Miles	Stops Per Square Mile	Stops Per Service Mile	Service Miles	Service Miles Per Square Mile	Miles of Service Per Capita	Population Served (Unduplicated)	Percent of Population Served	Population Unserved	Service Stops
4100275	Adair Village city	\$0.78	3.07	21.84	0.78	6.42	0.28	0.01	675	80.36	19.64	22

Figure 1.43: Census Place Extended Report for the Adair Village city

## 1.9.4 Congressional Districts Reports

Two geographical reports are available in this category:

1. “Congressional Districts Summary” report.
2. “Congressional District Extended” report.

Figure 1.44 illustrates how to access the “Congressional Districts Reports” via hyperlinks. The hyperlink for the **Geo ID** must be clicked to access the “Congressional District Extended” report. Similarly, to access the “Routes” report or the “Stops” report, the hyperlinks for the numbers displayed in the columns labeled **Total Routes** and **Total Stops** must be clicked.

The screenshot shows a table titled "Congressional Districts Summary Report" with the following data:

Geo ID	Name	Population (2010)	Land Area	Water Area	Total Routes	Total Stops
<a href="#">4101</a>	Congressional District 1	802,570	2,944.45	291.4	<a href="#">112</a>	<a href="#">2599</a>
<a href="#">4102</a>	Congressional District 2	769,987	69,490.23	734.82	<a href="#">60</a>	<a href="#">1055</a>
<a href="#">4103</a>	Congressional District 3	762,155	1,016.61	37.97	<a href="#">65</a>	<a href="#">3965</a>
<a href="#">4104</a>	Congressional District 4	739,234	17,172.95	860.09	<a href="#">68</a>	<a href="#">1703</a>
<a href="#">4105</a>	Congressional District 5	757,128	5,363.65	466.24	<a href="#">98</a>	<a href="#">2058</a>

Figure 1.44 Congressional Districts Summary Report

### 1.9.4.1 Congressional Districts Summary Report

By default, the “Congressional Districts Summary” report is sorted by **Geo ID** (notice the red arrow pointing up next to this heading). The “Congressional Districts Summary” report is composed of the following data elements (see Figure 1.44):

- **Geo ID.** Identification (ID) number associated with the geographic area.
- **Name.** Name of the congressional district.
- **Population.** Total population of the congressional district.
- **Land Area.** Total land area of the congressional district in square miles.
- **Water Area.** Total water area of the congressional district in square miles.
- **Total Routes.** Total number of routes serving stops in the given congressional district.
- **Total Stops.** Total number of stops within the given congressional district.

The “Congressional Districts Summary” report can be sorted based on any of the above fields by clicking on the corresponding column heading.

#### **1.9.4.2 Congressional District Extended Report**

The "Congressional District Extended" report is generated for a single congressional district. The "Congressional District Extended" report is accessed by clicking on the **Geo ID** field in the "Congressional Districts Summary" report. The "Congressional District Extended" report is composed of the following data elements (see Figure 1.45):

- **Geo ID.** Identification (ID) number associated with the geographic area.
- **Name.** Name of the geographic area.
- **Fare.** Average and medium fare of the available services within the geographic area.  
When  is clicked, an extended row will be displayed that shows the Average Fare and Median Fare (if available).
- **Route Miles.** The summation of longest trip lengths for routes within the congressional district.
- **Stops Per Square Mile.** Stop count in the congressional district divided by the area of the congressional district (in square miles).
- **Stops Per Service Mile.** Stop count in the congressional district divided by service miles.
- **Service Miles.** Total miles driven over all round trips of routes within the congressional district. Service miles may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Miles Per Square Mile.** Service miles divided by the area of the congressional district (in square miles).
- **Miles of Service Per Capita.** Service miles divided by the population of the congressional district.
- **Population Served (Unduplicated).** Summation of unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the congressional district.
- **Percent of Population Served.** Summation of unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the congressional district divided by the total population of the congressional district.
- **Population Unserved.** 100 minus percent of population served.
- **Service Stops.** Total stops within the congressional district multiplied by the number of times each stop is being served for the given date(s). The number reported is cumulative over the selected dates.
- **Population Served By Service.** Total unduplicated population impacted within an X-mile radius (i.e., stop distance) of all stops within the congressional district. This metric is calculated as *service stops* multiplied by the unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the congressional district for every trip. *Population Served By Service* may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Days.** Set of days (from the selected days) in which at least one trip within the given geographic area is taken place.

- **Connected Communities.** List of geographic areas of the same type that are connected to the area of interest through routes.
- **Hours of Service.** Earliest and latest arrival and departure times of the transit stops within the given geographic area.

The "Congressional District Extended" report includes a button located at the top of the report window that opens a calendar multi-date picker when clicked. Any number of dates can be added by selecting them with the mouse. As dates are selected, they are displayed to the left of the calendar. Selected dates can be removed by simply clicking on the specific date.

Once all dates have been selected and a search radius has been specified, a query can be executed. The values reported by the metrics **Stops Per Service Mile**, **Service Miles**, **Service Miles Per Square Mile**, **Miles of Service Per Capita**, **Population Served (Unduplicated)**, **Percent of Population Served**, **Population Unserved**, **Service Stops**, **Population Served By Service**, **Service Days**, and **Hours of Service** will change as more or less dates are selected and/or smaller or larger radii are specified by the user.

Transit Network Analysis Tool Reports												
Congressional District 2 Extended Report												
Database 1 Close Report												
Geo ID	Name	Fare	Route Miles	Stops Per Square Mile	Stops Per Service Mile	Service Miles	Service Miles Per Square Mile	Miles of Service Per Capita	Population Served (Unduplicated)	Percent of Population Served	Population Unserved	Service Stops
4102	Congressional District 2	\$2.57	1.23	0.02	0.22	4,886.75	0.0	0.01	0	0.0	100.0	2,044

Figure 1.45: Congressional District Extended Report for the congressional district 2

## 1.9.5 Urban Areas Reports

Two geographical reports are available in this category:

1. “Urban Areas Summary” report.
2. “Urban Area Extended” report.

Figure 1.46 illustrates how to access the “Urban Areas Reports” via hyperlinks. The hyperlink for the **Geo ID** must be clicked to access the “Urban Area Extended” report. Similarly, to access the “Routes” report or the “Stops” report, the hyperlinks for the numbers displayed in the columns labeled **Total Routes** and **Total Stops** must be clicked.

The screenshot shows a table titled "Urban Areas Summary Report" with the following data:

Geo ID	Name	Population (2010)	Land Area	Water Area	Total Routes	Total Stops
<a href="#">00955</a>	Albany, OR Urbanized Area	56,997	23.96	0.12	<a href="#">0</a>	<a href="#">0</a>
<a href="#">03547</a>	Astoria, OR Urban Cluster	14,115	9.11	0.63	<a href="#">0</a>	<a href="#">0</a>
<a href="#">04249</a>	Aumsville, OR Urban Cluster	3,692	1.15	0.0	<a href="#">0</a>	<a href="#">0</a>
<a href="#">04654</a>	Baker City, OR Urban Cluster	9,518	5.02	0.07	<a href="#">0</a>	<a href="#">0</a>
<a href="#">04924</a>	Bandon, OR Urban Cluster	3,119	2.2	0.0	<a href="#">0</a>	<a href="#">0</a>
<a href="#">06868</a>	Bend, OR Urbanized Area	83,794	39.71	0.22	<a href="#">0</a>	<a href="#">0</a>
<a href="#">08677</a>	Boardman, OR Urban Cluster	3,362	2.88	0.0	<a href="#">0</a>	<a href="#">0</a>
<a href="#">10621</a>	Brookings, OR Urban Cluster	10,915	7.02	0.13	<a href="#">3</a>	<a href="#">4</a>
<a href="#">11863</a>	Burns, OR Urban Cluster	4,131	2.51	0.0	<a href="#">1</a>	<a href="#">1</a>
<a href="#">13221</a>	Canby, OR Urban Cluster	17,119	5.0	0.02	<a href="#">1</a>	<a href="#">15</a>
<a href="#">13821</a>	Carlton, OR Urban Cluster	3,178	3.78	0.0	<a href="#">1</a>	<a href="#">3</a>
<a href="#">19936</a>	Coos Bay, OR Urban Cluster	31,386	16.48	1.89	<a href="#">8</a>	<a href="#">58</a>
<a href="#">19990</a>	Coquille, OR Urban Cluster	4,359	3.58	0.03	<a href="#">2</a>	<a href="#">3</a>
<a href="#">20422</a>	Corvallis, OR Urbanized Area	62,433	21.11	0.08	<a href="#">4</a>	<a href="#">19</a>

Figure 1.46: Urban Areas Summary Report

### 1.9.5.1 Urban Areas Summary Report

By default, the “Urban Areas Summary” report is sorted by **Geo ID** (notice the red arrow pointing up next to this heading). The “Urban Areas Summary” report is composed of the following data elements (see Figure 1.46):

- **Geo ID.** Identification (ID) number associated with the urban area.
- **Name.** Name of the urban area.
- **Population.** Total population of the urban area.
- **Land Area.** Total land area of the urban area in square miles.
- **Water Area.** Total water area of the urban area in square miles.
- **Total Routes.** Total number of routes serving stops in the given urban area.
- **Total Stops.** Total number of stops within the given urban area.

The "Urban Areas Summary" report can be sorted based on any of the above fields by clicking on the corresponding column heading.

#### 1.9.5.2 *Urban Area Extended Report*

The "Urban Area Extended" report is generated for a single urban area. The "Urban Area Extended" report is accessed by clicking on the **Geo ID** field in the "Urban Areas Summary" report. The "Urban Area Extended" report is composed of the following data elements (see Figure 1.47):

- **Geo ID.** Identification (ID) number associated with the geographic area.
- **Name.** Name of the geographic area.
- **Fare.** Average and medium fare of the available services within the geographic area.  
When  is clicked, an extended row will be displayed that shows the Average Fare and Median Fare (if available).
- **Route Miles.** The summation of longest trip lengths for routes within the urban area.
- **Stops Per Square Mile.** Stop count in the urban area divided by the area of the urban area (in square miles).
- **Stops Per Service Mile.** Stop count in the urban area divided by service miles.
- **Service Miles.** Total miles driven over all round trips of routes within the urban area. Service miles may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Miles Per Square Mile.** Service miles divided by the area of the urban area (in square miles).
- **Miles of Service Per Capita.** Service miles divided by the population of the urban area.
- **Population Served (Unduplicated).** Summation of unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the urban area.
- **Percent of Population Served.** Summation of unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the urban area divided by the total population of the urban area.
- **Population Unserved.** 100 minus percent of population served.
- **Service Stops.** Total stops within the urban area multiplied by the number of times each stop is being served for the given date(s). The number reported is cumulative over the selected dates.
- **Population Served By Service.** Total unduplicated population impacted within an X-mile radius (i.e., stop distance) of all stops within the urban area. This metric is calculated as *service stops* multiplied by the unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the urban area for every trip. *Population Served By Service* may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Days.** Set of days (from the selected days) in which at least one trip within the given geographic area is taken place.

- **Connected Communities.** List of geographic areas of the same type that are connected to the area of interest through routes.
- **Hours of Service.** Earliest and latest arrival and departure times of the transit stops within the given geographic area.

The "Urban Area Extended" report includes a button located at the top of the report window that opens a calendar multi-date picker when clicked. Any number of dates can be added by selecting them with the mouse. As dates are selected, they are displayed to the left of the calendar. Selected dates can be removed by simply clicking on the specific date.

Once all dates have been selected and a search radius has been specified, a query can be executed. The values reported by the metrics **Stops Per Service Mile**, **Service Miles**, **Service Miles Per Square Mile**, **Miles of Service Per Capita**, **Population Served (Unduplicated)**, **Percent of Population Served**, **Population Unserved**, **Service Stops**, **Population Served By Service**, **Service Days**, and **Hours of Service** will change as more or less dates are selected and/or smaller or larger radii are specified by the user.

Transit Network Analysis Tool Reports													Database 1	Close Report
Canby, OR Urban Cluster Urban Area Extended Report				1 day(s) selected					Population Search Radius (miles)				0.1	Submit
													Print Report	Export Report
Geo ID	Name	Fare	Route Miles	Stops Per Square Mile	Stops Per Service Mile	Service Miles	Service Miles Per Square Mile	Miles of Service Per Capita	Population Served (Unduplicated)	Percent of Population Served	Population Unserved	Service Stops		
13221	Canby, OR Urban Cluster	2.61	3.0	2.87	5.22	0.01	0.0	665	3.88	96.12	32			

Figure 1.47: Urban Area Extended Report for the Canby, OR Urban Cluster

## 1.9.6 ODOT Transit Regions Reports

Two geographical reports are available in this category:

1. “ODOT Transit Regions Summary” report.
2. “ODOT Transit Region Extended” report.

Figure 1.48 illustrates how to access the “ODOT Transit Regions” via hyperlinks. The hyperlink for the **Geo ID** must be clicked to access the “ODOT Transit Region Extended” report. Similarly, to access the “Routes” report or the “Stops” report, the hyperlinks for the numbers displayed in the columns labeled **Total Routes** and **Total Stops** must be clicked.

Geo ID	Name	Population (2010)	Land Area	Water Area	Total Routes	Total Stops	Counties
<a href="#">1</a>	Region 1	1,641,036	3,025.85	48.79	<a href="#">135</a>	<a href="#">7386</a>	<a href="#">3</a>
<a href="#">2a</a>	Region 2a	601,571	5,227.96	532.28	<a href="#">0</a>	<a href="#">0</a>	<a href="#">6</a>
<a href="#">2b</a>	Region 2b	600,000	8,498.95	404.27	<a href="#">0</a>	<a href="#">0</a>	<a href="#">4</a>
<a href="#">3</a>	Region 3	478,993	12,682.91	689.05	<a href="#">30</a>	<a href="#">753</a>	<a href="#">5</a>
<a href="#">4</a>	Region 4	327,342	28,504.79	519.78	<a href="#">30</a>	<a href="#">431</a>	<a href="#">10</a>
<a href="#">5</a>	Region 5	182,132	38,047.48	196.36	<a href="#">18</a>	<a href="#">154</a>	<a href="#">8</a>

Figure 1.48: ODOT Transit Regions Summary Report

### 1.9.6.1 ODOT Transit Regions Summary Report

By default, the “ODOT Transit Regions Summary” report is sorted by **Geo ID** (notice the red arrow pointing up next to this heading). The “ODOT Transit Regions Summary” report is composed of the following data elements:

- **Geo ID.** Identification (ID) number associated with the ODOT transit region.
- **Name.** Name of the ODOT transit region.
- **Population.** Total population of the ODOT transit region.
- **Land Area.** Total land area of the ODOT transit region in square miles.
- **Water Area.** Total water area of the ODOT transit region in square miles.
- **Total Routes.** Total number of routes serving stops in the ODOT transit region.
- **Total Stops.** Total number of stops within the ODOT transit region.

The “ODOT Transit Regions Summary” report can be sorted based on any of the above fields by clicking on the corresponding column heading.

### **1.9.6.2 ODOT Transit Region Extended Report**

The "ODOT Transit Region Extended" report is generated for a single ODOT transit region. The "ODOT Transit Region Extended" report is accessed by clicking on the **Geo ID** field in the "ODOT Transit Regions Summary" report. The "ODOT Transit Region Extended" report is composed of the following data elements (see Figure 1.49):

- **Geo ID.** Identification (ID) number associated with the geographic area.
- **Name.** Name of the geographic area.
- **Fare.** Average and medium fare of the available services within the geographic area. When  is clicked, an extended row will be displayed that shows the Average Fare and Median Fare (if available).
- **Route Miles.** The summation of longest trip lengths for routes within the ODOT transit region.
- **Stops Per Square Mile.** Stop count in the ODOT transit region divided by the area of the ODOT transit region (in square miles).
- **Stops Per Service Mile.** Stop count in the ODOT transit region divided by service miles.
- **Service Miles.** Total miles driven over all round trips of routes within the ODOT transit region. Service miles may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Miles Per Square Mile.** Service miles divided by the area of the ODOT transit region (in square miles).
- **Miles of Service Per Capita.** Service miles divided by the population of the ODOT transit region.
- **Population Served (Unduplicated).** Summation of unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the ODOT transit region.
- **Percent of Population Served.** Summation of unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the ODOT transit region divided by the total population of the ODOT transit region.
- **Population Unserved.** 100 minus percent of population served.
- **Service Stops.** Total stops within the ODOT transit region multiplied by the number of times each stop is being served for the given date(s). The number reported is cumulative over the selected dates.
- **Population Served By Service.** Total unduplicated population impacted within an X-mile radius (i.e., stop distance) of all stops within the ODOT transit region. This metric is calculated as *service stops* multiplied by the unduplicated population within an X-mile radius (i.e., stop distance) of all stops within the ODOT transit region for every trip. *Population Served By Service* may be calculated for a specific date or a set of dates specified by the user using a calendar. The number reported is cumulative over the selected dates.
- **Service Days.** Set of days (from the selected days) in which at least one trip within the given geographic area is taken place.

- **Connected Communities.** List of geographic areas of the same type that are connected to the area of interest through routes.
- **Hours of Service.** Earliest and latest arrival and departure times of the transit stops within the given geographic area.

The "ODOT Transit Region Extended" report includes a button located at the top of the report window that opens a calendar multi-date picker when clicked. Any number of dates can be added by selecting them with the mouse. As dates are selected, they are displayed to the left of the calendar. Selected dates can be removed by simply clicking on the specific date.

Once all dates have been selected and a search radius has been specified, a query can be executed. The values reported by the metrics **Stops Per Service Mile**, **Service Miles**, **Service Miles Per Square Mile**, **Miles of Service Per Capita**, **Population Served (Unduplicated)**, **Percent of Population Served**, **Population Unserved**, **Service Stops**, **Population Served By Service**, **Service Days**, and **Hours of Service** will change as more or less dates are selected and/or smaller or larger radii are specified by the user.

Transit Network Analysis Tool Reports												
null Extended Report		1 day(s) selected					Population Search Radius (miles) 0.1 Submit					
<a href="#">Print Report</a>   <a href="#">Export Report</a>												
Geo ID	Name	Fare	Route Miles	Stops Per Square Mile	Stops Per Service Mile	Service Miles	Service Miles Per Square Mile	Miles of Service Per Capita	Population Served (Unduplicated)	Percent of Population Served	Population Unserved	Service Stops
3	Region 3	▼	1,008.75	0.06	0.19	3,870.71	0.0	0.01	41,131	8.59	91.41	2,036
<												>

Figure 1.49: ODOT Transit Region Extended Report for the ODOT transit region 3