

MS2 User Guide

January 2025

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Midwest Software Solutions (MS2)

MS2 is a Michigan-based limited liability corporation that provides a cloud-based suite of tools for the management, analysis, and reporting of transportation data. In 2019, the Washington State Department of Transportation (WSDOT) licensed the use of the platform as a core component of a data modernization project. It includes a [public interface](#) that allows individuals outside of WSDOT to run ad-hoc data extracts. This document explains the use of that interface.

Application Overview

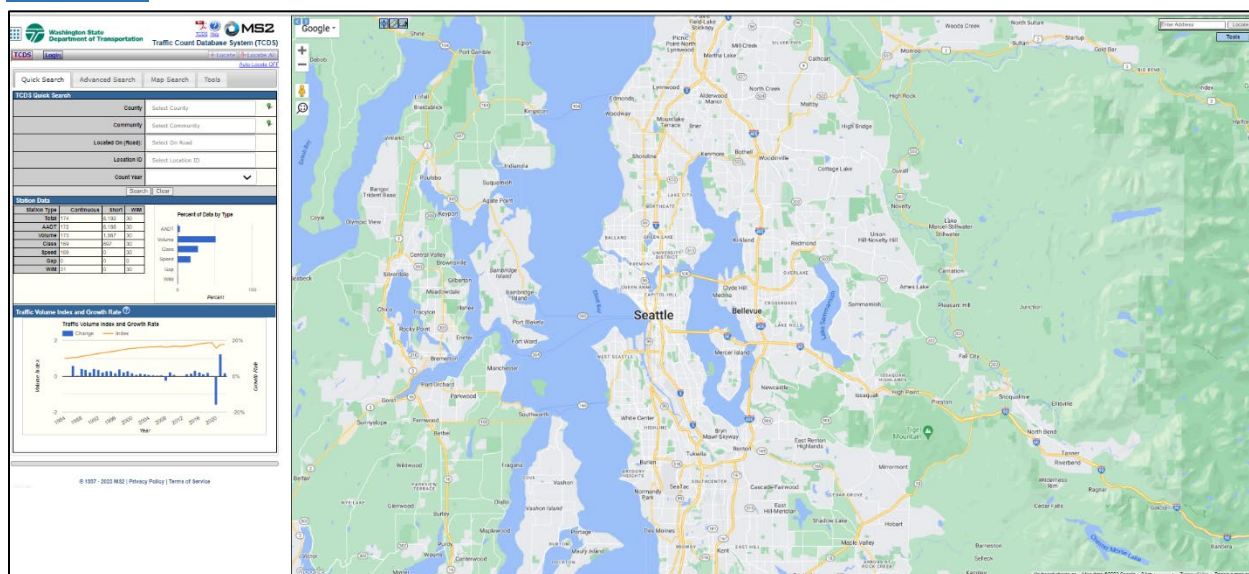
The core of MS2's platform is their Traffic Count Database System (TCDS). This is for managing planning-level transportation data (as opposed to real-time, operational data) derived from vehicular data collection stations. MS2 offers a number of add-ons to the TCDS, such as an active transportation module, but WSDOT currently only licenses the base platform.

Within the TCDS, permanently installed equipment that captures vehicle volumes by speed-group and vehicle type are called either Perm Stations or Continuous Stations. Those that additionally capture truck weights are referred to as Weigh-in-Motion (WIM) Stations. Those that capture data through temporary (usually one week or less) installations are called Short Count Stations. The latter sometimes capture traffic volumes by vehicle type, but most often only capture the number of axle-passes divided by two (called a two-axle equivalent volume).

Depending on the station, data may be available at the lane, direction, and/or combined-direction level, and will be available in either 15- or 60-minute summaries. For each station, annual statistics such as Annual Average Daily Traffic (AADT) will also be available.

Application Interface

Map Tool



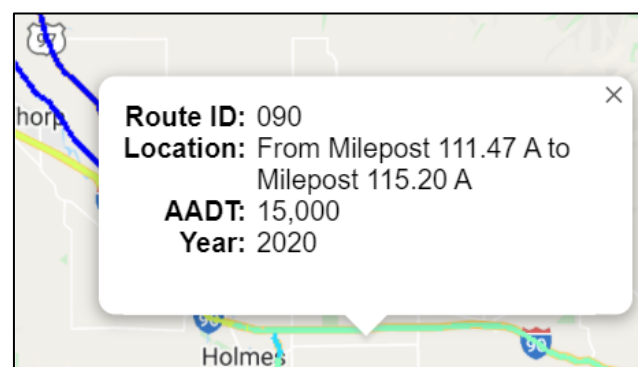
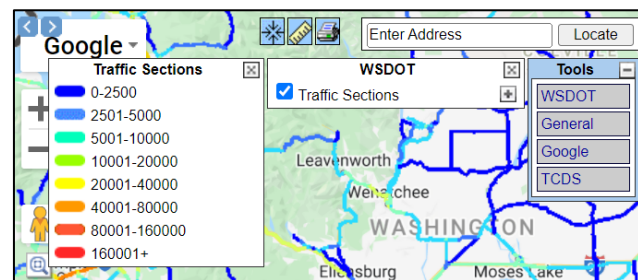
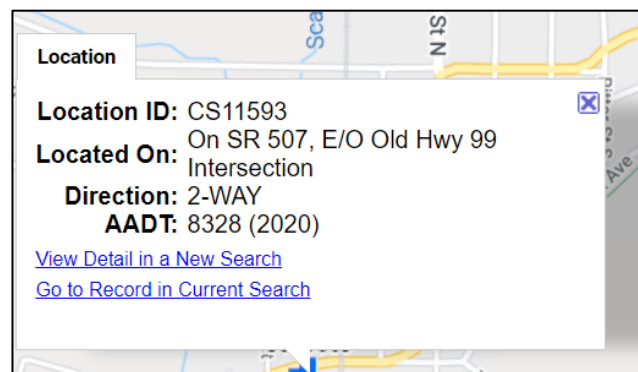
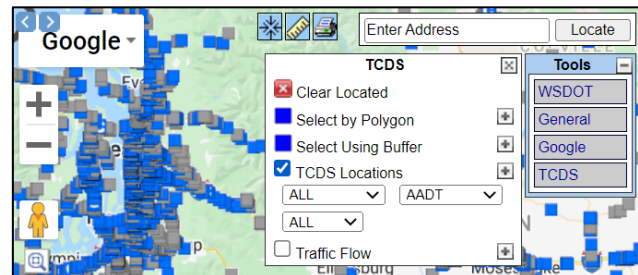
The interface is divided between a search and reporting interface on the left and a map interface on the right. The map interface contains standard tools such as zoom in, zoom out, pan, and an address search, as well as an icon that can be drug to a map location to bring up Google Street View imagery of that location. At the top-right of the interface there is also a Tools drop-down menu that allows the user to toggle various map layers on and off.

The most important Tools menu item is the TCDS Locations toggle in the TCDS sub-menu.

Activating this displays each active station as a blue square and each inactive (decommissioned) site as a grey square. Continuous Stations have a 'C' within the square and WIM stations have a 'W' within the square, with all others representing Short Count Stations. Parameters allow the user to only display records based on station type and/or whether active or inactive. A parameter also allows the user to select if the most recent AADT or the unique location ID is displayed above the station when zoomed to it.

Once enabled, if a station is clicked on a pop-up will provide the location ID, a description of the station's location, and whether it reflects a one-way road, two-way road, or ramp. Also provided is the most recent AADT available for the station and the year that AADT reflects. If directional AADTs exist for the location, then they will also be displayed.

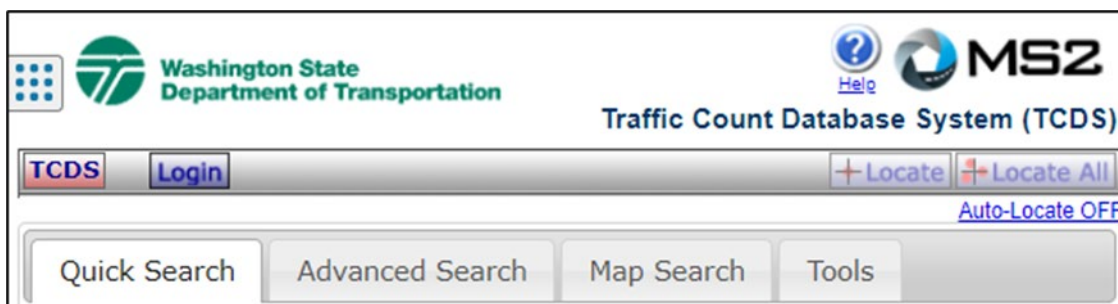
Another important item is the Traffic Sections toggle in the WSDOT sub-menu. This turns on a layer that color-codes the state highway system based on eight broad AADT categories. Once enabled, if a roadway segment is clicked on a pop-up will provide the segment's route and milepost description, its actual AADT, and the year that AADT represents (which will represent the most recent year for which all data processing has been completed, which usually occurs in May or June).



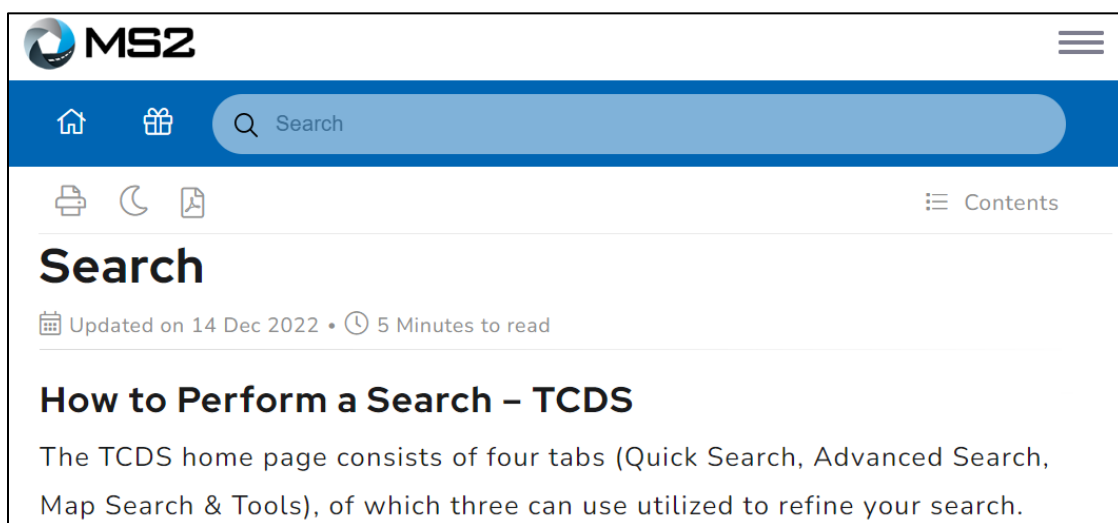
[General Information](#)

User Assistance

The left side of the interface is primarily devoted to search tools and summary data reporting. However, there are some items that are not relevant to the general user. One example is the Login icon, which is only relevant to members of organizations that have licensed the platform.



Another example is the Help icon. If clicked on, it provides the user with access to information on a large number of topics through the Contents menu. However, most topics covered will have little relevance to anyone other than those managing data in the system.



Count Program Information

Prior to a search of count stations being performed by the user, a table at the bottom left of the interface will display the number of active stations, by type, that have a given type of data available. These data types will be discussed in the Station Traffic Data section below.

A chart below this table provides the average percentage change in AADT, by year, for WSDOT stations in the TCDS, as well as a “volume index” representing the cumulative percent change from the first year displayed on the graph (with one representing 100 percent). However, users interested in Washington State system-level trends should reference the official vehicle miles traveled statistics available [here](#).

Station Search

Standard Search

Users can perform searches to identify stations that meet their search criteria, returning both station information and traffic data for the location. A tutorial on using the Quick Search, Advanced Search, and Map Search is provided by the vender via a [YouTube video](#), so specific instructions on performing a search are not provided in this document.

However, an item not covered in the YouTube tutorial is that MS2 makes a wide number of station data elements available to those licensing its platform, but an individual organization may choose not to use many, perhaps even most, of the data elements available. Searches that specify values for unused data elements will return no results, so it is advisable to confirm a categorical data element has values in its drop-down menu within the Advanced Search before using it as a search parameter.

Even when properly used, it can be difficult to return just those locations of interest from the Quick Search or Advanced Search. If the user is interested in an extract restricted to Perm Stations or WIM Stations, perhaps restricted to a specific county or roadway type, then the Advanced Search is a good option. In almost all other instances, the Map Search will be a better tool.

Custom Search

For those individuals familiar with WSDOT's method of roadway feature coding, as described in the [Washington State Highway Log](#), a custom search is a viable option when the goal is to filter a station search to a specific State Route ID. From the Tools Search tab click the Build Search link, which will bring up an interface that allows a search with up to a dozen user-selected parameters to be constructed.

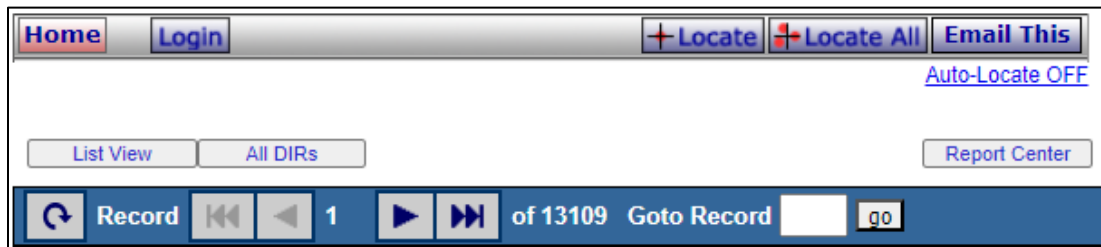
State Route ID can be used as a parameter within the Advanced Search, where it is labeled Route, as well as from the Tools Search, where it is confusingly labeled On Road Route. However, the Tools Search also allows for Mile Post and MilepostAhead/back parameters to be used. Note however that while the latter data item is stored within the TCDS, the platform cannot interpret it properly when performing milepost range selections. So, unless the search is for a specific milepost, or the user knows that only ahead- or back-mileposts are of interest, the MilepostAhead/back parameter should not be used. Unfortunately however, this may result in some unexpected station records being returned on routes with back-mileposting equations.

Build Search	
Enter search criteria below. Then click the "Search" button.	
On Road Route	002CODIVISN Enter the full road name or any part of it.
Mile Post	Min: 289.19 Max: 290.72 Enter "Min" and/or "Max" for number range.
Milepost Ahead/back	-- Select Milepost Ahead/back--

Search Results

Once a search has been performed, the application will return all count station records meeting the search parameters. However, returned search results will be ordered by the location ID, not by spatial proximity, route number, etc. The user can navigate between the records using the bottom line of the toolbar shown below. The user can also click on List View to transition to a list of all stations. From that

list an individual station can be clicked on, which will return the user to the original Form View but with that station active.



After a search has been performed, the Locate and Locate All buttons will become enabled. The latter will display all stations returned by the search on the map. The former will zoom the map to the current active station. Alternately, if the Auto-Locate option is enabled the map will automatically zoom to each active station as the user navigates between them.

Note that to the right of the List View button there is an All DIRs button. This has no functionality within WSDOT's implementation of the TCDS.

Station Records

Station Location Data

A number of data elements are provided for each station record, many of which can be ignored by those not actively managing data within the TCDS. For others, key information includes:

- Location ID – a unique code assigned to each station
- Located On – a description of the station's location
- Loc On Alias – an alternate station location description, if available
- Route – the concatenated State Route Number, Related Route Type, and Related Route Qualifier of the roadway monitored at the station (as defined within the [Washington State Highway Log](#))
- Milepost – the state route milepost of the station
- Active – whether the station is part of the current traffic data collection program
- Fnct'l Class – the roadway's functional classification within the Federal Highway Administration's (FHWA's) roadway classification scheme
- Category – the station's collection capabilities if it is a Perm or WIM installation

Record	10	of 12	Goto Record		go
Location ID	R103	MPO ID			
Type	SPOT	HPMS ID			
On NHS	No	On HPMS	No		
LRS ID	200	LRS Loc Pt.	28920		
SF Group		Route Type			
AF Group		Route	002CODIVISN		
GF Group		Active	Yes		
Class Dist Grp		Category	Volume/Speed/Length Class		
Seas Class Grp					
WIM Group					
QC Group	Urban				
Funct'l Class	Other Principal Arterial	Milepost	289.2		
Located On	On SR 002 CODIVISN, S/O EUCLID AVENUE - SPOKANE				
Loc On Alias					

Route Type, Metropolitan Planning Organization (MPO) ID, and Highway Performance Monitoring System (HPMS) ID are not stored by WSDOT within the TCDS, so these will be blank. On National Highway System (NHS) and On HPMS uniformly display as No because the data items are not maintained by WSDOT within the TCDS, even though in many cases the actual value should be Yes. The fields Type, LRS ID, and LRS Loc Pt. have internal uses within the TCDS, but can be ignored by users. Finally, the remaining seven fields starting with SF Group and ending with QC Group will, if populated, either contain a code representing a statistical model used internally to estimate annual traffic statistics from limited base data or a code representing the collection of quality control tests applied at the station to identify data of suspect accuracy. These can be ignored by those not managing data within the TCDS.

Station Summary Traffic Data

Below the station location information are a number of tables containing travel data for the station. The first is the AADT table.

AADT ?								
	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2020	21,091	1,603	8	63	19,128 (91%)	1,963 (9%)	
	2019	23,206						

This provides five years of annualized statistics:

- AADT – Annual Average Daily Traffic
- DHV-30 – for Perm and WIM stations this is the traffic volume of the thirtieth highest volume hour in the year, but for Short Count Stations this is highest volume captured
- K % – the DHV-30 as a percentage of AADT
- D % – the volume of the DHV-30 hour's highest volume direction divided by total volume
- PA – the AADT of FHWA vehicle classes 1 through 3 (i.e., motorcycles, cars, and pickups)
- BC – the AADT of FHWA vehicles classes 4 through 13 (i.e., buses and heavy trucks)
- Src – This field will contain notes regarding the computation of these statistics if applicable.

Annualized statistics for previous years, if any exist, can be reviewed using the navigation buttons at the bottom of the table.

Below this and to the right there is also a Volume Trend table, which lists the annual percentage change in AADT for the station. Note that both the AADT and Volume Trend tables, and the pop-ups discussed in the Map Tool section above, may contain a preliminary estimate for the most recent year. Finalized AADTs are not available until May or June of the year following the one they are provided for.

VOLUME TREND 	
Year	Annual Growth
2020	-11%
2019	0%

To the left of this is the Volume Count table. It will provide the total daily traffic volume for the ten most recent dates that data is available for the station (assuming such data is available for the given station, which will not consistently be the case for Short Count Stations until 2025). There is also an Int column, which indicates if the base data was stored in 15- or 60-minute intervals.

VOLUME COUNT			
	Date	Int	Total
	Wed 3/2/2022	15	92,356
	Tue 3/1/2022	15	92,737

Below this is the Speed table. If populated, this will also provide daily total volume and interval information for the most recent dates available. However, this reflects vehicle counts wherein each vehicle is categorized by speed bin, and because traffic monitoring equipment sometimes fails to capture a vehicle's speed the Total in this table may be less than the Total in the Volume Count table. Also provided is a Pace field, which is the two contiguous speed bins (discussed in more detail below) with the most vehicles for the given date. Finally, an 85th column indicates the speed at or below which 85 percent of vehicles traveled. Note however, that some estimation logic occurs to provide this value as a specific integer despite the traffic counts being stored in five-mile-per-hour bins.

SPEED					
	Date	Int	Pace	85th	Total
	Wed 3/2/2022	15	60 - 70	68	91,571
	Tue 3/1/2022	15	60 - 70	69	92,181
	Mon 2/28/2022	15	55 - 65	67	85,125

Adjacent to the Speed table is the Classification table. If populated, this will also provide daily total volume and interval information for the most recent dates available. However, this reflects vehicle counts wherein each vehicle is categorized by vehicle type.

CLASSIFICATION			
	Date	Int	Total
	Wed 3/2/2022	15	92,356
	Tue 3/1/2022	15	92,737

Next is the Weigh-In-Motion table, which will only be populated for the very limited number of stations with the ability to weigh trucks as they pass. Provided is the total number of buses and large trucks (FHWA vehicle classes 4 through 13), the total number of axle-passes this reflects, and the average gross vehicle weight in kips (i.e., thousands of pounds).

WEIGH-IN-MOTION ?				
	Date	Axles	Avg GVW	Total
	Wed 3/2/2022	36,704	38.67	9,154
	Tue 3/1/2022	34,640	38.01	8,788

Finally, the Notes/Files field may be used by WSDOT's data processing staff to document when the station has one or more lanes that capture highly atypical traffic (such as a bus-only lane or a lane that only serves as an off-ramp to a permanently closed weigh station). It may also be used to document that a major change has occurred to the traffic stream such that historic data will no longer be comparable to data collected in the future (such as the opening of a bypass that diverts a significant amount of traffic or the conversion of the facility to a toll road).

NOTES/FILES			
	Note	Date	
	Cabinet and sensors located at MP 1.98.	6/16/2022 AnnisT	
	Added a SB lane #5 on 8/26/2020 as a Transit Lane, open to traffic 10/14/2020.	3/24/2022 urenar	

The remaining four tables, labeled Gap, Per Vehicle, Partial Count, and Travel Demand Model, will not be populated. The Gap table is intended to provide information on the spacing between vehicles in the traffic stream, but WSDOT does not store gap data in the TCDS. Similarly, the Per Vehicle table will not be populated because WSDOT does not store data for individual vehicle passes in the TCDS, only data summarized to 15- or 60-minute increments. The Partial Count table is for traffic datasets that capture only part of a full 24-hour period, but WSDOT does not load incomplete 24-hour periods to the TCDS. Finally, the Travel Demand Model table will not be populated because WSDOT does not store this type of forecasted roadway usage data within the TCDS.

Data Navigation

Between the station location information and the summary traffic data tables is a pane labeled Station Data. This provides the levels at which data will be collected and stored for the given station. Each will include a total station level (i.e., 2-Way, 1-Way, or Ramp, depending on the roadway type), and most will also include directional levels (eastbound, northbound, etc.). Perm Stations and WIM stations will also include specific lanes, which are numbered independently in both directions of travel from the outside of the roadway in. The information provided in the summary traffic data tables will default to the station level, but the user can change the level presented simply by clicking the desired level in this pane.

STATION DATA					
Directions:	2-WAY	EB	WB	?	
		1	2	1	2

Note that data quality is assessed at the directional level, so for a given date and station traffic data may be available for one direction and not the other. In this situation, if the station level is selected in the Station Data pane, then a daily total will not be provided for the given date, though a record will exist in the table indicating the presence of data at the directional level.



To the right of the pane is a calendar that, when clicked on, brings up an interface that shows whether data is available for each date in a calendar year. The user can select the year and level of aggregation (total station level, a specific direction, or specific lane) of interest and the information will update automatically. The data type can be changed between volume, class, etc. by clicking in the desired radio box and then clicking the update button. Note however that if multiple check boxes are selected the interface will only indicate that data is available for a given date if it is available for all selected data types (despite the calendar's key incorrectly suggesting more nuanced functionality). For this reason, data availability should be reviewed for only one data type at a time.

To the right of the pane is a calendar that, when clicked on, brings up an interface that shows whether data is available for each date in a calendar year. The user can select the year and level of aggregation (total station level, a specific direction, or specific lane) of interest and the information will update automatically. The data type can be changed between volume, class, etc. by clicking in the desired radio box and then clicking the update button. Note however that if multiple check boxes are selected the interface will only indicate that data is available for a given date if it is available for all selected data types (despite the calendar's key incorrectly suggesting more nuanced functionality). For this reason, data availability should be reviewed for only one data type at a time.

Location: P4 - Year: 2022

Total Counts:	62			Record	⏮	⏪	1	⏩	⏭	of 9
Select Year:	2022 ▾	Show Type:	☒ Volume ☐ Class ☐ Gap ☐ Speed ☐ Weight ☐ Per Vehicle	Update						
Directions:	2-WAY	NB	SB	?						
	1	2	3	4	1	2	3	4		

- # Count Exists
- # Count Missing Interval Data
- No Counts Exist

Counts in January = 31

January						
Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8

Counts in February = 28

February						
Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12

Hourly Data

The Volume Count, Speed, and Classification tables each have a column on the left containing eye icons. When the eye is clicked on, a new interface will be brought up that contains a table of hourly data for the given date and data type. For speed and classification data, the hourly volumes will be broken out by speed group or vehicle type, respectively.

Speed Range (mph)																
Start Time	0-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85+	TOTAL
12:00 AM	0	0	0	0	0	8	31	97	212	420	255	78	22	8	2	1133
1:00 AM	1	1	0	0	0	1	18	71	167	336	197	49	8	3	0	852

FHWA-Scheme F Classification																
Start Time	Motor cycle	Car	Pick up	Bus	2A SU	3A SU	>3A SU	<5A 2U	5A 2U	>5A 2U	<6A >2U	6A >2U	>6A >2U	Unk	Err	TOTAL
12:00 AM	0	1	2	0	0	0	0	0	0	1	0	0	0	0	0	4
1:00 AM	0	1	3	2	1	0	0	0	0	2	0	0	0	0	0	9

Classification - Vehicle Length (feet)																
Start Time	0-20	20-42	42-73	73-115	115-999										Err	TOTAL
12:00 AM	189	21	19	7	0	0	0	0	0	0	0	0	0	0	0	236
1:00 AM	135	6	15	24	0	0	0	0	0	0	0	0	0	0	0	180

Classification data will either reflect the [FHWA 13-bin system](#) of categorizing vehicles by function and number of axles or, alternately, a four-bin system based on vehicle length (0.0'-19.9', 20.0'-41.9', 42.0'-72.9', and 73.0'-115.0'). Note that for the former an abbreviated bin description is provided (e.g., 3ASU for three-axle single-unit truck) instead of bin number. Additionally, a bin is provided for vehicles that could not be categorized by the traffic counting hardware (labeled as "Unk" in the FHWA-Scheme F table and greater than 115'-999' in the length scheme), and an "Err" bin is provided for hardware "errors" that reflect anomalies such as a single axle being detected for a vehicle.

At top of the speed and classification data interfaces there is also a pane providing basic information about the count (the roadway location description, the date and start time of the 24-hour period, etc.). The volume data interface contains similar information but broken into separate Location Info and Count Data Info panes. Importantly, the volume data interface is the only one that displays the Study field, which is used by WSDOT's data processing staff to document information relevant to any of the count's data, regardless of type. This includes accidents occurring during data collection, if the data is anomalously high or low relative to data previously collected at the location, etc.

COUNT DATA INFO	
Count Status	Atypical
Holiday	No
Start Date	Mon 4/11/2022
End Date	Tue 4/12/2022
Start Time	12:00:00 PM
End Time	12:00:00 PM
Direction	2-WAY
Notes	
Station	
Study	Count high?
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	CombineVolumeCountsIncremental
Latitude,Longitude	

Finally, as with the summary traffic data tables, there is a pane that allows the user to switch between total station, directional, or lane data (if available), as well as change dates using count navigation buttons. However, this pane also has a count type drop-down menu that allows the user to change the data type displayed.

Directions:

2-WAY

NB

SB

?

1

2

3

4

1

2

3

4

Count Navigation:

<<

<

>

>>

Count Type:

CLASS

▼

Short Count Station Caveats

Within the TCDS, Perm Station and WIM Station daily counts reflect Midnight to Midnight on the given date. For Short Count Stations however, a daily count will simply reflect a 24-hour period beginning on the quarter-hour of the day that the data processor deemed most appropriate for meeting organizational needs. This is usually midnight but can also simply be the first full 15-minute period of the day after data collection was initiated (usually late morning or early afternoon). Because of this, the 24-hour totals can sometimes, confusingly, not reflect the date they are provided for. Instead, they will reflect a 24-hour period that simply *began* on that date. A green play button will indicate the first hour of the count for which data was captured, but because data is often captured in 15-minute increments the true start time can only be determined by referencing the interface's Start Time field.

INTERVAL:15-MIN					
Time	15-min Interval				Hourly Count
	1st	2nd	3rd	4th	
0:00-1:00	51	45	26	25	147
1:00-2:00	35	25	36	23	119
2:00-3:00	22	20	25	24	91
3:00-4:00	16	17	21	27	81
4:00-5:00	21	29	51	52	153
5:00-6:00	59	81	109	132	381
6:00-7:00	171	161	225	244	801
7:00-8:00	243	327	350	362	1,282
8:00-9:00	374	397	338	348	1,457
9:00-10:00	335	345	356	341	1,377
10:00-11:00	273	313	326	296	1,208
11:00-12:00	297	337	335	344	1,313
12:00-13:00	311	366	347	292	1,316
13:00-14:00	306	324	348	346	1,324
14:00-15:00	 345	344	352	395	1,436
 15:00-16:00	401	406	424	415	1,646
16:00-17:00	418	415	460	445	1,738

Additionally, 15-minute, hourly, and daily traffic volumes at a Short Count Station can either reflect vehicle volumes or axle volumes divided by two (i.e., two-axle equivalent volumes). These two data types will deviate only nominally for the highest volume urban locations but usually become increasingly discrepant (by up to 30 percent or more) as a roadway becomes lower in volume or more rural in character as large trucks increase as a percentage of the total traffic stream. Which the count reflects can only be determined from the detail volume data interface's Sensor Type field. Vehicle volume counts will have ATR Class or Video Count in this field, while two-axle equivalent volume counts will have Axle/Tube.

Finally, a very small percentage of the counts present for Short Count Stations will reflect a four-hour visual observation count (also known as a "manual" count) that has been extrapolated to twenty-four hours using statistical models. For these, the Sensor Type field will contain Human, the Count Status field will contain Estimated, and the Study field of the volume interface's Count Data Info pane will document which four hours of the day reflect actual data collection. Importantly, many of these manual counts will have been conducted as part of a turning-movement study, which tallies vehicles relative to the various possible movements through an intersection. While the interface does not allow the data to be broken out in that way, it is nonetheless available upon request (see the last section of this document for a link to the data request form).

Note that volume count records will contain an AADT value in the count summary. This reflects the specific count volume adjusted using statistical models to account for variation in the traffic stream by month or year and day of week. For two-axle equivalent base data, an additional adjustment is made to account for the proportion of vehicles in the traffic stream with more than two axles (through the application of an 'axle-correction factor').

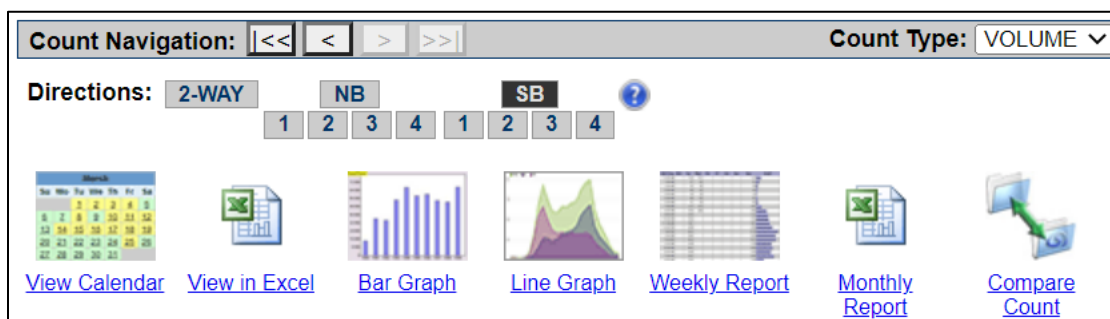
AADTs provided in the count records will deviate from the AADT provided in the station record, which reflects the finalized and published AADT for the location, once that finalization has occurred (generally, May or June of the calendar year following the count year). AADTs provided for Short Count Station records generally represent an average of AADTs from all available base data for the current year as

noted above. For all station types that lack base data in a given year, the AADT will reflect the application of a growth factor to the prior year's AADT.

Graphs and Downloadable Data Extracts

Graphs

Below the hourly tabular data is a series of icons. This includes a link to the data availability calendar, already discussed above. There are also two chart options, which can be helpful in visualizing the tabular data. The bar graph displays the hourly distribution for volume data, and for speed and class data displays the total daily volume broken out by bin. The line graph displays the directional and combined-direction volumes for each count interval, allowing quick comparison of the station's directional volume curves. For speed and class data, only one bin is represented at a time and displayed as a percentage of total volume. A drop-down menu at the top right allows the bin displayed to be changed.



Downloadable Data

For each data type, the View in Excel link will generate an Excel file containing the hourly data displayed on the screen, while the Monthly Report generates an Excel file with data for the entire month. Note that the classification data monthly report will provide data in terms of either the FHWA 13-bin system or the four-bin system based on vehicle length. If equipment capabilities changed during the month the report header will reflect the data available on the date the user selected prior to generating the report.

For volume data there is additional Hourly Volume by Lane icon when at the total station level, which when clicked will display the hourly volumes for the given date broken out by lane. More useful is the Weekly Report icon, which is available for volume data at any level. When clicked on this will bring up a new interface that provides available hourly volumes for each day of the calendar week containing the active date. This has an Excel Version link at the top left that will generate an Excel file containing the data displayed on the screen.

Count Comparison Tool

The Compare Count tool is intended exclusively for data processing staff to use during their quality control procedures, so it is not expanded upon in this document.

Report Center

Running Reports

After a search has been performed, the toolbar shown below will include a Report Center link. The Report Center provides several additional data reporting options that may be useful when the count station of interest is one with permanently installed equipment.

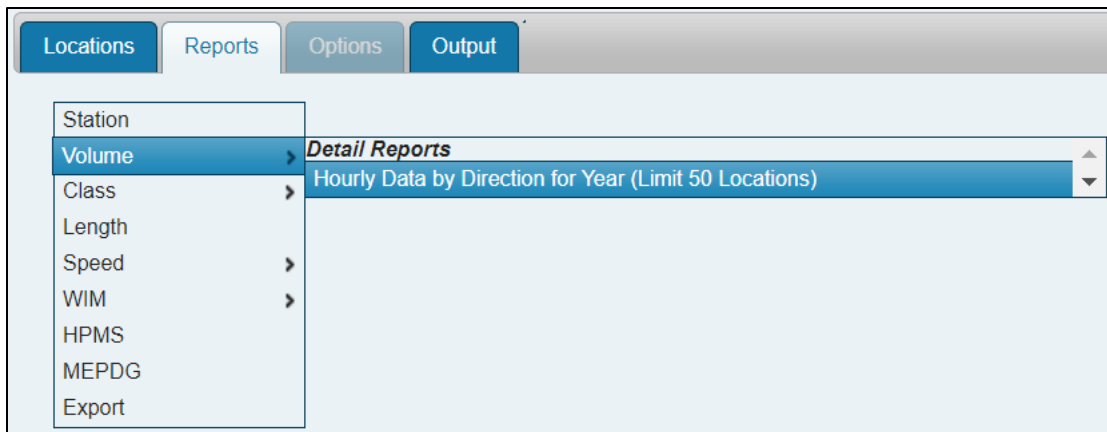
The toolbar contains the following elements from left to right: a 'Home' button, a 'Login' button, a '+ Locate' button, a '+ Locate All' button, and an 'Email This' button. Below these buttons is a link for 'Auto-Locate OFF'. Further down are 'List View' and 'All DIRs' buttons. On the right side is a 'Report Center' button. At the bottom is a record navigation bar with a refresh icon, a 'Record' label, navigation arrows, the number '1', a 'Goto Record' label, a text input field, and a 'go' button.

Clicking this will bring up a new interface with four tabs. The Locations tab will list all the stations returned by the search, with a toggle on the far right that allows each to be selected or deselected.

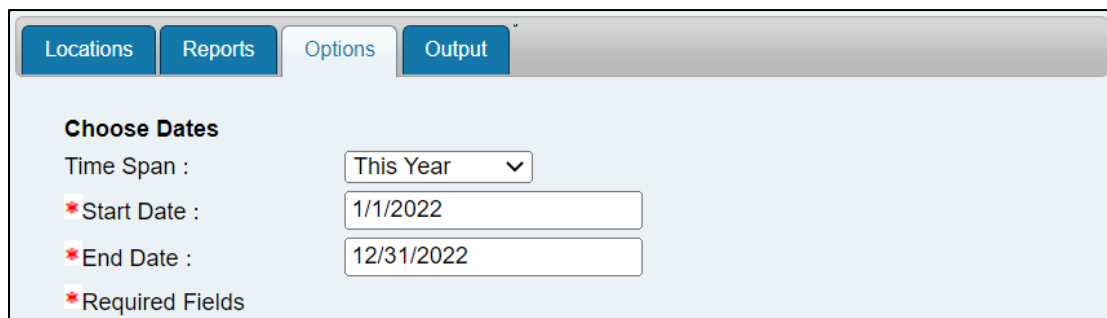
The interface shows the following settings at the top: 'Report : None', 'Dates : None', and 'Process : ☒ Immediately'. On the right are 'Home', 'Go', and 'Back' buttons. Below these is a tabbed interface with 'Locations', 'Reports', 'Options', and 'Output' tabs. The 'Locations' tab is active, showing 'County = Thurston, From 1/1/1900 To 12/31/2049 12:00:00 AM'. A summary bar indicates '9 Location(s) Found' and '9 Location(s) Selected'. Below this is a table with the following data:

Loc ID	County	Community	On	From	To	At	Dir	Alias	☒
P4	Thurston	-	On SR 005, S/O PACIFIC AVENUE I/C - OLYMPIA				2-WAY		☒
R003E	Thurston	-	On SR 101, E/O SR 8 - OLYMPIA				2-WAY		☒

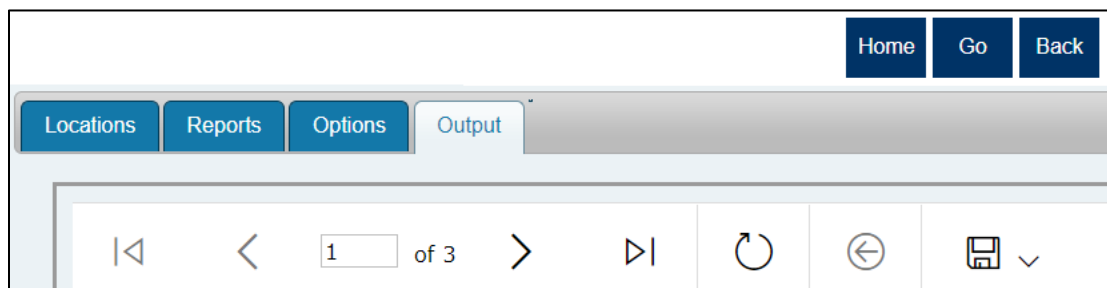
The Reports tab allows a report to be selected for the desired data type (i.e., total volume, 13-bin vehicle classification, speed bin, and weigh-in-motion). There are four other categories, but reports for these are not available.



Once a report has been selected the Options tab is made available. This allows the user to select the data range of interest. Note however that the date range selection is restricted by the report type, and sometimes by rules that are not made explicit by the interface.



Once the date range has been chosen, the Output tab can be selected to provide data for the site(s), dates, and report type chosen. From here, the floppy disc icon's drop-down menu can be used to export the data as an Excel, PowerPoint, or PDF file.



Note that if only a single report is run then the Go button on the top right has the same functionality as simply clicking the Output tab. However, if subsequent reports are run then the Go button must be used – clicking the Output tab will not initiate the creation of the new report output.

Also note that if large amounts of data are requested by selecting multiple locations and/or extended date ranges, the system may time out. When this happens, the user will not be notified, and instead the loading icon will continue to be displayed. If this issue is encountered, the process should be reinitiated at a later time and/or with a smaller request.

Report Details

The Volume > Hourly Data by Direction for Year report provides available directional hourly volumes for each date within a user-defined range of no more than one calendar year. If 13-bin vehicle classification data is available for the given hour, the percentage of the total volume represented by vehicle classes 5-13 (i.e., large trucks) will also be provided.

The Class > Average Daily Traffic by Class by Day of Week by Month report provides the combined-direction average daily volume, by month and day of week, of each 13-bin vehicle classification category for a user-defined calendar year.

The Class > Volume by Class by Month report provides available directional total volume, by month, of each 13-bin vehicle classification category for a user-defined calendar year. The percentage each represents relative to the overall monthly directional volume is also provided. Importantly, because equipment is not always functional over the course of an entire month, the number of days of available data within each month is also listed.

The Speed > Directional Volume by Speed Bin by Hour report provides the directional hourly average volume of each speed bin for a user-defined date range. Also estimated for each hour are the average speed, the number of vehicles exceeding the speed limit, and the 50th and 85th percentile speeds (the speed below which 50 and 85 percent of vehicles travel, respectively). Note that these statistics are computed using the assumption that actual vehicle speeds are equally distributed within each speed bin, and that the 85+ category represents an equal distribution of vehicles traveling above 85 MPH but less than or equal to 95 MPH. Also note that on the bottom right of the report's header the number of days of data the report reflects is provided. As noted above, data collection equipment is not always operational, so the data may not always reflect the entire period requested by the user.

The WIM > Average GVW by Vehicle Class by Day report provides the daily average gross vehicle weight in kips (i.e., thousands of pounds) of buses (bin 4), trucks (bins 5-13), and unclassified vehicles (bin 14) for a user-defined date range. Also provided is the number of vehicles the averages were generated from, as well as the average weight and average first axle weight of all bin 4-14 vehicles.

Data Extent and Accuracy Caveats

Note that AADTs are the only uniformly-provided traffic data in the TCDS for years prior to 2022. Daily and sub-daily volumes from Short Count Stations are not available prior to 2022, although such data is accessible through the Department's Electronic Content Management system available through the SecureAccess Washington portal (to set up access, contact the count processing team at TDGMOShortCountECMHelp@wsdot.wa.gov). For Perm Stations and WIM Stations, hourly directional volumes are available for ten years prior, but daily and sub-daily volumes by lane are only available from January of 2019, while daily and sub-daily speed and truck weight data is only available from August of 2020. To obtain data for prior periods, or to request a custom extract for a large number of stations and/or multiple years of data, a [traffic data request form](#) is available.

Also note that the interface will not provide data that has been reviewed and rejected as part of the quality control process. It will nonetheless provide recent data that has not had its accuracy evaluated if

it was not flagged as priority for review by the various automated quality control checks within the TCDS. Such data is generally reliable but may ultimately be rejected for issues not identified through automation. Therefore, data from roughly the prior two months should be used with caution.

Finally, on January 1 of 2022 there was a significant improvement to the methodology used to estimate the portion of a Short Count Station's AADT represented by each of the 13 vehicle bins when new base data was obtained. The individual bin AADTs are significantly different when generated from the new methodology, and as a result caution should be used when comparing Short Count Station truck AADTs derived before and after the methodological change.