Short Count Factoring Guide

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Washington State
Department of Transportation

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Section One: Introduction and Purpose

Reason for this Guide

This guide was created by the Washington State Department of Transportation (WSDOT) to promote good practice and uniformity in techniques being used for traffic counting and the estimation of Annual Average Daily Traffic (AADT) figures from short duration count data. It is an informational guide only and does not constitute a specification or a statement of required practice. The intent is to encourage high standards and uniform practices among traffic counting programs within the State of Washington so that an accurate representation of traffic on our public roadways is available to all interested parties.

The Need for Good Data

The demand for accurate information concerning our transportation systems is increasing every day. Our state and local legislative bodies require more precise and thorough analyses in order to understand the increasingly complex systems they must guide. They also require sound planning options from which to choose. Analysis and planning begin with the collection of data, and their quality depends on the accuracy and completeness of that data.

Governmental personnel responsible for monitoring, maintaining, and enhancing the performance of public roadways also require thorough and accurate data. Good data is needed for making a myriad of decisions in the design phase of construction projects, including what pavement depth and type are to be used, how many lanes will need to be constructed, what type of traffic control device(s) will be most effective, et cetera. The proper administration of construction and maintenance programs is also dependent on the availability of complete and accurate data, which are used in part to schedule the implementation of these programs so that worker and public safety is ensured. Furthermore, good data is required for monitoring the physical state of pavement and bridge decks, congestion, and other aspects of roadway condition and performance.

In addition, private interests and research organizations often request traffic information. Traffic data and analyses can be an important component of business decisions and research efforts.

Data collected by state and local governments is also requested by The Federal Highway Administration (FHWA). The data is used in the administration of the Federal-aid Highway

Program, which distributes federal funds to the states for the construction and improvement of public roadways. In addition, the data is used in the preparation of the Secretary of Transportation's Report to the United States Congress entitled *The Status of the Nation's Highways, Bridges and Transit: Condition and Performance*. This report is the basis for many decisions made concerning federal highway program design and funds allocation.

There are many other demands for data, and more are coming in the foreseeable future. It is outside the scope of this document to address all of these, but simply to note that data is becoming more important with each passing day. We are indeed in an information age.

The Scope of This Guide

This guide provides a general overview of traffic counting programs, as well as a more detailed discussion of suggested practice in relation to short duration traffic count field and office techniques. Short duration counts are those that are conducted over a relatively limited period of time, usually one week or less. In addressing such counts, focus is placed on those performed with the primary intent of developing AADTs in order to fulfill federal reporting requirements and help meet point-specific and area-wide traffic information needs. Special purpose counts, such as traffic signal warrant studies and counts for intersection design, will not be discussed. Information and requirements for these types of counts can be found elsewhere (e.g., *Policy on Geometric Design of Highways and Streets*, and chapter six of the *Manual on Uniform Traffic Control Devices*).

Target Audience

The target audience for this guide is state and local agency personnel responsible for conducting traffic counts, processing count data, and generating AADT figures from the base data collected. In providing information on good practices in this regard, basic techniques and general theory are stressed. The Federal Highway Administration's *Traffic Monitoring Guide* (TMG) is recommended for those interested in a more detailed discussion of theory and practice.

Larger local agencies may already have well developed traffic counting programs. In this case, the guide may be useful for introducing new personnel to basic traffic counting techniques.

Section Two: Traffic Counting Programs

General Purpose and Objectives

There are many good reasons for counting traffic, including:

- **Production of statistics**. Many valuable statistics flow from traffic counting programs. Examples include vehicle-miles of travel figures and AADT maps, as well as vehicle usage, truck flow, and commodity movement patterns.
- **Highway program design**. Highway capacity monitoring and construction scheduling depend on good traffic data. Safety monitoring programs need accurate flow information to locate unusually hazardous areas. Pavement design requires AADT and axle loading information.
- **Highway finance**. Some categories of federal funds are allocated based, in part, on vehicle miles traveled.
- **Transportation planning**. Traffic flow and demand is essential to system monitoring and planning. The first step in planning is to establish a database that is representative of present day conditions.
- **Information for the Public**. Governmental traffic counting programs are not specifically required to collect information exclusively for use by private individuals or organizations, but the data gathered should be made available. This creates an added responsibility for producing high quality data.
- **Research and analysis**. Vehicular traffic data is required for many research studies. However, the study results are only as reliable as the data upon which it is based.

Three Elements of Traffic Count Programs

In order to meet these needs, most states have implemented a count program consisting of three elements:

1. Continuous Count Element
2. Coverage Count Element
3. Special Purpose Element

Each element has its own purpose and methods, and all three elements are essential to a complete count program. The three elements are discussed below, in the level of detail appropriate to the intent of this guide.

Continuous Count Element

The continuous count element consists of a number of Permanent Traffic Recorders (PTRs), which collect data constantly throughout the year. These PTRs are distributed throughout Washington so that the variety of operational characteristics found on highways within the state is represented. By providing detailed and continuous traffic information for a representative sample of highway locations, this network of PTRs allows the following to be produced:

- **Growth rates**. Growth rates can be calculated from one or more PTR sites and then applied to other highway locations with similar geographic and operational characteristics.
- **Seasonal and day of week variation information**. Traffic streams vary in relation to both day of week and time of year. However, short duration counts, as their name implies, are restricted to collecting data for limited periods that are always less than an entire year and often less than a full week. Because of this, the average daily traffic volume from a short duration count will generally fail to accurately reflect the AADT of the location where the count was conducted. However, due to their continuous operation, PTRs record data that represent the variation of traffic streams in relation to day of week and time of year. This information can be used to calculate mathematical factors estimating annualized figures from short duration count data.
- **Axle correction factors**. Many short duration counts are restricted to simply recording the number of axle passages. Because not all vehicles are limited to two axles, merely counting all axle passages and then dividing by two cannot produce an accurate vehicle volume count. Axle correction factors, representing the ratio of vehicles to axles, must therefore be computed and applied to data limited to axle volumes in order to generate reasonably accurate estimates of vehicle volumes. To this end, data from PTRs instrumented to count and classify vehicles by type and number of axles can be used to calculate correction factors for application to short count data.
- **Analyses of traffic relationships**. Several traffic-related relationships are commonly used in the process of highway design. One is the “K” factor, which is the proportion of daily traffic occurring during the peak hour. For design purposes, the K factor is generally calculated using the thirtieth highest volume hour of the year. This factor is directly available from PTR data, and is commonly extended to other highways when site-specific information is not available. The same is true for the “D” factor, which represents the

percentage of traffic in the dominant direction of travel during the peak hour, as well as for truck percentages during the peak hour.

- **Estimates of truck volumes and weights**. Because PTRs are capable of classifying vehicles, they can provide factors for use in estimating total number of trucks on the state highway system. This is done in conjunction with a separate truck-weighing program, where the average weight of various truck classes is established. This program utilizes data from Weigh-In-Motion (WIM) PTRs, which are capable of weighing and classifying vehicles automatically as they travel over the site.

Appendix Two of this guide contains a link to map of the State Highway System showing the location of WSDOT's PTR stations. Data from these recorders is available upon request from WSDOT's Transportation Data, GIS and Modeling Group. In addition, several reports containing summary-level PTR data may be accessed through WSDOT's traffic data webpage at: https://wsdot.wa.gov/about/transportation-data/travel-data/traffic-count-data

Coverage Count Element

The coverage count element represents the main focus of this guide. It is primarily composed of short duration counts from which AADTs have been derived through the application of appropriate seasonal, day of week, and axle correction factors. The purpose of this element is to ensure that adequate traffic data is collected to fulfill federal reporting requirements and meet point-specific and area-wide traffic information needs.

The AADT information produced through this element has a number of applications, including use in the calculation of:

- exposure rates as part of safety analyses,
- vehicle loadings as part of pavement design,
- vehicle use as part of revenue forecasts, and
- congestion rates as part of transportation system performance monitoring.

When traffic volume data from coverage counts is maintained at levels of aggregation below that of a daily total, such as by hour and direction, the data has additional uses such as:

- traffic signal timing,
- air quality analysis,
- noise analysis,

- planning studies, and
- planning the timing of maintenance and construction activities.

The adequacy of this element in meeting its intended purpose is determined by the methods used in performing counts and factoring data to generate AADTs,[1] as well as by the thoroughness of geographic coverage provided. A discussion of good practice in relation to counting and factoring techniques is provided in the following sections of this document. However, a discussion of how many counts are needed and where they should be conducted in order to attain adequate geographic coverage is beyond the scope of this document. Readers are directed to the TMG, which provides a detailed treatment of this topic.

Special Purpose Element

The special purpose element is inclusive of counts conducted to increase geographic coverage over and above that provided by the coverage count element, as well as those performed to obtain traffic information for specific projects. This element includes counts for traffic signal warrants or design, interchange design, special studies of an environmental nature, or counts specific to a planned development or industrial facility. Counts performed for these purposes must be designed to accommodate the needs of each individual project, and will not be discussed in detail in this guide. However, if an accurate AADT can be generated from a special purpose count, then it should be included with the pool of coverage count information.

[1] Another important aspect of the coverage count element is the collection and maintenance of vehicle classification and truck weight information. However, these items are beyond the scope of this publication. Readers are encouraged to reference the TMG for a discussion of this topic.

Section Three: The Coverage Count Element

Temporal Factors Entering into Short Count Accuracy

The primary purpose of a coverage count is to collect traffic data that can be used in the computation of an AADT for the section of roadway where the count was performed. However, due to resource constraints, traffic counting programs usually conduct the majority of coverage counts with portable equipment left in place for short durations and collect data for each count location on a relatively infrequent basis. This limitation on the duration and frequency of data collection becomes a matter of concern because traffic streams vary over time. As a result, the average daily traffic volume recorded during the course of a short duration count will usually fail to reflect AADT accurately.

The following discussion addresses the types of temporal variation inherent to traffic streams, as well as methods for addressing this issue within a traffic counting program so that accurate AADT figures are produced.

Rate of Growth

Rate of traffic growth is one important temporal factor that affects the accuracy of AADTs derived from short duration count data. If traffic is growing at an average annual rate of five percent, and a count is three years old, the age of the count will likely contribute to an error of approximately 15%. Since it is not economical to collect traffic data at every count location every year, it has become common practice to update AADTs through the application of a growth factor.

Traffic growth does not occur evenly across all segments of a highway system. Economically depressed areas may exhibit slower growth than surrounding areas, or even experience a decrease in traffic. Generally, higher functional classes of roadway (i.e., interstates and principal arterials) exhibit the highest AADT growth rates, while collectors and local streets exhibit the lowest. Traffic growth is normally higher in urban areas than in rural areas and is often particularly high near urban growth boundaries. Growth on higher classification arterials will generally be relatively steady, while growth on lower classes, such as collector highways, will tend to vary more in relation to local conditions.

The best source of annual growth rates for application to individual counts is the annual growth rate of count information on similar facilities in the area. When calculating growth rates in this fashion, care must be taken to ensure that enough observations are included to average out the random inaccuracies that are always present in individual counts.

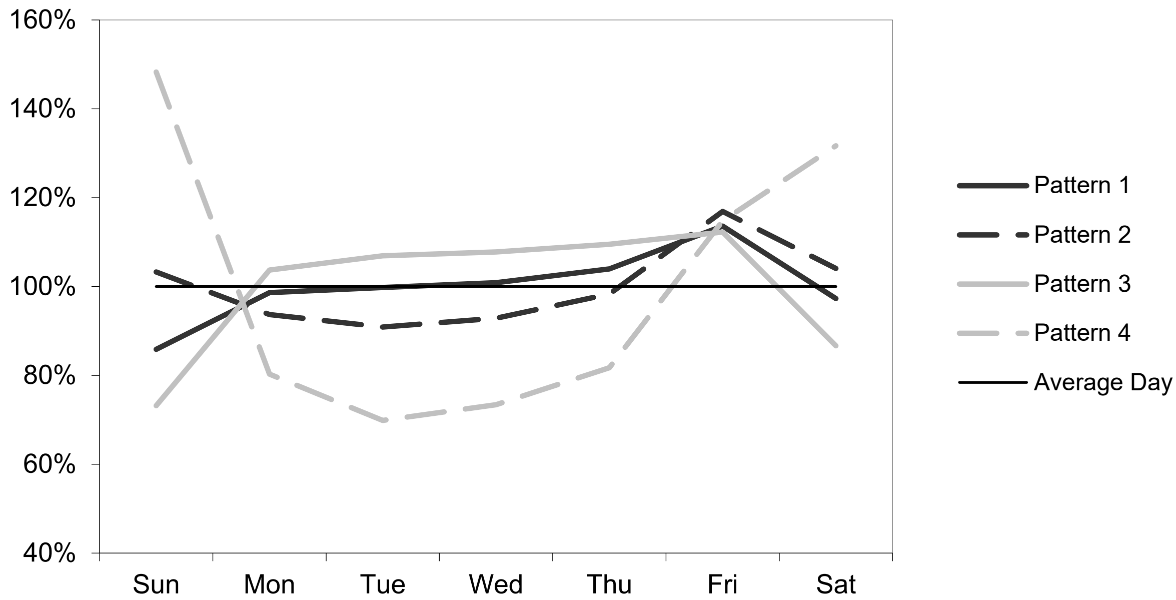
Appendix Five provides annual growth rates for ten broad categories of roadway on the state highway system. These growth rates represent averages and may be used when better information is unavailable.

Day of Week Variation

Another systematic way in which traffic streams vary is in relation to the different days of the week. The characteristics of weekend and weekday traffic flows are generally different, with extreme changes being observable on some roadways. This is illustrated by the graph on the following page, which displays daily traffic volume as a percentage of weekly average daily traffic for four typical weekly traffic patterns found on the state highway system.

Pattern 1 is reflective of many urban and rural highway locations that display a Friday traffic volume peak and a Sunday low. Pattern 2 represents a large number of other rural locations where weekend traffic is slightly higher than average due to a modest weekend recreational travel influence. Pattern 3 reflects many other urban locations where job-related weekday traffic is a particularly large component of total weekly volume, resulting in Saturday and Sunday having distinctly low traffic volumes in relation to other days of the week. Finally, Pattern 4 characterizes mountain passes and other locations that are significantly influenced by recreational travel, resulting in a large proportion of weekly traffic occurring on Friday through Sunday.

Typical Weekly Variation of Traffic Volumes
Daily Traffic as Percentage of Weekly Average Daily Traffic



As suggested by the graph, if counts are conducted for less than one full week then day of week variations will often result in count data failing to accurately represent weekly average daily traffic. This issue must be addressed if reasonable estimates of AADT are to be produced from short count data. One method of doing so is to ensure that all coverage counts include at least one full week's data. However, this is often precluded due to portable equipment limitations, costs, and the increased likelihood of vandalism or equipment failure associated with longer counts. The alternate method is to multiply the count volume for each day by a factor representing the ratio of the average daily traffic for the week to the traffic volume for the particular day and averaging the results. In mathematical terms the factor is expressed as:

$$\text{Day of week factor} = \frac{\text{Average daily traffic for the week}}{\text{Traffic volume for day of week}}$$

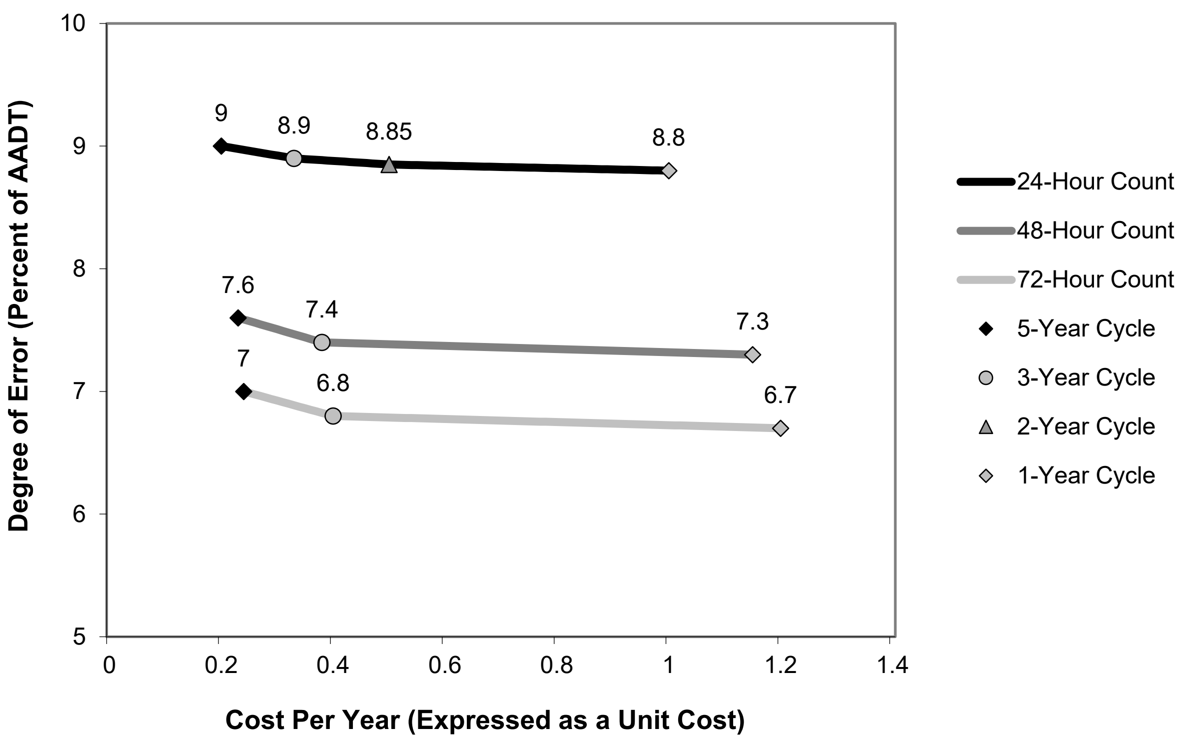
In practice however, the average daily traffic for the week will be unknown for the short count location where day of week factoring is required. As a result, day of week factors will need to be calculated for other locations (generally those with PTRs) and then applied to short counts conducted on roadway segments with similar characteristics. To reduce personnel time required to calculate and apply these factors, traffic counting programs are encouraged to standardize the days of the week that coverage counts are performed. In addition, because the day of week variation at a short count location will never precisely mirror the day of week variation of the location where factors are actually derived from, local programs are also encouraged to conduct coverage counts for at least 48 hours. Doing so will reduce the error inherent in factoring counts based on the day of week pattern found at other, albeit similar, locations. Similarly, coverage counts of less than one full week should not include data from noon on Friday through midnight on Sunday. This is because traffic patterns over this period tend to be relatively variable between locations that otherwise have similar patterns for the rest of the week, and therefore data from this period is less appropriate for factoring.

Random Variations

Traffic also varies due to less consistent influences, such as weather conditions, large sales at shopping malls, public events, acts of nature like the 1980 eruption of Mount St. Helens, or the effects of local and pandemic pathogens, such as the 2020 Coronavirus pandemic. The practitioner should avoid counting when it is known that normal conditions will not prevail for such reasons. For example, counters should not be set on a fairgrounds road while the county fair is in progress or near a shopping mall the day after Thanksgiving, as doing so would lead to biased representations of average yearly conditions. However, factors that may result in traffic being atypical cannot always be identified when a counter is set. As with the systematic variability of traffic in relation to day of week, local agencies should address this issue by establishing minimum count durations that achieve desired levels of precision in relation to average daily traffic volumes. A discussion of considerations pertinent to the determination of minimum count durations is provided below.

Data Accuracy Related to Count Cost, Duration and Cycle

The TMG recommends that coverage counts be at least 48 hours in duration. The FHWA recommends that counts be conducted at least every six years, with HPMS requiring collection every three years for locations on the Principal Arterial and National Highway System roadways. AADTs for years in which counts are not conducted may be estimated through the application of appropriate growth factors to the prior year AADT. This recommendation is the result of cost versus accuracy studies and is put forth as the most effective compromise between the goal of maximizing data validity and the constraints of cost and equipment limitations. The figure below is based on research cited in support of this recommendation.[2] It shows the relationship found between count duration, count cycle, degree of error, and relative cost of the count program. As can be seen, as count duration and frequency are increased, program cost rises while the level of inaccuracy in AADT estimation is reduced.



The actual design of a local agency's count program depends on local needs and available resources. However, as noted above, limiting count durations to less than 48 hours should be avoided. Count periods of less than two full days increase the degree to which day of week and

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[2] Source data for the figure are from Hallenbeck, M. E., and Bowman, L. A. (1984). *Development of a Statewide Traffic Counting Program Based on the Highway Performance Monitoring System*. Federal Highway Administration, United States Department of Transportation.

random variations result in counts failing to reflect average traffic volumes, but do not result in significant cost savings as the time required to set up and take down equipment is essentially the same regardless of count duration. Collecting multiple days of data also results in a better statistical sample for quality assurance purposes, allowing staff to compare data from similar hours of different days and identify improper equipment functioning or atypical traffic patterns from events such as accidents or other unusual circumstances.

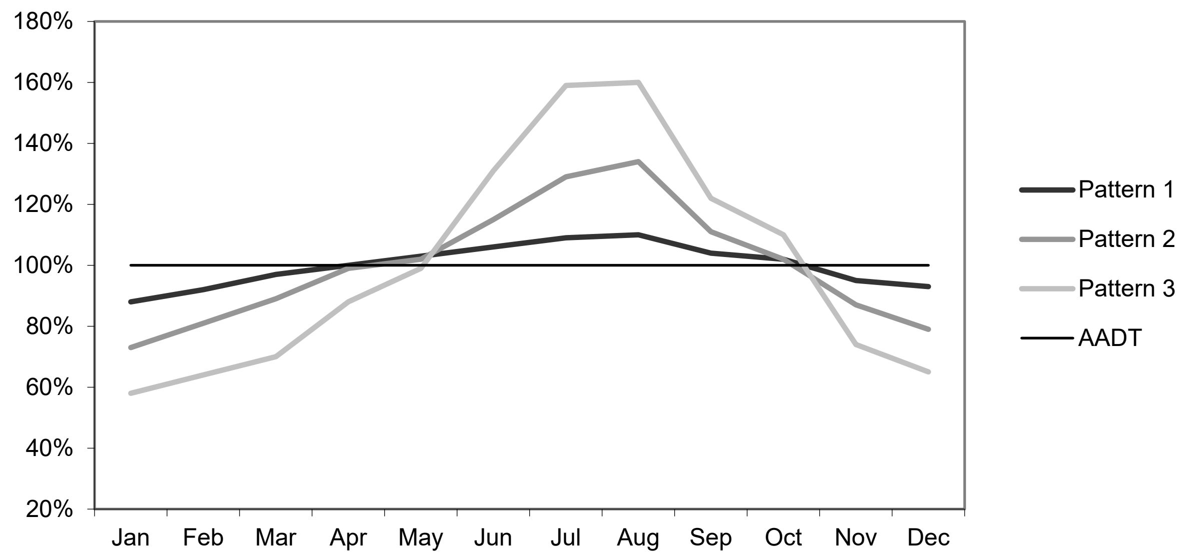
WSDOT conducts its own coverage count program with a three-year count cycle for the National Highway and Principal Arterial Systems, and a six-year cycle for all other roadways, in accordance with Highway Performance Monitoring System requirements. It has also established the policy that, whenever possible, short duration mechanical counts will be conducted continuously from noon on Monday to noon on Friday, excluding days impacted by holiday traffic, with equipment checked in the field each day for proper functioning. The goal is to capture 72 hours of valid weekday data, with 48 hours considered a minimum. Although counting over entire weeklong periods would theoretically result in average daily traffic figures that were not influenced by day of week variation, consistently performing such counts is effectively precluded by equipment limitations and other reasons noted above. As these considerations necessitate a standard count duration of less than one full week, the period from noon on Monday to noon on Friday was chosen since it is characterized by relatively consistent traffic volume patterns. Because of this, reasonably accurate average weekday traffic volumes can usually be produced even if only 48 hours of data is collected. These average volumes are then factored to compensate for the bias introduced through the exclusion of weekend data.

Seasonal Variations

The seasons of the year have a systematic effect on traffic flow. Traffic is typically depressed below average in the winter months and elevated above average in the summer. Mid-August is generally the time of peak travel, and mid-January is commonly near the lowest period of flow. Some locations have a harvest influence in early autumn.

The graph below displays Monthly Average Daily Traffic volume (MADT) as a percentage of AADT for three typical seasonal traffic patterns found on the state highway system. Pattern 1 reflects the normally modest seasonal curve of urban and urbanized areas. Pattern 2, with a stronger seasonal curve, reflects non-urbanized rural areas lacking a significant recreational traffic influence. Pattern 3 reflects rural central mountain locations heavily affected by summer recreational travel.

Typical Seasonal Variation of Traffic Volumes
MADT as Percentage of AADT



This graph illustrates the need to mathematically adjust short duration count data in relation to seasonal variation if the data is to provide an estimate of AADT that is not strongly influenced by the time of year the source count was conducted. This requires multiplying the weekly average daily traffic figure from a count by a factor representing the ratio of AADT over the weekly average daily traffic of the period covered by the count. In mathematical terms, the factor is expressed as:

$$Seasonal\ factor = \frac{AADT}{Weekly\ average\ daily\ traffic}$$

As with day of week factors, the numerator of this fraction will be unknown for the short count location where factoring is required. Therefore, seasonal factors will need to be calculated for those locations where data have been collected over an entire year and then applied to short counts conducted on roadway segments with similar characteristics.

It is a common practice to calculate seasonal factors for each month of the year and then apply the factor for a given month to short counts conducted within that month. In this case, the factor for a given month is calculated as follows:

$$Seasonal\ Factor = \frac{AADT}{MADT\ for\ the\ given\ month}$$

Because traffic volumes do change over the course of a month, seasonal factors calculated in this fashion are somewhat less precise than week-specific factors. However, monthly seasonal factors do have several advantages, including the fact that it is less time consuming to calculate and apply them than week-specific factors.

Axle Correction

Short duration counts often do not count vehicles but are restricted to a tally of axle passages. Because of this, factors representing the ratio of vehicles to axles must be computed and applied to data limited to axle information in order to generate reasonably accurate estimates of vehicle volume.

The source data for computation of an axle correction factor comes from classification counts that capture both the number of vehicles (units) and the number of axles passing a count location. The process of computing an axle correction factor generally begins with the division of the total number of axles counted by two, in order to arrive at the "two-axle equivalent" volume. The next step is to divide the total number of vehicles counted during the same period by the total number of two-axle equivalents. This factor can then be used as a multiplier that, when applied to a two-axle equivalent volume collected at a location with similar characteristics, will produce a relatively accurate estimate of actual vehicle volume.

A simple example of the computation of an axle correction factor is shown below.

120 cars with	2 axles each	=	240 axles
10 trucks with	3 axles each	=	30 axles
5 trucks with	5 axles each	=	25 axles
135 total vehicles with			295 axles

Two-axle equivalent volume: 295 axles ÷ 2 = 147.5

Axle correction factor: 135 vehicles ÷ 147.5 two-axle equivalents ≈ **0.915**

The axle correction factor calculated above is fairly typical of many urban areas around industrial locations or rural areas of light to medium trucking activity. This factor is not however representative of locations where large truck traffic represents other than a moderate proportion of the traffic stream. For example, some sections of rural interstate carry high percentages of five axle and larger trucks, resulting in factors of 0.70 or less.

Axle correction can never be ignored when counting traffic by number of axle passages. Although in urban areas away from arterials the factor can approach 1.00, and the impact of applying a factor may be insignificant, each count location should be evaluated individually before the decision to forgo the application of an axle correction factor is made.

It is important to note that the day of week and seasonal variation of vehicles differs by vehicle type. Passenger car traffic is relatively stable throughout the year in many locations, often elevating in the summer for nicer weather, recreational travel, and events. Recreational vehicles, including some trucks tend to be far more prevalent on weekends in seasons of nice weather. Trucks related to agricultural activities tend to increase in late summer. As a consequence, axle correction factors computed at a given location will vary by day of week and month of year. However, due to the fact that they are computed as the relationship between the distribution of vehicle types in the traffic stream, they tend to be far more stable throughout the week and year than the total traffic volume.

Appendix Three contains a table of axle correction factors by functional class of highway. These may be used when better information is unavailable. However, factors generated from local data should be considered of superior validity if they are from a representative sample and not skewed by special events such as harvest hauling or the presence of construction vehicles making many round trips over the same section of roadway.

Factoring Short Count Data to an AADT

As discussed, if short duration counts are to be used to produce accurate estimations of AADT then factors must be applied to compensate for temporal variations in the traffic stream and the limitations of count equipment. Annual Average Daily Traffic should therefore be computed from short duration count data as follows:

$$Estimated\ AADT = DT \times SF\ (\times\ WF)\ (\times ACF)$$

Where: DT = daily traffic volume short count
SF = seasonal factor
WF = day of week factor
ACF = axle correction factor

If DT is expressed in terms of unit volume as opposed to two-axle equivalent volume, then ACF is removed from the computation. If a count is inclusive of all days of the week, then WF is removed from the calculation.

To compensate for both seasonal and day of week variation, WSDOT uses data from PTRs to obtain monthly average day-of-week traffic to annual average daily traffic conversion factors. Each factor represents the AADT recorded by a PTR divided by the average daily traffic of that PTR for a given month and day of week. These are applied to the daily traffic volumes from short duration counts through the following formula:

$$Estimated\ AADT = DT \times SDOWF\ (\times\ ACF)$$

Where: DT = daily traffic volume from short count
$SDOWF$ = combined seasonal and day of week factor
ACF = axle correction factor

The above computation will result in an estimated AADT computed from each day of the short duration count study. A final AADT may be estimated by averaging the daily AADTs computed for each day.

Again, ACF is removed from the equation if AWDT is expressed in terms of vehicle volume as opposed to two-axle equivalent volume.

Appendix Four provides average AWDT to AADT conversion factors produced from groups of PTRs with similar seasonal traffic volume trends and definable commonalities in relation to functional classification of roadway, geographic area and/or traffic features. These may be used by local agencies when factors specific to the local area are unavailable. However, it is important to note that seasonal variations come in a wide variety of patterns. Routes used almost exclusively for warm-weather recreational travel will display an even greater summer peak than presented by Pattern 3 in the graph above. A route that is strongly influenced by winter recreational activity, such as one leading to a ski resort, can actually display peak periods in the winter months. Judgment and thought should be exercised in the application of seasonal factors to ensure that the characteristics of the roadway where a count to be factored was conducted match the defining features of the factor group being used.

Day of week adjustment factors are sometimes combined to represent multiple days of the week. Axle factors by functional classification provided in Appendix Three are provided as a single factor for all days of the year. The PTR axle factors are provided as factors grouped into Tuesday, Wednesday, Thursday ("Weekday") and Friday, Saturday, Sunday ("Weekend") averages. Likewise, the seasonal adjustment factors in Appendix Four are also provided as monthly weekday and weekend factors representing average Tuesday through Thursday, and Friday through Monday factors, respectively, for each month. Factors should be applied to the data for the days represented by the factors. That is, in lieu of more appropriate factors, the seasonal and axle adjustment factors in Appendices Three and Four for weekdays should be applied to Tuesday, Wednesday, and Thursday short duration count data in the corresponding month(s). The corresponding weekend factors should be applied to Friday, Saturday, and Sunday short duration count data. An analysis of data at the location should be performed to determine if weekend or weekday factors are more appropriate for application to Monday short duration count. Almost exclusively, the weekday (Tuesday through Thursday) factors are more appropriate for application to Monday short duration count data.

Example

The following example demonstrates how AADTs may be estimated from a 72-hour short-duration count collecting two-axle equivalent data. Note that WSDOT maintains axle correction factors and combined seasonal and day of week factors by month and day of week.

Count month and day of week	Count Volume*		Axle Factor		Seasonal Factor		Estimated AADT
Aug (Tue)	32,235	×	0.776	×	0.924	=	23,113
Aug (Wed)	32,306	×	0.785	×	0.903	=	22,900
Aug (Thu)	33,820	×	0.798	×	0.861	=	23,237

**Two-axle equivalent volume*

A final estimated AADT is computed by averaging the estimated AADTs from each day of the count. The final estimated AADT is 23,083.

Note: The difference in estimated AADTs by day demonstrate how the vehicle mix in the traffic stream and the day of week and month of year variation differs between the count location and the source of the factors. Since one cannot expect the patterns to match exactly, some variation is expected. However, widely deviant AADT estimates by day are an indication that 1) bad or atypical data is present in the count location data or factor source data, or 2) the vehicle mix and temporal variations at the source location may differ too greatly from the count location to be applicable. In the latter case, temporal and vehicle mix patterns of the count location should be investigated, to the degree possible to determine if an alternative factor source is a better fit.

Section Four: Short Count Equipment and Methods

Short Count Equipment

The market for quality traffic data collection equipment has resulted in a number of vendors that have developed various traffic counters and an array of accompanying sensors. This allows professionals responsible for the administration of traffic counting programs to determine what their data needs are and purchase accordingly. Traffic counters today will collect volume and speed data and are often capable of recording vehicle classification as well. Several manufactures provide portable traffic counters that will also monitor and record truck wheel, axle, and gross vehicle weights. These systems are lightweight, portable slow-speed and static truck weighing scales that can be transported in the trunk of a car or the back of a truck.

Of course, in deciding upon what equipment to purchase, consideration should be given not only to the type of data that can be collected by a product, but also to the product's cost versus its performance, durability, and ease of use. This cost-benefit analysis should take into account such issues as the type of power source the counter uses (e.g., long-term batteries, solar panels), whether or not the counter provides a visual display of the data as it is being collected, and the time required setting up the counter in the field.

Types of Count Data

As noted above, there are a number of different types of data that can be collected using standard electronic traffic counting equipment. These include:

Volume. Vehicle and axle volume data are by far the most commonly collected data types. This data is usually collected using standard pneumatic road tubes (axle volume) or permanently installed inductive loops (vehicle volume) connected to an electronic counter. Newer radar and video-based collection units are being used to collect vehicle volume with varying degrees of success. Older electronic counters store this data in programmable time increments ranging from one minute to 24 hours. In contrast, counters that employ newer technology are capable of being programmed to store volume data on a per vehicle basis. This data can then be summarized at whatever interval is needed, using software provided by the manufacturer.

Classification. Vehicle classification data is another commonly collected data type. When using road tubes, collection of this data requires the setting of two sensors in order for vehicle speed to be determined. Once the speed is determined, internal software can analyze the timing between axle strikes to establish axle spacing and thus vehicle classification. Permanent installation of two axle detection sensors, such as piezo sensors, allows for vehicles to be classified in the same fashion. However, a permanent installation composed of sensors that not only count axles but also determine vehicle presence (e.g., two inductive loops and a piezo sensor) often produce a higher degree of accuracy.

Various classification schemes are in use. Most equipment capable of collecting classification data allow the user to define how vehicles are classified or use a classification scheme preprogrammed into the counter software. The most familiar classification scheme consists of classifying vehicles as automobiles, single-unit trucks, double-unit trucks, or triple-unit trucks. Other schemes break these four categories into additional subdivisions, separating automobiles into smaller groupings (such as motorcycles, cars, pickups and vans) and further dividing the truck categories. The most well-known of these more refined classification systems is the one employed by FHWA. This system categorizes vehicles into 13 different classes. However, since no mechanical vehicle classification equipment is perfect, many states have included an additional 14th class used for unknown vehicles. Other states have included additional classes for their own purposes, such as monitoring specific types of vehicles in which they have a special interest. A detailed description of the FHWA classification scheme is provided in Appendix Six.

Speed. A third common type of data collected is speed data. It is used for many different types of studies, such as gasoline consumption, 85th percentile speed determination for design studies, and various types of environmental studies (including noise and air quality). Most electronic counters capable of classifying vehicles are also capable of collecting speed data. Traditionally, two sensors are usually required to collect speed information. However, it is possible to collect generalized speed data using a single inductive loop if average vehicle length is known.

Weight. Truck weight data has gained importance as a planning tool since the advent of Weigh-In-Motion data collection equipment. The truck weight data collected by such equipment is an integral component of various nationally mandated programs, such as the Strategic Highway Research Program, that have been implemented with a primary goal of collecting pavement longevity information for use in pavement maintenance and design. These systems are very sophisticated and currently very expensive. However, costs of these systems are expected to decrease as the technology becomes more available.

These systems are capable of tracking individual vehicles and providing classification, single and tandem axle weights, vehicle length, speed, Equivalent Single Axle Loads (ESALs), gross weight, and other user programmable items. Included software programs allow for manipulation of the data in various ways and provide standard and user defined reports.

Gap and Headway. Data on the distance separating vehicles is also gaining importance in the monitoring of roadway safety. The distance between vehicles can be used to identify aggressive driving behaviors and target subsequent enforcement campaigns. Most of today's counters can collect this data.

Occupancy. The ability to determine if a vehicle is within the detection zone of a sensor and how long it has been in that zone is becoming increasingly important as counters are used for traffic flow estimations and travel times. Most counters today, if connected to presence detectors such as inductive loops, can capture vehicle occupancy data.

Traffic Counting Technologies Available

A number of different traffic counters and counter technologies are available from many different traffic collection equipment manufacturers. For a discussion of different short-duration and permanent counter technologies and sensors, the reader is referred to Chapter Two of the 2022 TMG. This resource also discusses the advantages and disadvantages of each technology and sensor type, along with the types of data that each type of counter technology may collect. This information may be salient for local agencies setting up traffic data collection programs.

The WSDOT Transportation Data, GIS and Modeling Group's traffic data collection program currently utilizes three different collection methods when performing short-duration count. By far, the most common method for short-duration count data collection is through the use of portable pneumatic tubes connected to an air switch on a data logger. These are used to collect vehicle volume and axle-based classification data. Additionally, the agency has started using video collection technology, which, once processed by the vendor's video processing platform, produces vehicle volume data. Lastly, manual observation counts are used to collect vehicle classification count data in areas that are not able to be collected using mechanical means.

Since pneumatic tube counts are the industry's most commonly used and best understood method of short-duration traffic count collection, tips on their use are discussed below.

Tips on Setting Portable Counters with Road Tubes

When setting counters with pneumatic tubes, one must take great care to place them in the proper location. Tubes should be set an adequate distance from traffic signals or stop signs, as they do not function well in very slow or stop and go traffic. In addition, areas with numerous driveways should be avoided. Traffic turning out of a driveway will cross nearby road tubes at an angle, often resulting in four individual axle hits on the tube by a single two-axle vehicle.

The total length of a road tube should be no less than 30 feet and no greater than 60 feet, with optimal performance achieved from tubes of approximately 50 feet. If a tube is too short, inaccurate counts can result due to reflecting air pulses from the far end of the tube. If a tube is too long, vehicles impacting near the end of the tube may not register due to a weak air pulse.

To set a counter with a pneumatic tube sensor, first chain and lock the counter to a signpost, telephone pole or other fixed object on the shoulder of the road in order to prevent theft. Then lay the tube across the lanes to be counted. Fasten the far end of the tube to the surface using one-eighth inch nylon cord tied around the tube and attached to either 10-inch spikes driven into the shoulder or PK nails driven into the pavement. In a similar fashion, attach the tube to the shoulder of the roadway near the counter after stretching the tube about six inches in order to take out the slack. (Note that the tube should not be stretched too tightly as this will cut off the air pulse to the counter.) In attaching the tube at these two points, care should be taken to ensure that it is set at a 90-degree angle to the traffic (which may not necessarily be a 90-degree angle to the roadway lane striping). At this point, the tube can be attached to the counter and the equipment checked for accurate functioning.

Road tubes require periodic maintenance. The interior of the tube must be kept clean and free of water and dirt to ensure proper operation and prevent failure of the counter's air switch. The best method of cleaning is by passing compressed air through the tube.

Maintaining Accuracy of the Equipment

Properly functioning equipment is essential to the accuracy necessary for high quality traffic data. All traffic counting and classifying equipment should be tested for accurate functioning when it is first purchased. The equipment should also be inspected regularly during each field setting. Any time a major malfunction or accuracy problem occurs, or when the collected data appears to be suspicious, the equipment should be examined and repaired or replaced. In addition, the FHWA recommends that each counter be rigorously retested every three years.

The results of all equipment testing should be documented and placed in files for later retrieval and comparison with future tests.

Testing New Equipment

It is always best to have the manufacturer provide a demonstration of their merchandise and then perform some independent tests to determine the dependability of the equipment before purchasing. Testing should include getting the data in a format that will interface with your system or software.

The initial acceptance test of short duration count equipment should be rigorous. The type of test to be conducted depends on the capabilities of the new counter. If the counter is capable of vehicle classification, acceptance testing should be based at minimum on the FHWA's 13-bin classification scheme. If the counter is only capable of measuring volumes, tests should be based on either two-axle equivalent volumes (in the case of axle detection equipment such as air tubes) or unit volumes (in the case of vehicle presence detection equipment such as inductive loops). The FHWA suggests that counters collect volume data accurate to within 10%, and equipment capable of vehicle classification should classify 90% of all vehicles accurately.

Usually, new equipment is purchased under a set of performance specifications. In this case, tests should be designed to ensure that the equipment meets these specifications. Accuracy testing of new counting/classifying equipment should be carried out per the procedures set forth in the original Request for Proposal (RFP) or specifications. If acceptance testing specifications are not included in the RFP, then one of the following two methods should be used:

- The preferred method is to check the accuracy by comparing the results of at least one manual count taken at the same time the new counter is in operation. The manual count should be taken for at least four hours on a roadway where the traffic volume is high enough to collect an adequate sample (at least 100 trucks). If the equipment being tested cannot classify, only a manual volume count will be taken. If the equipment is capable of classifying, a manual classification count will provide the basis for comparison.

- The alternate method is to check the accuracy by comparing the results of at least one mechanical count against the new counter. The count period should be for a minimum duration of four hours. The accuracy of the mechanical counter used to make the comparison should be known and well documented. If the new counter is capable of classifying, then the mechanical count will be a classification count.

Continuous Field Check

Each time a counter is set, it should be checked for proper operation and accuracy. This may be accomplished by conducting a short manual count and comparing the results to those given by the mechanical counter. This count should last for five minutes or the passing of 100 vehicles, whichever comes first. If the counter is set for classification, comparisons should be based on a manual classification count. If the counter is set to record volume only, comparisons should be based on either two-axle equivalent volumes (in the case of axle detection equipment) or unit volumes (in the case of vehicle presence detection equipment).

For as long as the counter is set out at the site, every time the counter is field checked an additional short manual count should be made and the results again recorded. If at any time the accuracy of the counter is suspect, the sensors should first be checked. If these are not operating properly, they must be replaced. Then the manual count check can be continued until it is determined whether or not the counter is functioning properly. If the counter is found to be malfunctioning, it must be replaced immediately, and the problem documented. The malfunctioning counter can then be repaired.

Three Year Cycle Testing

All counting equipment should be rigorously retested once every three years, with one third of all counters in current use tested each year. This testing should be performed and documented using the procedures described above under Testing New Equipment.

A schedule for retesting should be developed and maintained. If a piece of equipment has been tested and/or repaired for other purposes within the last three years, and is known to be functioning properly, retesting can be delayed until a three-year period has elapsed.

Documentation and Retention of Test Results

All testing of equipment, and any problems discovered, should be documented for later review and comparison with other test results or collected data. It is suggested that three types of documentation be maintained:

1. A file containing data from the initial acceptance testing of equipment, the three-year cycle testing, and other testing due to the detection of operational problems. Information to be filed includes data from the counter, data from manual counts conducted for comparison, and the results of those comparisons.
2. A "counter problem record book", where information regarding counter malfunctions and other problems is documented.
3. Field sheets that record information from the continuous field checks and other count-specific information needed by office personnel responsible for processing count data. Each sheet should be stored with a copy of the count data and other pertinent information related to the traffic count.

APPENDICES

Appendix One: Definitions of Terms

Adjusted Traffic Count

A base traffic count that has had data adjusted by application of axle, seasonal, day of week or other defined factors.

Annual Average Daily Traffic (AADT)

The estimated average daily traffic over the period of one year.

Automatic Traffic Recorder (ATR)

A device that records the continuous passage of vehicles across a section of road. This is sometimes used to refer to permanently installed, continuous recorders.

Average Daily Traffic (ADT)

The estimated total traffic volume passing a point or on a road segment during a given time period (from one day to one year), divided by the number of days in that time period.

Average Weekday Traffic (AWDT)

The estimated total weekday traffic volume passing a point or on a road segment during a given time period (from one day to one year), divided by the number of weekdays in that time period. For this calculation, "weekday" is often defined exclusive of Fridays due to the fact that Friday traffic typically has a different pattern than Monday through Thursday.

Average Weekend-day Traffic (AWEDT)

The estimated total weekend-day traffic volume passing a point or on a road segment during a given time period (from one day to one year), divided by the number of week-end days in that time period.

Axle Correction Factor

A factor used to estimate vehicle volume from base two-axle equivalent volume data by adjusting for the incidence of vehicles within the traffic stream having more than two axles. This is sometimes referred to simply as an Axle Factor.

Base Traffic Count

A traffic count that has not had data adjusted by application of axle, seasonal, day of week or other defined factors.

Base Traffic Data

The unedited and unadjusted measurements of traffic characteristics, including two-axle equivalent volume, vehicle volume, vehicle classification, vehicle speed, vehicle weight, and axle weight.

Continuous Traffic Count

A traffic count with a count period of an entire year, conducted in order to provide generalizable statistics required for highway design (design hour factors, truck factors, et cetera) and/or factors for adjusting short duration base traffic counts (seasonal factors, day of week factors, et cetera).

Count Period

The beginning and ending date and time of traffic characteristic measurement.

Coverage Count

A traffic count conducted wholly or in part to meet the requirement for system-level estimates of traffic characteristics. The count is typically a short duration traffic count, and may collect one or more types of base traffic data.

Data Obsolescence Count

A traffic count conducted as part of a program to provide more thorough traffic data for a roadway system than is produced through coverage counts. The count is typically a short duration traffic count, and may collect one or more types of base traffic data.

Day of Week Factor

A factor used to adjust base traffic count data in order to compensate for travel behavior fluctuations in relation to the day of week.

Design Hour Volume (DHV)

The hourly traffic volume used in the design of highways, usually represented by the 30th highest hourly volume of the future year chosen for design. Depending on traffic behavior, another hour may be chosen, for example, the 50th or 100th highest hourly volume.

Factor

A quotient calculated for the purpose of multiplication by a Base Traffic Count or Adjusted Traffic Count in order to compensate for temporal variation in traffic volumes, or multiplication by a Base Traffic Count in order to compensate for the incidence of vehicles with more than two axles in the traffic stream.

Functional Classification

The grouping of streets and highways into classes, or systems, according to the character of service they are intended to provide. The recognition that individual roads do not serve travel independently and most travel involves movement through a network or roads is basic to functional classification.

Growth Factor

A factor used to estimate annual average daily traffic from the previous year's annual average daily traffic by adjusting for the annual change in the number of vehicles within the traffic stream.

Manual Traffic Count

Measurement of traffic characteristics based on human observation, which may or may not be electronically recorded.

Mechanical Traffic Count

Measurement of traffic characteristics by sensors and electronic recording of the measurements, independent of human observations.

Monthly Average Daily Traffic (MADT)

The estimated average daily traffic over the period of one month.

Monthly Average Weekday Traffic (MAWDT)

The estimated average weekday traffic over the period of one month.

Monthly Average Weekend-day Traffic (MAWEDT)

The estimated average weekend-day traffic over the period of one month.

Peak Hour

The 60-minute interval that contains the largest volume of traffic during a given time period.

Peak Hour Directional Percentage

The peak hour, peak direction traffic volume expressed as a percentage of total peak hour traffic volume. Often referred to as the D-factor.

Peak Hour Peak Direction

The direction of travel during the peak hour that contains the highest percentage of traffic.

Peak Hour Percentage

The peak hour traffic volume expressed as a percentage of average daily traffic. Often referred to as the K-factor.

Peak Hour Truck Percentage

The truck volume occurring during the peak hour expressed as a percentage of total peak hour volume. Often referred to as the T-factor. Frequently peak hour Single-unit and peak hour combination unit truck percentages are desired.

Permanent Traffic Recorder (PTR)

A traffic counting device that is permanently installed at a roadway location and continuously records the passage of vehicles. This is also referred to as a continuous count station.

Seasonal Factor

A factor used to adjust base-count data in order to compensate for travel behavior fluctuations in relation to time of year.

Short Duration Traffic Count

A traffic count with a count period of less than one year, usually one week or less.

Truck

Any vehicle with six or more tires.

Two-axle Equivalent Volume

The estimated total traffic volume, in terms of the number of axles in contact with the road divided by two, on a road segment during a given time period.

Vehicle Miles Traveled (or Vehicle Kilometers Traveled)

Weighted average traffic volume on a specific road segment multiplied by the length of the road segment. Usually calculated as average daily or total annual vehicle distance traveled.

Appendix Two: WSDOT Permanent Traffic Recorders

The permanently installed, continuous traffic count locations monitored by the Automated Data Collection and Processing Section of the WSDOT Transportation Data, GIS and Modeling Group are listed on the following pages. For each site, a link to the site location in Google Maps is provided. Additionally, a link to the site in WSDOT's traffic data reporting system (which is hosted by MS2) is also provided.

A map of all count stations, including all permanent count recorders is available through WSDOT's traffic data reporting system, which is linked in the *Data Reporting Applications* section of WSDOT's Traffic Count Data page.
https://wsdot.wa.gov/about/transportation-data/travel-data/traffic-count-data

A link to a help and user's guide for interacting with the reporting system is also provided on the page.

Data from any of these sites may be accessed using the reporting system. Upon request, data from any of these sites may be obtained from the Transportation Data, GIS and Modeling Group.

Permanent Traffic Recorder

Station Locations and Descriptions

Site	Google	MS2	Route Number	Route Type and Qualifier	Milepost	Urban/ Rural	Site Description
B02	Google	MS2	12		12.3	Urban	W/O Monte Brady Loop Rd Wye Conn - Brady
B03	Google	MS2	395		27.2	Rural	S/O Vineyard Dr - Pasco
B04	Google	MS2	90		82.7	Rural	W/O W First St I/C - Cle Elum
D1	Google	MS2	405		9.26	Urban	At Lake Washington Blvd Uxing - Bellevue
D10	Google	MS2	520		3.58	Urban	W/O Evergreen Point Rd Transit Station - Seattle
D12	Google	MS2	18		12.55	Urban	At 180th Ave SE Uxing - Covington
D13	Google	MS2	518		0.21	Urban	E/O SR 509 I/C - Burien
D14	Google	MS2	509		26.37	Urban	N/O SR 518 & 146th I/C - Burien
D3	Google	MS2	512		1.53	Urban	W/O SR 7 I/C - Parkland
P01	Google	MS2	2		113.1	Urban	W/O Red Apple Rd - Cashmere
P02	Google	MS2	2		179.1	Rural	E/O J SE - Coulee City
P03	Google	MS2	97		66.3	Rural	S/O Progressive Rd Wye Conn - Wapato
P04	Google	MS2	5		261.33	Urban	N/O Slater Rd I/C - Ferndale
P05	Google	MS2	12		376.98	Rural	W/O Tucannon River Bridge - Dayton
P06	Google	MS2	14		11.9	Urban	E/O Alpine Rd - Camas
P07	Google	MS2	14		17.7	Urban	E/O 32nd St - Washougal
P08	Google	MS2	82		48.5	Rural	W/O SR 22 I/C - Buena
P09	Google	MS2	82		121.42	Rural	W/O Coffin Rd I/C - Plymouth
P1	Google	MS2	5		184.48	Urban	N/O 164th St SW I/C - Everett
P10	Google	MS2	90		218.83	Rural	W/O SR 395 I/C - Ritzville
P11	Google	MS2	97		250.35	Rural	N/O Starr Rd - Pateros
P13	Google	MS2	195		6.01	Rural	S/O Bauer Rd No 9440 - Uniontown
P14	Google	MS2	195		22.2	Rural	S/O SR 270 - Pullman
P15	Google	MS2	195		87.7	Rural	N/O Washington Rd - Spangle
P17	Google	MS2	221		13.1	Rural	S/O Sellards Rd - Prosser
P18	Google	MS2	101		324.8	Rural	S/O Eagle Creek Bridge - Lilliwaup
P19	Google	MS2	522		13.3	Urban	W/O SR 9 I/C - Woodinville
P20	Google	MS2	18		5.26	Urban	E/O SR 164 I/C - Auburn
P21	Google	MS2	9		28.75	Urban	N/O Highland Dr - Arlington
P22	Google	MS2	97		335.3	Rural	S/O Shirley Rd - Oroville
P23	Google	MS2	97		286.16	Rural	S/O SR 20 - Okanogan
P24	Google	MS2	90		298.79	Urban	W/O Spokane Bridge Rd I/C - Spokane
P26	Google	MS2	395		260	Rural	S/O Louise Ave - Orient
P28	Google	MS2	2		301.4	Rural	S/O Norwood Rd - Chattaroy
P29	Google	MS2	82		34.02	Urban	NW/O SR 24 I/C - Yakima
P3	Google	MS2	5		176.72	Urban	At NE 185th St Uxing - Shoreline
P30	Google	MS2	27		77.3	Rural	S/O Gibbs Rd - Spokane Valley
P33	Google	MS2	290		17.66	Rural	W/O Idaho Rd - Newman Lake
P34	Google	MS2	395		212.65	Rural	S/O Immel Rd - Chewelah
P4	Google	MS2	5		106.7	Urban	S/O Pacific Ave I/C - Olympia
P5S	Google	MS2	5		1.98	Urban	S/O SR 500 and NE 39th St I/C - Vancouver
P6	Google	MS2	167		23.7	Urban	N/O S 212th St I/C - Kent

Permanent Traffic Recorder

Station Locations and Descriptions

Site	Google	MS2	Route Number	Route Type and Qualifier	Milepost	Urban/ Rural	Site Description
P7CS	Google	MS2	395		93.01	Rural	S/O SR 90 I/C - Ritzville
P8	Google	MS2	5		44.39	Urban	N/O Kelso Weigh Station - Kelso
P9	Google	MS2	5		274.17	Urban	N/O Peace Portal Dr I/C - Blaine
R001S	Google	MS2	5		207.76	Urban	S/O SR 530 I/C - Marysville
R003E	Google	MS2	101		362.01	Urban	E/O SR 8 - Olympia
R003N	Google	MS2	101		361.37	Urban	N/O SR 8 - Olympia
R003W	Google	MS2	8		20.67	Urban	At SR 101 Bridge - Olympia
R008E	Google	MS2	12		308.41	Rural	E/O SR 730 Spur (WALULA) - Wallula
R014E	Google	MS2	90		254.5	Rural	E/O Fishtrap Rd I/C - Fishtrap
R017	Google	MS2	90		4.22	Urban	At East End Of Mt Baker Tunnel - Seattle
R019S	Google	MS2	5		85.57	Urban	S/O SR 12 I/C - Grand Mound
R020S	Google	MS2	17		30.37	Rural	S/O Lee Rd - Othello
R021	Google	MS2	2		289.79	Urban	N/O Walton Ave - Spokane
R023S	Google	MS2	101		281.15	Rural	S/O Orcas and Holland Drives - Discovery Bay
R034	Google	MS2	5		131.22	Urban	N/O S 56th St I/C - Tacoma
R036	Google	MS2	90		284.46	Urban	W/O Sprague Ave I/C - Spokane Valley
R037	Google	MS2	20		191.9	Rural	W/O Rader Rd - Winthrop
R038	Google	MS2	2		50.12	Rural	E/O Old Cascade Hwy - Skykomish
R039W	Google	MS2	90		33.56	Urban	W/O 468th Ave SE I/C - North Bend
R040W	Google	MS2	12		135.1	Rural	W/O Coal Creek Bridge - Packwood
R041	Google	MS2	97		13.41	Rural	N/O State Frontage Rd - Goldendale
R042	Google	MS2	90		136.62	Rural	E/O Huntzinger Rd I/C - Vantage
R043	Google	MS2	105		31.92	Rural	At Elk River Bridge - Westport
R044	Google	MS2	16		8.38	Urban	W/O Tacoma Narrows Bridge - Tacoma
R045	Google	MS2	5		20.14	Urban	S/O SR 503 I/C - Woodland
R046	Google	MS2	5		168.84	Urban	S/O NE 45th St I/C - Seattle
R047EE	Google	MS2	2		104.84	Rural	E/O SR 97 - Dryden
R047SS	Google	MS2	97		178.19	Rural	S/O Old Blewett Rd - Blewett Pass
R047WW	Google	MS2	2		103.92	Rural	W/O Green and Saunders Rds - Peshastin
R048	Google	MS2	82		24.86	Rural	E/O Selah Creek Rest Area On Ramp - Selah
R050N	Google	MS2	3		44.33	Urban	N/O Newberry Hill I/C - Silverdale
R051N	Google	MS2	205		29.85	Urban	N/O Mill Plain I/C - Vancouver
R052E	Google	MS2	2		0.26	Urban	E/O SR 5 I/C - Everett
R053E	Google	MS2	2		119.77	Urban	E/O SR 97 Alternate Route I/C - Wenatchee
R054S	Google	MS2	101		104.55	Rural	S/O Hensel Rd - Humptulips
R055E	Google	MS2	90		180.33	Rural	E/O SR 17 I/C - Moses Lake
R057	Google	MS2	970		6.85	Rural	W/O Teanaway Rd - Teanaway
R058E	Google	MS2	2		80.2	Rural	E/O Nason Ridge Rd - Nason Creek
R059	Google	MS2	97	AR	201.53	Urban	N/O Ohme Garden and Warehouse Rds - Rocky Reach
R060S	Google	MS2	5		110.03	Urban	S/O SR 510 I/C - Lacey
R062W	Google	MS2	240		37.14	Urban	W/O Columbia Park Trail I/C - Richland
R063	Google	MS2	395		190.29	Rural	S/O SR 292 - Loon Lake

Permanent Traffic Recorder

Station Locations and Descriptions

Site	Google	MS2	Route Number	Route Type and Qualifier	Milepost	Urban/ Rural	Site Description
R064W	Google	MS2	2		250.5	Rural	W/O Gunning Rd - Davenport
R066E	Google	MS2	26		43.06	Rural	E/O SR 17 I/C - Othello
R067W	Google	MS2	12		389.71	Rural	W/O Pataha Creek Bridge - Pomeroy
R068N	Google	MS2	97		293.42	Rural	N/O Copple Rd - Omak
R069	Google	MS2	101		254.34	Urban	East Of Lake Farm Rd - Port Angeles
R070	Google	MS2	395		235.6	Rural	S/O Pingston Rd - Kettle Falls
R073	Google	MS2	101		204	Rural	E/O SR 113/Burnt Mountain Rd - Sappho
R074N	Google	MS2	101		30	Rural	N/O SR 4 - Nemah
R075E	Google	MS2	12		77.78	Rural	E/O Kennedy Rd - Salkum
R076W	Google	MS2	14		100.64	Rural	W/O SR 14 Spur (MARYHL) - Maryhill
R077W	Google	MS2	14		102.27	Rural	W/O Maryhill Rd - Stonehenge
R078	Google	MS2	4		55.05	Rural	W/O SR 432 and Coal Creek Rd - Longview
R081	Google	MS2	182		6.34	Urban	At Columbia River Bridge - Pasco
R082S	Google	MS2	5		193.07	Urban	S/O Pacific Ave I/C - Everett
R083N	Google	MS2	9		32.98	Rural	N/O 53rd Ave NE - Bryant
R084N	Google	MS2	97		220.55	Rural	N/O Brays Rd - Orondo
R085	Google	MS2	104		13.92	Rural	At Hood Canal Bridge - Hood Canal
R087	Google	MS2	395		18.59	Urban	At Columbia River Bridge - Kennewick
R088	Google	MS2	16		18.65	Rural	N/O SR 302 Spur (PURDY) - Burley
R089S	Google	MS2	3		28.68	Rural	S/O Lake Flora Rd - Belfair
R090N	Google	MS2	7		58.2	Urban	N/O 38th St I/C - Tacoma
R091N	Google	MS2	5		119.39	Urban	N/O Dupont I/C - Dupont
R092S	Google	MS2	5		126.2	Urban	S/O SR 512 I/C - Lakewood
R093N	Google	MS2	5		226.96	Urban	N/O SR 536 I/C - Mount Vernon
R095	Google	MS2	104		19.48	Rural	W/O Old Port Gamble Rd Wye Conn - Port Gamble
R096S	Google	MS2	307		2.31	Rural	S/O NE Gunderson Rd - Poulsbo
R097S	Google	MS2	5		100.54	Urban	S/O Tumwater Blvd I/C - Tumwater
R098	Google	MS2	101		366.88	Urban	E/O Cooper Point Rd I/C - Olympia
R099N	Google	MS2	5		103.73	Urban	N/O Deschutes Parkway Off Ramp - Tumwater
R100N	Google	MS2	17		112.25	Rural	N/O SR 172 - Mansfield
R101N	Google	MS2	99		29.37	Urban	N/O Spokane St Bridge - Seattle
R102	Google	MS2	2		287.7	Urban	N/O North River Dr - Spokane
R103	Google	MS2	2	CO DIVISN	289.2	Urban	S/O Euclid Ave - Spokane
R104	Google	MS2	5		75.35	Urban	N/O Labree Rd I/C - Chehalis
R105	Google	MS2	285		4.48	Urban	At Wenatchee River Bridge - Wenatchee
R106E	Google	MS2	512		11.43	Urban	E/O Pioneer Ave I/C - Puyallup
R107W	Google	MS2	16		1.63	Urban	W/O Union Ave I/C - Tacoma
R108	Google	MS2	5		254.1	Urban	N/O Iowa/Ohio St I/C - Bellingham
R109	Google	MS2	5		12.18	Urban	N/O SR 502 I/C - Battleground
R110	Google	MS2	5		217.17	Rural	S/O Starbird Rd I/C - Conway
R111	Google	MS2	395	SP NSC	167.18	Urban	W/O Farwell Rd I/C - Wandemere
R112	Google	MS2	167		5.7	Urban	S/O SR 512 I/C - Fort Malone

Permanent Traffic Recorder

Station Locations and Descriptions

Site	Google	MS2	Route Number	Route Type and Qualifier	Milepost	Urban/ Rural	Site Description
R113	Google	MS2	167		13.3	Urban	S/O 15th St SW I/C - Algona
R114	Google	MS2	395	SP NSC	163.7	Urban	S/O Parksmith Dr I/C - Spokane
R115	Google	MS2	5		35.88	Urban	S/O SR 432 I/C - Kelso
R116	Google	MS2	16		27.09	Urban	W/O Clifton Rd I/C - Port Orchard
R117	Google	MS2	90		2.98	Urban	W/O Rainier Ave I/C - Seattle
R118	Google	MS2	90		278.8	Urban	E/O SR 2 I/C - Spokane
R121	Google	MS2	25		100.6	Rural	N/O Williams Lake Rd - Northport
R122	Google	MS2	25		79.88	Rural	S/O Hillcrest Loop Rd - Kettle Falls
R123	Google	MS2	20		340.64	Rural	E/O Mellenberger Rd - Sherman Pass
R124	Google	MS2	20		356.01	Rural	E/O Evergreen Rd - East Colville
R125	Google	MS2	14		1.93	Urban	E/O SE Columbia Way - Vancouver
R49R	Google	MS2	5	RL 005EXP	168.31	Urban	At E Roanoke St Uxing - Seattle
S103	Google	MS2	285		0.21	Urban	At Columbia River Bridge - East Wenatchee
S189	Google	MS2	5		179.88	Urban	N/O 220th St SW I/C - Mountlake Terrace
S202	Google	MS2	5		162.35	Urban	N/O Corson Ave I/C - Seattle
S203	Google	MS2	90		10.42	Urban	E/O SR 405 I/C - Bellevue
S204	Google	MS2	405		13.04	Urban	N/O SE 8th St I/C - Bellevue
S206	Google	MS2	202		9.65	Urban	W/O 204th Place NE - Redmond
S207	Google	MS2	5		155.55	Urban	N/O SR 405 and SR 518 I/C - Tukwila
S208	Google	MS2	5		153.26	Urban	S/O SR 405 and SR 518 I/C - Tukwilla
S209	Google	MS2	405		19.05	Urban	S/O NE 116th St I/C - Kirkland
S210	Google	MS2	405		4.9	Urban	n SR 405 N/O Sunset Blvd NE - Renton
S503	Google	MS2	433		0.7	Urban	At Columbia River Bridge - Longview
S533	Google	MS2	520		7.93	Urban	W/O 148th Ave NE I/C - Bellevue
S547	Google	MS2	520		12.05	Urban	E/O W Lake Sammamish Pkwy I/C - Redmond
S612	Google	MS2	24		43.5	Rural	At Columbia River Bridge - Vernita
S706	Google	MS2	20		20.02	Rural	E/O Rhododendron Park - Coupeville
S803S	Google	MS2	5		269.56	Rural	S/O Birch Bay/Lynden Rd I/C - Custer
S809S	Google	MS2	5		148.07	Urban	S/O SR 516 I/C - Kent
S818E	Google	MS2	12		185.62	Rural	E/O SR 410 - Naches
S818S	Google	MS2	12		185.25	Rural	S/O Jct SR 410 - White Pass
S818W	Google	MS2	410		116.26	Rural	W/O SR 12 - Chinook Pass
S819	Google	MS2	411		7.97	Rural	S/O Sandy Bend Rd - Lexington
S820W	Google	MS2	20		304.6	Rural	W/O Fairgrounds Rd - Republic
S824	Google	MS2	405		28.99	Urban	N/O SR 527 I/C - Bothell
S825	Google	MS2	90		14.65	Urban	W/O SR 900 I/C - Issaquah
S826	Google	MS2	90		23.54	Rural	E/O Jones Rd I/C - Preston
S837	Google	MS2	5		136.75	Urban	S/O SR 99 I/C - Fife
S839	Google	MS2	599		1.15	Urban	E/O SR 99 I/C - Tukwila
S841NE	Google	MS2	401		0.15	Rural	NE/O SR 101 - Astoria/Megler
S841NW	Google	MS2	101		0.6	Rural	NW/O SR 401 I/C - Astoria/Chinook
S901	Google	MS2	90		47.71	Rural	At Tinkham Rd Uxing - Tinkham

Permanent Traffic Recorder

Station Locations and Descriptions

Site	Google	MS2	Route Number	Route Type and Qualifier	Milepost	Urban/ Rural	Site Description
S903	Google	MS2	90		63.98	Rural	At Cabin Creek Rd Uxing - Cabin Creek
B02	Google	MS2	12		12.3	Urban	W/O Monte Brady Loop Rd Wye Conn - Brady
B03	Google	MS2	395		27.2	Rural	S/O Vineyard Dr - Pasco
B04	Google	MS2	90		82.7	Rural	W/O W First St I/C - Cle Elum
D1	Google	MS2	405		9.26	Urban	At Lake Washington Blvd Uxing - Bellevue

Appendix Three: Axle Correction Factors

Axle correction factors can be derived from classification counts that provide both the number of vehicles (units) and the number of axles passing the count site. The factor is calculated by dividing the total number of vehicles by the total number of two-axle equivalents (i.e., the number of axles divided by two). If the local agency has access to vehicle classification counts within its jurisdiction, these should be used to calculate axle correction factors. If axle counts are not available, they may be estimated from vehicle classification data using axles/vehicle factors based on the vehicle type, multiplied by the number of vehicles of that type. Two-axle equivalent volume data should be adjusted to estimated vehicle volume data through the application of an axle correction factor derived from one or more counts conducted nearby or at a location with similar characteristics. If an appropriate factor is unavailable, one may be used from the table below, which provides statewide average daily axle correction factors by functional class of highway.

Average Axle Correction Factors by Functional Class of Highway

Source Data from 2019, 2022 and 2023[3]

Code	Description	Factor
R1	Interstate, Rural	0.81
R2	Principal Arterial Freeway, Rural	0.86
R3	Other Principal Arterial, Rural	0.89
R4	Minor Arterial, Rural	0.90
R5	Major Collector, Rural	0.92
R6	Minor Collector, Rural	N/A
R7	Local Access, Rural	N/A
U1	Interstate, Urban	0.92
U2	Principal Arterial Freeway, Urban	0.95
U3	Other Principal Arterial, Urban	0.97
U4	Minor Arterial, Urban	0.96
U5	Major Collector, Urban	0.95
U6	Minor Collector, Urban	N/A
U7	Local Access, Urban	N/A

[3] 2020 and 2021 data are excluded due to the atypical nature of travel during the COVID-19 pandemic.

If a count location can be matched to a functional class for which the table provides a factor, that value should be used. Counts conducted on a rural functional class 6 or 7 highway should be factored using the value closest to 1.00 provided for a rural functional class. Counts conducted on an urban functional class 6 or 7 highway should be factored using the value closest to 1.00 provided for an urban functional class. The exceptions to these guidelines are that: 1) if a count location, whether urban or rural, exists within an urbanized area as defined by the U.S. Census Bureau then an urban factor should be employed; and 2) if a count location is within a city with a population of less than 10,000, but not within an urbanized area, then a rural factor should usually be used.

Note that because the factors provided in the table above are based on both weekday and weekend source data, discretion is recommended regarding their use when a count to be factored is not representative of all days of the week. The importance of this is illustrated by the table beginning on the next page, which provides axle correction factors from WSDOT permanent traffic recorders. As can be seen, weekday and weekend factors are often significantly different. It is suggested that local agencies utilize the factor information below to supplement their counting programs whenever applicable.

The following table includes three-year average[4] axle factors by day of week, grouped into weekday (Monday through Friday averages), and weekend day (Saturday through Sunday averages) from PTR sites equipped with axle-based vehicle classification equipment. Frequently, due to equipment issues, nearby events, construction, etc., classification data at a site is deemed atypical or erroneous. For days when this occurs, axle factors are not generated. The table only includes factors from a year in the average day of week axle factors are available for all days of week in all months.

[4] Note that 2020 and 2021 data are excluded due to the atypical nature of travel during the COVID-19 pandemic.

Three-Year Average Axle Correction Factors from WSDOT Permanent Traffic Recorders

Weekday = Average Mon - Fri **Weekend = Average Sat - Sun**

PTR	Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Years Included
B02	Weekday	0.909	0.915	0.917	0.921	0.918	0.922	0.921	0.923	0.920	0.921	0.918	0.915	2022, 2023
B02	Weekend	0.979	0.981	0.980	0.981	0.982	0.980	0.975	0.976	0.972	0.978	0.980	0.981	2022, 2023
B03	Weekday	0.716	0.724	0.726	0.735	0.746	0.758	0.743	0.744	0.720	0.726	0.730	0.728	2023, 2024
B03	Weekend	0.832	0.847	0.856	0.861	0.866	0.868	0.850	0.851	0.826	0.841	0.850	0.838	2023, 2024
B04	Weekday	0.654	0.668	0.694	0.716	0.732	0.754	0.770	0.769	0.738	0.729	0.701	0.686	2023, 2024
B04	Weekend	0.822	0.834	0.875	0.888	0.898	0.898	0.899	0.901	0.892	0.891	0.861	0.854	2023, 2024
D1	Weekday	0.945	0.946	0.947	0.945	0.946	0.947	0.950	0.952	0.950	0.949	0.950	0.953	2022
D1	Weekend	0.981	0.983	0.983	0.983	0.982	0.981	0.981	0.983	0.982	0.983	0.983	0.983	2022
D10	Weekday	0.994	0.993	0.992	0.992	0.988	0.989	0.991	0.991	0.989	0.992	0.991	0.991	2023, 2024
D10	Weekend	0.999	0.999	0.999	0.995	0.999	0.998	0.999	0.996	0.998	0.998	0.999	0.999	2023, 2024
D12	Weekday	0.826	0.828	0.827	0.831	0.840	0.843	0.843	0.842	0.832	0.831	0.827	0.837	2022, 2023, 2024
D12	Weekend	0.921	0.927	0.929	0.930	0.935	0.933	0.931	0.932	0.929	0.924	0.920	0.923	2022, 2023, 2024
D13	Weekday	0.988	0.988	0.988	0.987	0.987	0.987	0.988	0.988	0.988	0.988	0.989	0.990	2022, 2023, 2024
D13	Weekend	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	0.997	2022, 2023, 2024
D14	Weekday	0.987	0.988	0.988	0.987	0.987	0.988	0.988	0.988	0.988	0.988	0.988	0.990	2022, 2023, 2024
D14	Weekend	0.997	0.997	0.998	0.998	0.997	0.997	0.997	0.997	0.997	0.997	0.998	0.998	2022, 2023, 2024
D3	Weekday	0.923	0.925	0.923	0.924	0.922	0.921	0.922	0.922	0.923	0.924	0.923	0.924	2022, 2023, 2024
D3	Weekend	0.967	0.969	0.970	0.969	0.968	0.967	0.966	0.966	0.969	0.967	0.965	0.968	2022, 2023, 2024
P01	Weekday	0.936	0.938	0.938	0.937	0.936	0.934	0.935	0.940	0.935	0.933	0.934	0.945	2023, 2024
P01	Weekend	0.981	0.984	0.983	0.981	0.981	0.975	0.974	0.977	0.978	0.979	0.982	0.988	2023, 2024
P02	Weekday	0.857	0.791	0.860	0.896	0.906	0.902	0.906	0.874	0.908	0.904	0.884	0.887	2022, 2023, 2024
P02	Weekend	0.960	0.965	0.966	0.960	0.965	0.959	0.946	0.920	0.960	0.965	0.971	0.962	2022, 2023, 2024
P03	Weekday	0.921	0.925	0.922	0.917	0.919	0.917	0.919	0.919	0.911	0.916	0.926	0.934	2022, 2023, 2024
P03	Weekend	0.969	0.974	0.972	0.970	0.972	0.968	0.963	0.965	0.958	0.962	0.973	0.974	2022, 2023, 2024
P04	Weekday	0.914	0.916	0.919	0.919	0.918	0.918	0.922	0.922	0.919	0.920	0.919	0.925	2022, 2023, 2024
P04	Weekend	0.953	0.959	0.960	0.960	0.961	0.958	0.963	0.963	0.960	0.960	0.962	0.961	2022, 2023, 2024
P05	Weekday	0.759	0.768	0.766	0.780	0.788	0.800	0.774	0.753	0.760	0.767	0.766	0.763	2022, 2023, 2024
P05	Weekend	0.891	0.902	0.905	0.903	0.911	0.916	0.890	0.858	0.890	0.896	0.900	0.885	2022, 2023, 2024
P06	Weekday	0.970	0.969	0.969	0.969	0.969	0.968	0.969	0.967	0.966	0.967	0.970	0.972	2022, 2023, 2024
P06	Weekend	0.993	0.993	0.994	0.993	0.993	0.992	0.992	0.992	0.990	0.991	0.994	0.994	2022, 2023, 2024
P07	Weekday	0.930	0.927	0.929	0.933	0.940	0.943	0.942	0.934	0.927	0.929	0.932	0.938	2022, 2023, 2024
P07	Weekend	0.985	0.986	0.987	0.986	0.988	0.988	0.988	0.988	0.979	0.979	0.986	0.988	2022, 2023, 2024
P08	Weekday	0.811	0.812	0.824	0.822	0.825	0.827	0.827	0.814	0.797	0.788	0.808	0.818	2022, 2023, 2024
P08	Weekend	0.898	0.900	0.914	0.910	0.913	0.903	0.902	0.893	0.883	0.874	0.891	0.896	2022, 2023, 2024

Three-Year Average Axle Correction Factors from WSDOT Permanent Traffic Recorders

Weekday = Average Mon - Fri **Weekend = Average Sat - Sun**

PTR	Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Years Included
P09	Weekday	0.739	0.756	0.747	0.764	0.771	0.776	0.784	0.776	0.766	0.763	0.756	0.754	2022, 2023, 2024
P09	Weekend	0.809	0.822	0.823	0.838	0.843	0.842	0.846	0.840	0.829	0.827	0.822	0.811	2022, 2023, 2024
P1	Weekday	0.932	0.932	0.932	0.933	0.933	0.934	0.935	0.934	0.933	0.933	0.934	0.938	2022, 2023, 2024
P1	Weekend	0.973	0.975	0.976	0.976	0.975	0.975	0.975	0.975	0.976	0.976	0.975	0.975	2022, 2023, 2024
P10	Weekday	0.659	0.677	0.693	0.708	0.727	0.743	0.749	0.751	0.727	0.717	0.693	0.693	2022, 2023, 2024
P10	Weekend	0.796	0.818	0.837	0.844	0.854	0.860	0.862	0.868	0.857	0.848	0.826	0.801	2022, 2023, 2024
P11	Weekday	0.883	0.892	0.887	0.887	0.889	0.901	0.900	0.899	0.864	0.859	0.880	0.890	2022, 2023, 2024
P11	Weekend	0.971	0.977	0.975	0.971	0.974	0.968	0.956	0.963	0.929	0.935	0.972	0.975	2022, 2023, 2024
P13	Weekday	0.863	0.869	0.863	0.868	0.873	0.870	0.869	0.865	0.867	0.874	0.875	0.873	2022, 2023, 2024
P13	Weekend	0.942	0.947	0.949	0.947	0.951	0.950	0.939	0.932	0.940	0.947	0.949	0.944	2022, 2023, 2024
P14	Weekday	0.819	0.827	0.823	0.831	0.844	0.849	0.847	0.839	0.833	0.838	0.839	0.834	2022, 2023, 2024
P14	Weekend	0.918	0.927	0.931	0.933	0.936	0.937	0.929	0.920	0.924	0.931	0.930	0.920	2022, 2023, 2024
P15	Weekday	0.898	0.910	0.908	0.909	0.915	0.908	0.905	0.915	0.910	0.918	0.919	0.927	2023
P15	Weekend	0.954	0.969	0.972	0.967	0.969	0.965	0.961	0.965	0.966	0.966	0.972	0.969	2023
P17	Weekday	0.621	0.630	0.641	0.653	0.663	0.670	0.663	0.654	0.652	0.619	0.641	0.645	2022, 2023, 2024
P17	Weekend	0.669	0.678	0.708	0.721	0.742	0.744	0.741	0.723	0.727	0.697	0.704	0.697	2022, 2023, 2024
P18	Weekday	0.858	0.857	0.862	0.874	0.885	0.893	0.908	0.907	0.885	0.865	0.853	0.825	2024
P18	Weekend	0.963	0.966	0.969	0.976	0.977	0.977	0.980	0.977	0.977	0.975	0.970	0.964	2024
P19	Weekday	0.955	0.953	0.949	0.950	0.950	0.949	0.949	0.946	0.948	0.951	0.952	0.955	2023, 2024
P19	Weekend	0.992	0.992	0.991	0.990	0.991	0.990	0.990	0.990	0.991	0.992	0.991	0.993	2023, 2024
P20	Weekday	0.871	0.877	0.874	0.878	0.879	0.884	0.886	0.884	0.874	0.879	0.878	0.890	2022
P20	Weekend	0.950	0.954	0.953	0.955	0.956	0.955	0.956	0.954	0.953	0.952	0.952	0.956	2022
P21	Weekday	0.967	0.967	0.966	0.964	0.966	0.961	0.956	0.964	0.967	0.968	0.969	0.969	2022, 2023, 2024
P21	Weekend	0.993	0.993	0.992	0.992	0.992	0.990	0.989	0.991	0.990	0.992	0.992	0.994	2022, 2023, 2024
P22	Weekday	0.785	0.788	0.797	0.815	0.817	0.835	0.856	0.846	0.810	0.798	0.799	0.811	2022, 2023, 2024
P22	Weekend	0.932	0.937	0.933	0.937	0.952	0.947	0.953	0.950	0.938	0.931	0.942	0.948	2022, 2023, 2024
P23	Weekday	0.880	0.885	0.879	0.885	0.879	0.886	0.894	0.877	0.859	0.844	0.868	0.885	2023, 2024
P23	Weekend	0.960	0.961	0.959	0.953	0.951	0.953	0.948	0.934	0.909	0.913	0.953	0.956	2023, 2024
P24	Weekday	0.912	0.921	0.911	0.911	0.913	0.915	0.924	0.917	0.914	0.914	0.915	0.914	2022
P24	Weekend	0.939	0.944	0.950	0.950	0.944	0.942	0.946	0.945	0.943	0.943	0.941	0.937	2022
P26	Weekday	0.800	0.802	0.834	0.856	0.850	0.849	0.869	0.862	0.855	0.856	0.850	0.845	2022, 2023, 2024
P26	Weekend	0.979	0.974	0.982	0.974	0.966	0.966	0.983	0.972	0.962	0.972	0.969	0.979	2022, 2023, 2024
P27	Weekday	0.689	0.579	0.576	0.675	0.690	0.728	0.776	0.773	0.720	0.744	0.739	0.921	2022
P27	Weekend	0.834	0.822	0.782	0.856	0.906	0.878	0.941	0.914	0.886	0.877	0.883	0.890	2022

Three-Year Average Axle Correction Factors from WSDOT Permanent Traffic Recorders

Weekday = Average Mon - Fri **Weekend = Average Sat - Sun**

PTR	Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Years Included
P28	Weekday	0.974	0.973	0.970	0.967	0.965	0.964	0.964	0.964	0.961	0.963	0.968	0.974	2022, 2023, 2024
P28	Weekend	0.990	0.990	0.988	0.986	0.985	0.984	0.984	0.985	0.984	0.985	0.987	0.990	2022, 2023, 2024
P29	Weekday	0.862	0.864	0.867	0.868	0.872	0.870	0.875	0.856	0.845	0.838	0.856	0.864	2023, 2024
P29	Weekend	0.930	0.935	0.938	0.938	0.939	0.932	0.934	0.919	0.908	0.903	0.925	0.932	2023, 2024
P3	Weekday	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P3	Weekend	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P30	Weekday	0.962	0.966	0.960	0.958	0.956	0.954	0.937	0.943	0.946	0.950	0.957	0.963	2023, 2024
P30	Weekend	0.991	0.992	0.992	0.988	0.988	0.987	0.981	0.983	0.985	0.984	0.988	0.992	2023, 2024
P33	Weekday	0.890	0.891	0.897	0.881	0.880	0.887	0.895	0.888	0.879	0.879	0.889	0.909	2022
P33	Weekend	0.950	0.961	0.963	0.961	0.963	0.963	0.967	0.962	0.961	0.963	0.957	0.965	2022
P34	Weekday	0.897	0.911	0.918	0.907	0.900	0.891	0.898	0.901	0.897	0.897	0.902	0.902	2023, 2024
P34	Weekend	0.968	0.969	0.974	0.968	0.970	0.968	0.967	0.969	0.967	0.967	0.970	0.974	2023, 2024
P4	Weekday	0.872	0.876	0.876	0.877	0.876	0.876	0.878	0.880	0.877	0.878	0.878	0.878	2022, 2023, 2024
P4	Weekend	0.937	0.945	0.947	0.947	0.948	0.946	0.947	0.946	0.946	0.946	0.942	0.941	2022, 2023, 2024
P5S	Weekday	0.906	0.904	0.910	0.908	0.907	0.901	0.902	0.909	0.907	0.909	0.907	0.909	2023, 2024
P5S	Weekend	0.952	0.954	0.957	0.957	0.957	0.954	0.952	0.957	0.957	0.955	0.953	0.952	2023, 2024
P6	Weekday	0.935	0.936	0.937	0.938	0.936	0.936	0.936	0.935	0.934	0.936	0.939	0.940	2022, 2023, 2024
P6	Weekend	0.979	0.980	0.981	0.981	0.980	0.979	0.979	0.980	0.981	0.979	0.979	0.980	2022, 2023, 2024
P7CS	Weekday	0.649	0.664	0.674	0.685	0.704	0.721	0.732	0.726	0.707	0.697	0.679	0.669	2022, 2023, 2024
P7CS	Weekend	0.781	0.794	0.822	0.827	0.835	0.845	0.845	0.851	0.834	0.835	0.810	0.793	2022, 2023, 2024
P8	Weekday	0.725	0.736	0.744	0.748	0.748	0.761	0.772	0.771	0.760	0.747	0.742	0.739	2022, 2023, 2024
P8	Weekend	0.869	0.885	0.893	0.896	0.898	0.902	0.906	0.907	0.903	0.895	0.881	0.875	2022, 2023, 2024
P9	Weekday	0.726	0.743	0.755	0.791	0.798	0.803	0.846	0.852	0.831	0.830	0.828	0.843	2022
P9	Weekend	0.804	0.848	0.842	0.893	0.893	0.894	0.927	0.934	0.927	0.927	0.927	0.929	2022
R001S	Weekday	0.899	0.900	0.901	0.904	0.902	0.904	0.907	0.909	0.904	0.903	0.903	0.910	2022, 2023, 2024
R001S	Weekend	0.959	0.961	0.962	0.965	0.963	0.962	0.963	0.965	0.964	0.964	0.962	0.962	2022, 2023, 2024
R003E	Weekday	0.953	0.953	0.953	0.953	0.953	0.954	0.953	0.952	0.951	0.953	0.955	0.957	2022, 2023, 2024
R003E	Weekend	0.988	0.988	0.989	0.988	0.987	0.987	0.985	0.986	0.985	0.987	0.988	0.989	2022, 2023, 2024
R003N	Weekday	0.960	0.957	0.958	0.957	0.959	0.960	0.958	0.958	0.960	0.959	0.958	0.963	2022, 2024
R003N	Weekend	0.989	0.990	0.990	0.989	0.989	0.989	0.988	0.988	0.988	0.990	0.989	0.991	2022, 2024
R003W	Weekday	0.943	0.947	0.946	0.948	0.947	0.948	0.948	0.948	0.947	0.951	0.951	0.948	2022, 2024
R003W	Weekend	0.986	0.985	0.986	0.986	0.985	0.985	0.983	0.982	0.982	0.985	0.986	0.985	2022, 2024
R008E	Weekday	0.863	0.875	0.879	0.884	0.883	0.887	0.848	0.846	0.855	0.856	0.868	0.877	2022, 2023, 2024
R008E	Weekend	0.952	0.962	0.960	0.961	0.960	0.962	0.922	0.924	0.940	0.943	0.957	0.961	2022, 2023, 2024

Three-Year Average Axle Correction Factors from WSDOT Permanent Traffic Recorders

Weekday = Average Mon - Fri **Weekend = Average Sat - Sun**

PTR	Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Years Included
R014E	Weekday	0.660	0.672	0.693	0.703	0.718	0.743	0.752	0.752	0.724	0.713	0.692	0.679	2022, 2023, 2024
R014E	Weekend	0.790	0.802	0.835	0.837	0.848	0.858	0.859	0.866	0.846	0.841	0.816	0.796	2022, 2023, 2024
R019S	Weekday	0.771	0.780	0.786	0.787	0.786	0.790	0.798	0.800	0.790	0.785	0.780	0.784	2022, 2023, 2024
R019S	Weekend	0.890	0.904	0.910	0.912	0.912	0.911	0.915	0.916	0.912	0.908	0.898	0.898	2022, 2023, 2024
R020S	Weekday	0.768	0.771	0.772	0.783	0.787	0.788	0.781	0.775	0.762	0.761	0.772	0.780	2022, 2023, 2024
R020S	Weekend	0.866	0.881	0.881	0.888	0.890	0.886	0.881	0.860	0.853	0.865	0.876	0.879	2022, 2023, 2024
R023S	Weekday	0.905	0.912	0.909	0.919	0.922	0.921	0.928	0.937	0.937	0.924	0.919	0.912	2022, 2024
R023S	Weekend	0.980	0.981	0.981	0.983	0.983	0.981	0.985	0.986	0.987	0.982	0.983	0.979	2022, 2024
R034	Weekday	0.909	0.908	0.917	0.905	0.912	0.918	0.919	0.919	0.917	0.917	0.918	0.915	2024
R034	Weekend	0.964	0.964	0.969	0.963	0.968	0.966	0.968	0.968	0.967	0.969	0.965	0.964	2024
R036	Weekday	0.942	0.943	0.938	0.936	0.939	0.940	0.943	0.942	0.939	0.939	0.940	0.944	2022, 2023, 2024
R036	Weekend	0.959	0.961	0.961	0.960	0.962	0.962	0.963	0.963	0.961	0.961	0.961	0.964	2022, 2023, 2024
R037	Weekday	0.992	0.993	0.967	0.946	0.939	0.943	0.955	0.949	0.943	0.942	0.941	0.990	2022, 2023, 2024
R037	Weekend	0.992	0.995	0.992	0.990	0.985	0.983	0.981	0.982	0.984	0.982	0.983	0.991	2022, 2023, 2024
R038	Weekday	0.971	0.968	0.955	0.948	0.939	0.948	0.956	0.956	0.947	0.938	0.928	0.963	2022, 2023, 2024
R038	Weekend	0.995	0.994	0.992	0.987	0.986	0.986	0.985	0.985	0.987	0.989	0.987	0.995	2022, 2023, 2024
R039W	Weekday	0.721	0.737	0.734	0.735	0.745	0.765	0.778	0.775	0.752	0.738	0.714	0.710	2022, 2023, 2024
R039W	Weekend	0.911	0.916	0.916	0.908	0.909	0.915	0.920	0.919	0.910	0.903	0.887	0.888	2022, 2023, 2024
R040W	Weekday	0.793	0.814	0.814	0.764	0.777	0.821	0.867	0.854	0.819	0.783	0.762	0.818	2022, 2023, 2024
R040W	Weekend	0.961	0.956	0.954	0.925	0.914	0.931	0.937	0.928	0.932	0.910	0.909	0.950	2022, 2023, 2024
R041	Weekday	0.709	0.716	0.727	0.738	0.749	0.757	0.760	0.764	0.750	0.736	0.723	0.723	2023, 2024
R041	Weekend	0.826	0.833	0.849	0.866	0.867	0.866	0.865	0.873	0.857	0.855	0.849	0.823	2023, 2024
R042	Weekday	0.626	0.636	0.661	0.693	0.709	0.729	0.739	0.728	0.704	0.683	0.668	0.654	2022, 2023, 2024
R042	Weekend	0.818	0.826	0.854	0.869	0.874	0.887	0.882	0.875	0.857	0.843	0.848	0.818	2022, 2023, 2024
R043	Weekday	0.983	0.982	0.978	0.980	0.973	0.964	0.970	0.967	0.968	0.967	0.971	0.956	2022, 2023, 2024
R043	Weekend	0.994	0.994	0.994	0.994	0.989	0.984	0.986	0.984	0.984	0.985	0.989	0.973	2022, 2023, 2024
R044	Weekday	0.966	0.965	0.963	0.964	0.964	0.964	0.963	0.963	0.964	0.965	0.966	0.968	2022, 2023, 2024
R044	Weekend	0.988	0.988	0.988	0.987	0.987	0.987	0.986	0.986	0.987	0.987	0.986	0.988	2022, 2023, 2024
R045	Weekday	0.797	0.803	0.809	0.809	0.810	0.815	0.820	0.822	0.817	0.812	0.806	0.811	2022, 2023, 2024
R045	Weekend	0.899	0.911	0.916	0.917	0.920	0.919	0.923	0.924	0.921	0.917	0.909	0.908	2022, 2023, 2024
R047EE	Weekday	0.918	0.922	0.920	0.921	0.922	0.920	0.922	0.928	0.918	0.916	0.913	0.928	2022, 2023, 2024
R047EE	Weekend	0.979	0.980	0.979	0.979	0.980	0.976	0.973	0.976	0.971	0.975	0.977	0.985	2022, 2023, 2024
R047SS	Weekday	0.803	0.814	0.817	0.828	0.838	0.850	0.857	0.869	0.852	0.833	0.807	0.852	2022, 2023, 2024
R047SS	Weekend	0.959	0.962	0.961	0.963	0.967	0.959	0.958	0.967	0.961	0.961	0.958	0.974	2022, 2023, 2024

Three-Year Average Axle Correction Factors from WSDOT Permanent Traffic Recorders

Weekday = Average Mon - Fri **Weekend = Average Sat - Sun**

PTR	Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Years Included
R047WW	Weekday	0.966	0.966	0.965	0.963	0.962	0.962	0.958	0.960	0.953	0.954	0.957	0.974	2022, 2023, 2024
R047WW	Weekend	0.992	0.991	0.991	0.990	0.989	0.987	0.988	0.986	0.982	0.987	0.991	0.995	2022, 2023, 2024
R048	Weekday	0.713	0.720	0.735	0.751	0.764	0.762	0.762	0.758	0.742	0.736	0.734	0.724	2023, 2024
R048	Weekend	0.846	0.850	0.878	0.889	0.886	0.882	0.881	0.878	0.866	0.861	0.866	0.850	2023, 2024
R050N	Weekday	0.963	0.963	0.961	0.961	0.960	0.960	0.961	0.962	0.961	0.962	0.964	0.965	2022, 2023, 2024
R050N	Weekend	0.988	0.988	0.987	0.987	0.986	0.986	0.986	0.986	0.986	0.987	0.987	0.988	2022, 2023, 2024
R051N	Weekday	0.932	0.934	0.931	0.932	0.933	0.934	0.934	0.935	0.935	0.935	0.935	0.934	2022, 2023, 2024
R051N	Weekend	0.970	0.973	0.972	0.972	0.973	0.971	0.973	0.972	0.973	0.973	0.972	0.971	2022, 2023, 2024
R052E	Weekday	0.976	0.975	0.976	0.975	0.974	0.971	0.972	0.973	0.973	0.975	0.976	0.979	2022, 2023, 2024
R052E	Weekend	0.995	0.995	0.995	0.994	0.994	0.994	0.993	0.993	0.993	0.995	0.995	0.995	2022, 2023, 2024
R053E	Weekday	0.938	0.940	0.935	0.932	0.934	0.929	0.928	0.928	0.917	0.915	0.929	0.939	2022, 2023, 2024
R053E	Weekend	0.983	0.985	0.984	0.982	0.982	0.975	0.969	0.972	0.962	0.960	0.980	0.986	2022, 2023, 2024
R054S	Weekday	0.823	0.815	0.828	0.848	0.846	0.868	0.879	0.857	0.859	0.846	0.833	0.840	2022, 2023, 2024
R054S	Weekend	0.987	0.989	0.989	0.989	0.987	0.987	0.988	0.985	0.984	0.985	0.986	0.986	2022, 2023, 2024
R055E	Weekday	0.683	0.699	0.717	0.728	0.744	0.756	0.764	0.770	0.742	0.730	0.716	0.717	2022, 2023, 2024
R055E	Weekend	0.803	0.825	0.845	0.849	0.857	0.860	0.863	0.871	0.855	0.840	0.829	0.811	2022, 2023, 2024
R057	Weekday	0.852	0.866	0.864	0.876	0.884	0.894	0.897	0.907	0.888	0.866	0.852	0.871	2022, 2023, 2024
R057	Weekend	0.971	0.971	0.969	0.972	0.974	0.970	0.970	0.975	0.972	0.970	0.965	0.979	2022, 2023, 2024
R058E	Weekday	0.946	0.950	0.942	0.940	0.939	0.945	0.954	0.940	0.929	0.930	0.929	0.952	2022, 2023, 2024
R058E	Weekend	0.991	0.991	0.989	0.985	0.986	0.984	0.984	0.984	0.987	0.987	0.986	0.993	2022, 2023, 2024
R059	Weekday	0.981	0.978	0.972	0.961	0.959	0.954	0.958	0.954	0.944	0.949	0.959	0.980	2022, 2023, 2024
R059	Weekend	0.994	0.995	0.993	0.991	0.990	0.990	0.989	0.990	0.984	0.988	0.992	0.994	2022, 2023, 2024
R060S	Weekday	0.854	0.856	0.859	0.858	0.856	0.858	0.859	0.860	0.857	0.857	0.856	0.861	2023, 2024
R060S	Weekend	0.931	0.937	0.941	0.942	0.941	0.938	0.935	0.934	0.936	0.937	0.933	0.935	2023, 2024
R062W	Weekday	0.991	0.991	0.990	0.989	0.990	0.989	0.989	0.988	0.990	0.990	0.990	0.992	2022, 2023
R062W	Weekend	0.997	0.997	0.997	0.997	0.997	0.996	0.996	0.996	0.996	0.996	0.997	0.998	2022, 2023
R063	Weekday	0.935	0.937	0.937	0.935	0.933	0.932	0.940	0.937	0.931	0.935	0.937	0.943	2022, 2023, 2024
R063	Weekend	0.979	0.980	0.981	0.978	0.977	0.977	0.977	0.978	0.976	0.975	0.979	0.982	2022, 2023, 2024
R064W	Weekday	0.906	0.908	0.907	0.901	0.895	0.902	0.900	0.905	0.901	0.899	0.899	0.908	2022, 2023, 2024
R064W	Weekend	0.952	0.957	0.958	0.953	0.953	0.951	0.945	0.945	0.952	0.954	0.953	0.956	2022, 2023, 2024
R066E	Weekday	0.765	0.775	0.779	0.798	0.810	0.821	0.785	0.803	0.776	0.768	0.782	0.794	2022, 2023, 2024
R066E	Weekend	0.884	0.908	0.917	0.927	0.933	0.925	0.900	0.920	0.914	0.892	0.915	0.912	2022, 2023, 2024
R067W	Weekday	0.759	0.764	0.761	0.774	0.790	0.803	0.777	0.778	0.764	0.776	0.781	0.761	2024
R067W	Weekend	0.882	0.897	0.901	0.898	0.914	0.920	0.887	0.895	0.890	0.904	0.903	0.900	2024

Three-Year Average Axle Correction Factors from WSDOT Permanent Traffic Recorders

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PTR	Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Years Included
R068N	Weekday	0.939	0.939	0.937	0.934	0.929	0.932	0.933	0.924	0.916	0.908	0.930	0.939	2023, 2024
R068N	Weekend	0.978	0.978	0.977	0.970	0.972	0.968	0.965	0.958	0.942	0.943	0.973	0.977	2023, 2024
R069	Weekday	0.957	0.958	0.957	0.956	0.956	0.957	0.960	0.961	0.960	0.960	0.960	0.961	2022, 2023, 2024
R069	Weekend	0.989	0.991	0.989	0.990	0.990	0.989	0.989	0.989	0.989	0.991	0.990	0.990	2022, 2023, 2024
R070	Weekday	0.912	0.908	0.927	0.923	0.917	0.918	0.922	0.926	0.915	0.915	0.919	0.929	2022, 2023, 2024
R070	Weekend	0.979	0.976	0.980	0.980	0.982	0.980	0.980	0.981	0.979	0.980	0.982	0.982	2022, 2023, 2024
R073	Weekday	0.859	0.858	0.870	0.872	0.887	0.909	0.923	0.916	0.899	0.894	0.897	0.891	2022, 2023, 2024
R073	Weekend	0.990	0.985	0.984	0.987	0.985	0.985	0.986	0.985	0.982	0.985	0.989	0.992	2022, 2023, 2024
R074N	Weekday	0.902	0.911	0.909	0.927	0.918	0.927	0.937	0.932	0.921	0.913	0.905	0.920	2022, 2023, 2024
R074N	Weekend	0.983	0.981	0.985	0.983	0.985	0.982	0.981	0.978	0.977	0.981	0.984	0.983	2022, 2023, 2024
R075E	Weekday	0.849	0.849	0.842	0.842	0.851	0.848	0.864	0.864	0.847	0.840	0.845	0.856	2022, 2023, 2024
R075E	Weekend	0.964	0.964	0.958	0.959	0.957	0.957	0.956	0.959	0.955	0.953	0.958	0.967	2022, 2023, 2024
R076W	Weekday	0.810	0.817	0.825	0.842	0.862	0.862	0.857	0.855	0.831	0.808	0.806	0.811	2022, 2023, 2024
R076W	Weekend	0.927	0.940	0.942	0.950	0.957	0.950	0.930	0.942	0.914	0.909	0.927	0.928	2022, 2023, 2024
R077W	Weekday	0.672	0.688	0.699	0.732	0.754	0.769	0.771	0.731	0.711	0.685	0.661	0.674	2022, 2023, 2024
R077W	Weekend	0.796	0.819	0.851	0.871	0.893	0.888	0.885	0.863	0.839	0.814	0.800	0.800	2022, 2023, 2024
R078	Weekday	0.940	0.936	0.943	0.945	0.957	0.965	0.955	0.956	0.938	0.946	0.954	0.959	2022, 2023, 2024
R078	Weekend	0.992	0.993	0.991	0.990	0.992	0.991	0.991	0.988	0.988	0.991	0.991	0.991	2022, 2023, 2024
R081	Weekday	0.942	0.942	0.941	0.941	0.944	0.942	0.938	0.930	0.930	0.928	0.938	0.942	2022, 2023
R081	Weekend	0.969	0.972	0.974	0.973	0.975	0.971	0.968	0.961	0.960	0.960	0.968	0.968	2022, 2023
R082S	Weekday	0.941	0.937	0.936	0.935	0.937	0.937	0.941	0.942	0.942	0.940	0.945	0.945	2024
R082S	Weekend	0.974	0.976	0.977	0.976	0.976	0.976	0.976	0.978	0.978	0.978	0.977	0.977	2024
R083N	Weekday	0.905	0.907	0.904	0.903	0.908	0.910	0.935	0.949	0.943	0.913	0.899	0.905	2022, 2023, 2024
R083N	Weekend	0.991	0.989	0.990	0.991	0.991	0.989	0.990	0.989	0.988	0.989	0.989	0.992	2022, 2023, 2024
R084N	Weekday	0.884	0.893	0.884	0.885	0.888	0.890	0.894	0.895	0.864	0.856	0.868	0.878	2022, 2023, 2024
R084N	Weekend	0.973	0.977	0.974	0.969	0.971	0.966	0.955	0.965	0.929	0.931	0.960	0.973	2022, 2023, 2024
R085	Weekday	0.917	0.919	0.920	0.925	0.925	0.927	0.931	0.934	0.926	0.924	0.923	0.927	2022, 2023, 2024
R085	Weekend	0.983	0.984	0.983	0.984	0.983	0.982	0.985	0.985	0.982	0.983	0.983	0.982	2022, 2023, 2024
R087	Weekday	0.949	0.949	0.947	0.948	0.949	0.948	0.948	0.947	0.945	0.945	0.947	0.947	2022, 2023
R087	Weekend	0.968	0.969	0.970	0.970	0.971	0.970	0.968	0.967	0.967	0.967	0.967	0.967	2022, 2023
R088	Weekday	0.956	0.955	0.952	0.953	0.953	0.953	0.954	0.954	0.953	0.954	0.956	0.957	2022, 2023, 2024
R088	Weekend	0.984	0.985	0.984	0.984	0.984	0.983	0.983	0.984	0.983	0.984	0.983	0.984	2022, 2023, 2024
R089S	Weekday	0.971	0.970	0.970	0.965	0.963	0.959	0.960	0.963	0.963	0.965	0.967	0.971	2022, 2023, 2024
R089S	Weekend	0.990	0.990	0.990	0.989	0.989	0.989	0.989	0.990	0.989	0.990	0.989	0.992	2022, 2023, 2024

Three-Year Average Axle Correction Factors from WSDOT Permanent Traffic Recorders

Weekday = Average Mon - Fri **Weekend = Average Sat - Sun**

PTR	Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Years Included
R091N	Weekday	0.839	0.852	0.852	0.853	0.852	0.854	0.859	0.860	0.856	0.856	0.852	0.864	2022
R091N	Weekend	0.928	0.943	0.936	0.937	0.938	0.937	0.938	0.941	0.942	0.941	0.934	0.937	2022
R092S	Weekday	0.869	0.871	0.874	0.873	0.871	0.873	0.876	0.877	0.874	0.875	0.872	0.875	2022, 2023, 2024
R092S	Weekend	0.940	0.945	0.949	0.948	0.948	0.947	0.948	0.949	0.948	0.947	0.943	0.942	2022, 2023, 2024
R093N	Weekday	0.888	0.889	0.890	0.892	0.892	0.893	0.895	0.897	0.896	0.891	0.891	0.903	2022, 2023, 2024
R093N	Weekend	0.951	0.954	0.956	0.956	0.956	0.955	0.956	0.958	0.959	0.956	0.954	0.957	2022, 2023, 2024
R095	Weekday	0.966	0.967	0.968	0.968	0.966	0.968	0.972	0.970	0.969	0.968	0.970	0.973	2022, 2023, 2024
R095	Weekend	0.996	0.997	0.996	0.995	0.995	0.995	0.995	0.995	0.995	0.996	0.995	0.997	2022, 2023, 2024
R096S	Weekday	0.989	0.988	0.986	0.985	0.985	0.985	0.985	0.985	0.983	0.986	0.987	0.989	2022, 2023, 2024
R096S	Weekend	0.996	0.996	0.996	0.995	0.995	0.996	0.995	0.995	0.995	0.995	0.996	0.996	2022, 2023, 2024
R097S	Weekday	0.793	0.800	0.803	0.805	0.805	0.807	0.813	0.816	0.807	0.805	0.800	0.808	2022, 2023, 2024
R097S	Weekend	0.898	0.911	0.916	0.916	0.918	0.916	0.919	0.920	0.916	0.916	0.906	0.909	2022, 2023, 2024
R098	Weekday	0.960	0.959	0.959	0.959	0.958	0.958	0.958	0.958	0.959	0.959	0.961	0.964	2022, 2023, 2024
R098	Weekend	0.988	0.988	0.987	0.987	0.987	0.986	0.986	0.986	0.986	0.987	0.987	0.989	2022, 2023, 2024
R099N	Weekday	0.841	0.839	0.843	0.842	0.842	0.843	0.851	0.852	0.845	0.845	0.842	0.849	2022, 2024
R099N	Weekend	0.923	0.927	0.932	0.931	0.932	0.931	0.933	0.934	0.930	0.930	0.923	0.925	2022, 2024
R100N	Weekday	0.680	0.694	0.698	0.704	0.694	0.709	0.734	0.702	0.703	0.697	0.689	0.717	2022, 2023, 2024
R100N	Weekend	0.839	0.873	0.877	0.869	0.860	0.870	0.860	0.860	0.854	0.852	0.837	0.850	2022, 2023, 2024
R101N	Weekday	0.978	0.980	0.978	0.978	0.979	0.979	0.981	0.984	0.984	0.985	0.984	0.985	2022, 2023, 2024
R101N	Weekend	0.991	0.994	0.994	0.992	0.992	0.993	0.994	0.995	0.995	0.994	0.995	0.997	2022, 2023, 2024
R104	Weekday	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R104	Weekend	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
R105	Weekday	0.988	0.989	0.987	0.986	0.986	0.985	0.985	0.986	0.985	0.984	0.987	0.989	2022, 2023, 2024
R105	Weekend	0.996	0.997	0.996	0.996	0.995	0.994	0.994	0.995	0.995	0.994	0.996	0.997	2022, 2023, 2024
R106E	Weekday	0.916	0.918	0.915	0.917	0.913	0.916	0.920	0.918	0.919	0.920	0.921	0.923	2022, 2024
R106E	Weekend	0.960	0.964	0.965	0.966	0.965	0.963	0.965	0.965	0.968	0.963	0.962	0.967	2022, 2024
R110	Weekday	0.869	0.871	0.874	0.882	0.877	0.881	0.886	0.888	0.881	0.877	0.875	0.890	2022, 2023, 2024
R110	Weekend	0.947	0.950	0.953	0.955	0.954	0.953	0.955	0.958	0.956	0.954	0.955	0.953	2022, 2023, 2024
R111	Weekday	0.965	0.967	0.963	0.960	0.963	0.963	0.960	0.960	0.961	0.957	0.964	0.966	2024
R111	Weekend	0.987	0.987	0.987	0.983	0.984	0.985	0.985	0.984	0.984	0.986	0.988	0.989	2024
R112	Weekday	0.894	0.893	0.892	0.892	0.892	0.893	0.894	0.898	0.899	0.898	0.898	0.902	2023, 2024
R112	Weekend	0.949	0.953	0.950	0.954	0.953	0.956	0.951	0.955	0.957	0.955	0.949	0.951	2023, 2024
R113	Weekday	0.909	0.909	0.910	0.911	0.909	0.908	0.909	0.906	0.903	0.905	0.911	0.914	2024
R113	Weekend	0.964	0.966	0.968	0.967	0.965	0.963	0.964	0.965	0.964	0.961	0.961	0.964	2024

Three-Year Average Axle Correction Factors from WSDOT Permanent Traffic Recorders

Weekday = Average Mon - Fri **Weekend = Average Sat - Sun**

PTR	Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Years Included
R114	Weekday	0.955	0.955	0.951	0.955	0.950	0.947	0.947	0.947	0.950	0.952	0.954	0.957	2022, 2023, 2024
R114	Weekend	0.977	0.978	0.978	0.977	0.978	0.977	0.978	0.977	0.978	0.978	0.979	0.980	2022, 2023, 2024
R115	Weekday	0.763	0.772	0.781	0.781	0.783	0.790	0.802	0.803	0.795	0.792	0.784	0.788	2022, 2023, 2024
R115	Weekend	0.880	0.895	0.903	0.904	0.906	0.906	0.914	0.916	0.911	0.908	0.898	0.897	2022, 2023, 2024
R116	Weekday	0.960	0.959	0.957	0.958	0.957	0.958	0.958	0.959	0.958	0.959	0.960	0.961	2022, 2023, 2024
R116	Weekend	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.986	0.985	0.986	2022, 2023, 2024
R117	Weekday	0.970	0.969	0.970	0.970	0.970	0.973	0.972	0.971	0.970	0.970	0.969	0.971	2022, 2023, 2024
R117	Weekend	0.992	0.992	0.992	0.993	0.992	0.992	0.992	0.991	0.990	0.991	0.991	0.991	2022, 2023, 2024
R118	Weekday	0.907	0.909	0.905	0.905	0.908	0.908	0.908	0.906	0.904	0.905	0.907	0.912	2022, 2023, 2024
R118	Weekend	0.940	0.942	0.945	0.944	0.946	0.946	0.944	0.945	0.943	0.945	0.945	0.944	2022, 2023, 2024
R119	Weekday	0.854	0.867	0.868	0.868	0.868	0.865	0.873	0.872	0.868	0.866	0.865	0.867	2022, 2024
R119	Weekend	0.928	0.939	0.945	0.944	0.944	0.942	0.945	0.945	0.943	0.942	0.938	0.935	2022, 2024
R121	Weekday	0.736	0.719	0.758	0.712	0.718	0.722	0.760	0.771	0.753	0.741	0.722	0.726	2022, 2023, 2024
R121	Weekend	0.896	0.886	0.890	0.893	0.910	0.903	0.924	0.938	0.927	0.915	0.897	0.910	2022, 2023, 2024
R122	Weekday	0.926	0.926	0.932	0.922	0.912	0.908	0.919	0.906	0.898	0.905	0.926	0.937	2022, 2023, 2024
R122	Weekend	0.978	0.974	0.978	0.973	0.975	0.978	0.974	0.975	0.971	0.975	0.982	0.984	2022, 2023, 2024
R123	Weekday	0.820	0.853	0.916	0.912	0.866	0.861	0.880	0.886	0.877	0.874	0.875	0.856	2022, 2023, 2024
R123	Weekend	0.972	0.971	0.980	0.979	0.978	0.975	0.975	0.977	0.975	0.977	0.978	0.980	2022, 2023, 2024
R124	Weekday	0.936	0.935	0.944	0.952	0.944	0.938	0.930	0.914	0.921	0.928	0.935	0.939	2022, 2023, 2024
R124	Weekend	0.986	0.987	0.991	0.990	0.986	0.986	0.985	0.984	0.986	0.986	0.990	0.992	2022, 2023, 2024
R125	Weekday	0.968	0.967	0.966	0.967	0.967	0.966	0.966	0.965	0.965	0.965	0.967	0.969	2023, 2024
R125	Weekend	0.989	0.990	0.990	0.990	0.990	0.990	0.990	0.989	0.989	0.989	0.989	0.990	2023, 2024
S103	Weekday	0.981	0.981	0.978	0.981	0.982	0.981	0.987	0.985	0.985	0.986	0.986	0.989	2022, 2024
S103	Weekend	0.993	0.993	0.991	0.993	0.993	0.993	0.995	0.996	0.995	0.995	0.997	0.997	2022, 2024
S503	Weekday	0.890	0.881	0.885	0.883	0.889	0.883	0.888	0.891	0.893	0.893	0.891	0.897	2023, 2024
S503	Weekend	0.974	0.972	0.973	0.975	0.977	0.977	0.970	0.971	0.975	0.976	0.977	0.977	2023, 2024
S612	Weekday	0.734	0.741	0.748	0.760	0.777	0.775	0.777	0.741	0.680	0.659	0.723	0.752	2022, 2023, 2024
S612	Weekend	0.900	0.915	0.923	0.921	0.933	0.922	0.918	0.891	0.826	0.808	0.891	0.910	2022, 2023, 2024
S706	Weekday	0.978	0.978	0.977	0.977	0.977	0.977	0.976	0.978	0.976	0.975	0.976	0.978	2022, 2023, 2024
S706	Weekend	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.995	0.996	0.995	0.996	2022, 2023, 2024
S803S	Weekday	0.863	0.867	0.873	0.880	0.878	0.887	0.888	0.893	0.883	0.881	0.879	0.889	2022, 2023, 2024
S803S	Weekend	0.920	0.931	0.934	0.940	0.939	0.943	0.943	0.945	0.942	0.942	0.943	0.943	2022, 2023, 2024
S818E	Weekday	0.870	0.874	0.864	0.864	0.876	0.891	0.907	0.897	0.883	0.868	0.870	0.866	2022, 2023, 2024
S818E	Weekend	0.960	0.956	0.956	0.954	0.956	0.963	0.963	0.952	0.956	0.948	0.950	0.957	2022, 2023, 2024

Three-Year Average Axle Correction Factors from WSDOT Permanent Traffic Recorders

Weekday = Average Mon - Fri **Weekend = Average Sat - Sun**

PTR	Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Years Included
S818S	Weekday	0.827	0.824	0.823	0.815	0.833	0.846	0.867	0.843	0.815	0.803	0.806	0.814	2022, 2023, 2024
S818S	Weekend	0.957	0.952	0.946	0.942	0.942	0.947	0.950	0.929	0.917	0.917	0.934	0.947	2022, 2023, 2024
S818W	Weekday	0.960	0.966	0.949	0.956	0.943	0.948	0.956	0.953	0.948	0.950	0.949	0.962	2022, 2023, 2024
S818W	Weekend	0.977	0.982	0.981	0.979	0.983	0.981	0.982	0.982	0.981	0.983	0.982	0.981	2022, 2023, 2024
S819	Weekday	0.967	0.967	0.962	0.971	0.967	0.976	0.975	0.973	0.973	0.973	0.976	0.975	2022, 2023, 2024
S819	Weekend	0.993	0.992	0.993	0.995	0.995	0.995	0.993	0.994	0.995	0.995	0.996	0.997	2022, 2023, 2024
S820W	Weekday	0.938	0.929	0.954	0.966	0.962	0.962	0.960	0.955	0.952	0.957	0.957	0.952	2022, 2023, 2024
S820W	Weekend	0.990	0.986	0.988	0.988	0.987	0.984	0.982	0.984	0.983	0.985	0.987	0.987	2022, 2023, 2024
S824	Weekday	0.961	0.960	0.958	0.958	0.958	0.956	0.957	0.957	0.958	0.960	0.962	0.963	2023, 2024
S824	Weekend	0.985	0.984	0.984	0.983	0.983	0.983	0.981	0.983	0.985	0.984	0.984	0.984	2023, 2024
S825	Weekday	0.948	0.947	0.946	0.946	0.946	0.947	0.948	0.947	0.946	0.945	0.947	0.948	2022, 2023, 2024
S825	Weekend	0.980	0.979	0.980	0.978	0.978	0.978	0.977	0.979	0.978	0.978	0.978	0.978	2022, 2023, 2024
S826	Weekday	0.902	0.899	0.897	0.901	0.902	0.905	0.906	0.908	0.903	0.901	0.899	0.906	2022, 2023, 2024
S826	Weekend	0.966	0.966	0.964	0.963	0.963	0.965	0.964	0.965	0.964	0.961	0.961	0.962	2022, 2023, 2024
S837	Weekday	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S837	Weekend	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S838	Weekday	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S838	Weekend	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S839	Weekday	0.905	0.907	0.907	0.903	0.905	0.907	0.908	0.906	0.903	0.905	0.908	0.909	2022, 2023, 2024
S839	Weekend	0.968	0.971	0.972	0.972	0.971	0.974	0.973	0.973	0.971	0.969	0.969	0.968	2022, 2023, 2024
S840	Weekday	0.892	0.924	0.840	0.785	0.854	0.923	0.962	0.933	0.939	0.871	0.808	0.756	2022
S840	Weekend	0.963	0.990	0.994	0.994	0.997	0.999	0.999	0.998	0.997	0.978	0.986	0.990	2022
S841NE	Weekday	0.903	0.909	0.916	0.922	0.923	0.929	0.939	0.937	0.919	0.909	0.906	0.919	2022, 2023, 2024
S841NE	Weekend	0.988	0.988	0.988	0.989	0.988	0.985	0.984	0.983	0.984	0.986	0.990	0.986	2022, 2023, 2024

Appendix Four: Seasonal Factors for Midweek Counts

WSDOT uses data from permanent traffic recorders to generate monthly average day of week traffic to annual average daily traffic conversion factors. These factors are then used to estimate AADTs based on daily traffic volumes from short duration counts.

Whenever possible, short duration count data should be adjusted using factors from a nearby permanent traffic recorder installed at a location with similar traffic patterns. However, due to the high cost of PTR installation and maintenance, WSDOT does not have an applicable PTR for every short duration count location on the state highway system. To address this issue, average factors are produced from groups of PTRs with similar seasonal traffic volume trends and definable commonalities in relation to functional classification of roadway, geographic area and/or traffic features (such as a relatively high proportion of recreational travel). The factors from a given group can then be considered applicable to short count locations that have characteristics consistent with those that define the group.

The seasonal factor groups currently used by WSDOT are:

SFG-01: Urban Interstate
SFG-02: Urban Non-Interstate
SFG-03: Rural, Non-Recreational Interstate
SFG-04: Rural Central Mountain (Moderate Recreational Influence)
SFG-05: Rural, Non-Interstate, Non-Recreational West
SFG-06: Rural, Non-Interstate East (Agricultural Influence)
SFG-07: Rural, Non-Interstate, Non-Recreational Northeast
SFG-08: Rural, Non-Interstate, Non-Recreational Southeast
SFG-09: Rural Central Mountain (Strong Recreational Influence)
SFG-10: Recreational West

SFG-01 and SFG-02 represent urban interstate and urban non-interstate highway locations respectively. SFG-03 represents rural interstate highway locations, with the exception of the section of Interstate 90 passing through the central mountain region of the state. SFG-04 and SFG-09 represent this central mountain region, with the latter reflective of highways with an extremely high summertime traffic volume peak due to recreational travel. SFG-05 represents typical rural locations in the western part of the state, while SFG-10 reflects western locations that are much more influenced by summertime recreational traffic. SFG-06 represents rural locations in the east of the state strongly influenced by seasonal agriculture-related traffic. SFG-08 represents rural southeastern locations with much less seasonal variation (such long-haul truck routes). Finally, SFG-07 represents typical rural locations in the northeast of the state.

The table below provides three-year rolling average monthly seasonal factors for each of these groups. To use them, multiply the daily total(s) from a short duration count by the corresponding weekday or weekend factor for the pertinent group and month in which the count was conducted.

2022, 2023, and 2024 Average ADT to AADT Conversion Factors
Weekday = Average Monday - Friday
Weekend = Average Saturday - Sunday

Group	Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SFG-01	Weekday	1.03	0.99	0.96	0.95	0.93	0.92	0.91	0.91	0.93	0.95	0.97	0.98
SFG-01	Weekend	1.25	1.15	1.09	1.08	1.06	1.02	1.01	1.00	1.05	1.08	1.15	1.15
SFG-02	Weekday	1.00	0.96	0.94	0.93	0.91	0.89	0.89	0.89	0.90	0.92	0.95	0.96
SFG-02	Weekend	1.33	1.24	1.17	1.16	1.13	1.09	1.07	1.07	1.11	1.14	1.25	1.24
SFG-03	Weekday	1.15	1.08	1.01	0.98	0.95	0.91	0.88	0.88	0.93	0.97	1.03	1.06
SFG-03	Weekend	1.31	1.18	1.05	1.02	1.00	0.94	0.89	0.89	0.95	1.00	1.12	1.22
SFG-04	Weekday	1.64	1.52	1.39	1.25	1.07	0.91	0.80	0.82	0.96	1.03	1.35	1.44
SFG-04	Weekend	1.39	1.26	1.12	1.02	0.83	0.68	0.59	0.61	0.71	0.80	1.24	1.25
SFG-05	Weekday	1.14	1.08	1.03	0.98	0.94	0.89	0.83	0.84	0.91	0.98	1.05	1.08
SFG-05	Weekend	1.35	1.24	1.12	1.11	1.02	0.95	0.84	0.84	0.95	1.08	1.27	1.33
SFG-06	Weekday	1.31	1.21	1.07	1.00	0.93	0.87	0.82	0.84	0.89	0.93	1.08	1.21
SFG-06	Weekend	1.50	1.32	1.09	1.02	0.96	0.88	0.85	0.84	0.90	0.93	1.17	1.46
SFG-07	Weekday	1.14	1.10	1.03	0.95	0.88	0.84	0.79	0.81	0.86	0.88	1.01	1.08
SFG-07	Weekend	1.63	1.48	1.35	1.20	1.09	1.01	0.90	0.93	1.06	1.09	1.37	1.51
SFG-08	Weekday	1.10	1.03	0.96	0.93	0.89	0.88	0.88	0.88	0.87	0.89	0.96	1.04
SFG-08	Weekend	1.42	1.26	1.13	1.09	1.06	1.04	1.07	1.03	1.02	1.04	1.21	1.36
SFG-09	Weekday	1.70	1.53	1.62	1.52	1.22	0.93	0.75	0.75	0.99	1.19	1.77	1.49
SFG-09	Weekend	0.99	0.98	1.14	1.15	0.81	0.66	0.54	0.55	0.70	0.82	1.49	1.21
SFG-10	Weekday	1.40	1.27	1.15	1.03	0.97	0.88	0.76	0.76	0.87	1.05	1.22	1.30
SFG-10	Weekend	1.43	1.24	1.12	1.03	0.88	0.87	0.71	0.69	0.79	1.04	1.29	1.43

Under ideal circumstances, seasonal factors that are specific to the locality a short duration count was conducted in should be employed. However, for most local agencies these will not be available. If so, seasonal factors calculated for the general area in which the agency is located should be used[5]. If no localized factors are available, those provided in the table above can be utilized, although the following guidelines for their use are suggested. Group SFG-02 should be used for all count locations within the boundaries of an urbanized area as defined by the U.S. Census Bureau, as well as within cities that are outside of an urbanized area but that have populations greater than 10,000. For cities of 5,000 to 10,000 people that are not in an urbanized area, the appropriate factor group will be determined by an examination of the character of local development; if the area is fairly compact and densely populated, SFG-02 is likely appropriate; if not, one of the rural groups SFG-05 through SFG-08 is probably applicable. For all other counts (i.e., those conducted in unincorporated, non-urbanized areas or in cities with populations below 5,000 that are outside of urbanized areas), one of the groups SFG-05 through SFG-10 should be chosen based on geographic area and the proportion of annual traffic volume represented by traffic in the summer months.

[5] Monthly traffic volume statistics from individual continuous traffic count locations monitored by the WSDOT Transportation Data, GIS, and Modeling Group are available through the Traffic Data Reporting System (https://wsdot.public.ms2soft.com/tcds/tsearch.asp?loc=Wsdot&mod=TCDS) and may be useful in generating these area-specific factors.

Appendix Five: Growth Factors

If an estimate of the AADT for a section of highway that has not been counted in the current year is needed, and an estimate of the previous year's AADT for the section is available, a growth factor should be applied in order to estimate the current AADT. As noted in Section Three, if a data source is available that is representative of the specific locality, such as a historical set of local traffic counts, growth rates should be calculated from this data source and used. Otherwise, the growth rates given in the table below should be employed. The table provides growth factors for PTRs grouped in the same groups as those used for seasonal factors. The different prefix ("GFG-" vs "SFG-") simply indicate the factor type used. The PTRs comprising GFG-01 are also those that comprise SFG-01, etc. The instructions given in Appendix Four regarding how to determine which seasonal factor group is most appropriate for a given count location should also be followed when deciding upon an appropriate growth factor group in relation to growth rates. Prior year growth factors are provided for reference.

Growth Factors by Factor Group

FACTOR GROUP	2023-2024	2022-2023	2021-2022
GFG-01	1.006	1.018	1.028
GFG-02	1.012	1.024	1.011
GFG-03	1.011	1.032	1.019
GFG-04	0.998	1.034	0.972
GFG-05	1.003	1.025	0.98
GFG-06	1.006	1.027	0.995
GFG-07	1.016	1.039	0.988
GFG-08	1.007	1.04	0.98
GFG-09	0.998	0.999	0.954
GFG-10	1.001	1.012	0.961

The values provided in the table above are factors which can be multiplied directly to the previous year's AADT to estimate the current year AADT for the same location. For example, a value of 1.028 in the table above reflects a 2.8% increase. A value of 0.961 in the table above reflects a 3.9% decrease.

Appendix Six: FHWA Vehicle Classes

The following is the Federal Highway Administration's vehicle classification scheme.

1. **Motorcycles** (Optional) - All two or three-wheeled motorized vehicles. Typical vehicles in this category have saddle type seats and are steered by handlebars rather than steering wheels. This category includes motorcycles, motor scooters, mopeds, motor-powered bicycles, and three-wheel motorcycles. This vehicle type may be reported at the option of the State.
2. **Passenger Cars** - All sedans, coupes, and station wagons manufactured primarily for the purpose of carrying passengers and including those passenger cars pulling recreational or other light trailers.
3. **Other Two-Axle, Four-Tire Single Unit Vehicles** - All two-axle, four-tire vehicles, other than passenger cars. Included in this classification are pickups, panels, vans, and other vehicles such as campers, motor homes, ambulances, hearses, carryalls, and minibuses. Other two-axle, four-tire single-unit vehicles pulling recreational or other light trailers are included in this classification. *Because automatic vehicle classifiers have difficulty distinguishing class 3 from class 2, these two classes may be combined into class 2.*
4. **Buses** - All vehicles manufactured as traditional passenger-carrying buses with two axles and six tires or three or more axles. This category includes only traditional buses (including school buses) functioning as passenger-carrying vehicles. Modified buses should be considered to be a truck and should be appropriately classified.
5. **Two-Axle, Six-Tire, Single-Unit Trucks** - All vehicles on a single frame including trucks, camping and recreational vehicles, motor homes, et cetera, with two axles and dual rear wheels.
6. **Three-Axle Single-Unit Trucks** - All vehicles on a single frame including trucks, camping and recreational vehicles, motor homes, et cetera, with three axles.
7. **Four or More Axle Single-Unit Trucks** - All trucks on a single frame with four or more axles.
8. **Four or Fewer Axle Single-Trailer Trucks** - All vehicles with four or fewer axles consisting of two units, one of which is a tractor or straight truck power unit.
9. **Five-Axle Single-Trailer Trucks** - All five-axle vehicles consisting of two units, one of which is a tractor or straight truck power unit.

10. **Six or More Axle Single-Trailer Trucks** - All vehicles with six or more axles consisting of two units, one of which is a tractor or straight truck power unit.
11. **Five or fewer Axle Multi-Trailer Trucks** - All vehicles with five or fewer axles consisting of three or more units, one of which is a tractor or straight truck power unit.
12. **Six-Axle Multi-Trailer Trucks** - All six-axle vehicles consisting of three or more units, one of which is a tractor or straight truck power unit.
13. **Seven or More Axle Multi-Trailer Trucks** - All vehicles with seven or more axles consisting of three or more units, one of which is a tractor or straight truck power unit.

NOTE: In reporting information on trucks the following criteria should be used:

a. Truck tractor units traveling without a trailer will be considered single-unit trucks.
b. A truck tractor unit pulling other such units in a "saddle mount" configuration will be considered one single-unit truck and will be defined only by the axles on the pulling unit.
c. Vehicles are defined by the number of axles in contact with the road. Therefore, retractable “lift”, “floating”, or "drop" axles are counted only when in the down position.
d. The term "trailer" includes both semi- and full trailers.