MetroCount® traffic data specialists

Report Profiles

MTE User Manual

4.03

MetroCount

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Vehicle Filter Settings

Overview

Profile vehicle filtering is used to exclude certain vehicles from a report and specifically target others, based on the key vehicle filtering criteria of class, speed, separation and direction. For example, the direction filter is used for bidirectional sites to give separate reports for each direction.

These settings are grouped into the main Profile dialog box, where each is a clickable button that leads to the available settings for that criteria. Note that these settings are only relevant for Classification reports, and are disabled for Event Count reports. Time filtering is covered in detail in its own section.

Report profile	
	and report settings ig and report settings are here
Name	Default Profile Advanced)
Speed	Include vehicles with speeds between 10 km/h and 160 km/h.
Separation	No filter on Separation - (Headway)
Direction	North, East, South, West bound.
Classes	Include class 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Scheme	Classified vehicles - ARX
Time	From 13:00 Monday, 20 September 1993 to 14:24 Monday, 27 September 1993
	Disable filter Cancel OK

Profile vehicle filter settings

Speed Filter

The Speed filter excludes vehicles outside the specified range. The default range is 10 to 160 km/hr, or 10 to 100 mph. This may need to be changed for sites with an expectation of significant numbers outside of this range. The upper limit is 200 km/h or 140 mph.

Speed range Speed units are km/h	
Include vehicles Above 10	Below 160 🚔
 ↓ 5 ↓ 10 	 4 5 ▶ 4 10 ▶
Default	DK Cancel

Speed filter range

Separation Filter

Separation for a vehicle is the time since the last vehicle travelling in the same direction. Separation can be defined as Headway (first axle to first axle) or Gap (last axle to first axle) in the Advanced Profile options. For example, a separation of "more than four seconds" will only include vehicles with more than four seconds in front of them.

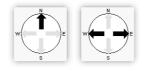


Separation filter

Direction Filter

Manual Setting

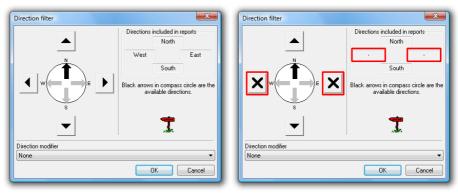
The Direction filter includes and excludes vehicles based on their direction of travel, derived from the direction specified in a dataset's header. The default setting is all directions included.



Direction filter compass examples

The black arrows in the compass indicate the combined direction codes of the tagged datasets. The first example above indicates at least one tagged dataset with a unidirectional code of North-bound. The second example indicates data is available for both East and West-bound traffic. This may be from a bidirectional dataset, or separate east and west datasets.

Remember, the direction code specified when a RSU was setup is simply a descriptive field. Data may still be available for directions other than those indicated by the compass.

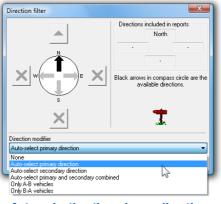


Toggling included directions

Directions are included and excluded by toggling the four buttons around the compass, the effect of which can be seen in the **Directions included in reports** box at the top. A black cross in a button indicates that direction will be excluded from the report.

Automatic Setting

The **Direction modifier** drop-down list at the bottom provides a number of automatic direction filtering options. The **Auto-select** options automatically set the four direction buttons per the compass directions. The **Primary** direction is the **A>B** direction, and **Secondary** is **B>A**. Where multiple datasets are tagged, the **A>B** direction of the first tagged dataset is used. Note that the four buttons are disabled when using these options.



Auto-selecting the primary direction

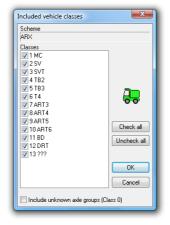
The last two options in the list filter vehicles based on their A>B or B>A direction of travel, before the normal compass direction filtering is applied. This can be used for entering and exiting filtering where several RSUs are used to cover a site, and a consistent A>B layout is used for each RSU.

Class Filter

The Class filter lists the vehicle classes for the classification scheme selected in the Advanced Profile options, with a check box to include or exclude each class.

Each classification scheme specifies the classes that are included by default. For example, schemes normally exclude the *unclassifiable* vehicle class by default. This is usually the last class in a scheme (designated **???**).

Class zero is a special class, which consists of groups of hits that can not form a vehicle (usually fewer than four hits), such as hits detected while the sensors are being setup. This class is for diagnostics only.



Class filter

Time Filtering

Overview

Profile time filtering controls the start and finish time of a report, with a range of options to automatically set common time filtering requirements. Selected periods can also be excluded based on time of day, and day of the week. All adjustments can be made to any 15-minute boundary.

Report profile									
	and report settings ng and report settings are here								
Name	Default Profile Advanced)								
Speed	Include vehicles with speeds between 0 km/h and 200 km/h.								
Separation	No filter on Separation - (Headway)								
Direction	North, East, South, West bound.								
Classes	Include class 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13								
Scheme	Classified vehicles - ARX								
Time									
TIME	From 00:00 Tuesday, 21 September 1993 to 00:00 Monday, 27 September 1993								
	Disable filter								

Profile time filter settings

The time filter options are accessed by clicking the button showing the currently selected time range. The chart above the button represents the available time range for the tagged datasets. The blue line in the centre represents the range of actual data, from the start time to the last detected sensor hit. The red bar represents the selected time range.

The default behaviour of a Local Profile is to select the entire time range. Time filtering is primarily used to avoid partial time bins at the start and finish of reports, and for including integral numbers of complete hours or days for statistical analysis.

Time Range

Manual Setting

The time range of a report can be manually set using the controls in the **Include vehicles after (start)** and **Include vehicles before (finish)** blocks. The buttons, or spin control under the time adjust the time in hourly steps, or 15 minute steps if the **Allow 15 minute granularity** option is checked. The date spin control steps in days.

ime range 13:00 Monday, 20 September 1993			14:24 Monda	y, 27 September 1993
Incl	ude vehicles after	Include vehicles	before	Set to end >>
00:00 Tue 21	Sep 1993	00:00	Mon 27	Sep 1993
Exclusion times Mask Use exclusion		Auto-Wrap None Wrap to actual Align reports to : Allow 15 minute	start of time range	
			OK	Cancel

Manually setting the Profile time range

Auto-Wrap

The Auto-wrap options automatically adjust the time range to a selection of common filtering requirements. If the selected wrap type cannot be applied to the available data, the time range chart will flash.

Time range	
12:32 Thursday, 12 July 2007	12:44 Friday, 27 July 2007
Include vehicles after	Include vehicles before
<< Set to start	Set to end >>
00:00 Fri 13 Jul 2007	00:00 Fri 20 Jul 2007
Exclusion times	Auto-Wrap
Mask	First seven aligned days 👻
Use exclusion	None Entire dataset
	Aligned hours Aligned days Aligned weeks
	First aligned day First two aligned days
	First seven aligned days
	First eight aligned days First aligned week
	Unaligned days (24-hour periods) Unaligned weeks (168-hour periods)
	First umaligned day (24 hours) First two unaligned days (48 hours) First seven unaligned days (168 hours) First eight unaligned days (192 hours)
	First masked day (24 hours) First two masked days (48 hours)

Time Filter Auto-Wrap options

Aligned Auto-wrap options adjust the time filter to the maximum number of the selected time increment (hour, day or week), aligned to the selected time increment. Put simply:

- Aligned Hours wraps to complete hours.
- Aligned Days wraps to complete days, starting at midnight.
- Aligned Weeks wraps to complete weeks, starting midnight Monday (or Saturday for alternate weekends).

Unaligned Auto-wrap options adjust the time filter to the maximum number of the selected time increment (hour, day or week), but only aligned to hours. For example, **First two unaligned days (48 hours)** will select the first two days of data, aligned to the first complete hour.

Masked Auto-wrap options select the maximum number of contiguous time increments not masked by the Time Mask. For example, the first 48 hours of *weekday* data can be selected by masking weekends with the Time Mask, then selecting **First two masked days (48 hours)**.

Time range				×
12:32 Thursday, 12 July 2007			12:	44 Friday, 27 July 2007
Include ve	hicles after	Include vehi	cles before	
<< Set to start				Set to end >>
00:00 Mon 16 Jul 2	007	00:00	Wed 18	Jul 2007
4 > 4 >		- ()	•	
Exclusion times		uto-Wrap		
Mask		First two mask	ed days (48 hours)	•
Use exclusion			s to start of time range	
·			nute granularity	
			ОК	Cancel

Auto-wrap with weekends masked

The **Wrap to actual data** option aligns the Auto-wrap options to the last hour, day or week containing sensor hits, as represented by the blue line. The time of the last sensor hit may differ from the dataset finish time if the RSU was removed from the field before unloading.

Time range	×
13:00 Monday, 20 September 1993	14:24 Monday, 27 September 1993
Include vehicles af	ter Include vehicles before
<< Set to start	Set to end >>
13:00 Mon 20 Sep 1993	07:00 Mon 27 Sep 1993
Exclusion times	Auto-Wrap
Mask	Aligned hours
	Wrap to actual data
Use exclusion	Align reports to start of time range
	Allow 15 minute granularity
	OK Cancel

Wrap to actual data option aligns to last sensor hit

Time Exclusions

The **Time Mask** is used to exclude particular times of the week (with 15 minute resolution), or selected dates from the time range of the tagged datasets. Some common uses for the Time Mask:

- Excluding weekends.
- Targeting "school hours" for variable speed limits.
- Excluding holidays.

The Time Mask settings are accessed by clicking the **Mask** button. Note that the **Use exclusion** option *must* be checked for the Time Mask to take effect. The masked times will be represented by black regions in the time range chart.

Time range	
12:32 Thursday, 12 July 2007	12:44 Friday, 27 July 2007
Include vehicles after	Include velocities before
<< Set to start	Set to end >>
12:32 Thu 12 Jul 2007	12:44 Fri 27 Jul 2007
Exclusion times	Auto-Wrap
Mask	None
V Use exclusion	Wrap to actual data
Use exclusion	Align reports to start of time range
	Allow 15 minute granularity
	OK Cancel

Excluding time using the Time Mask

The Time Mask uses a grid representing a week divided into hours. Shaded hours will be included in the report, and white hours excluded. Each hour can be toggled by clicking on it, or rapidly toggled by clicking and dragging. Entire rows and columns can be toggled using the + and - buttons.

Exclus	ion																									X
Benn	Report is generated for shaded areas																									
									7 0	8 0	9 1	0 1	1 1	2 1	3 1	4 1	51	6 1	7 1	8 1	9 2	0 2	21 2	2 2	3	
		Ŧ	ŧ	ŧ	Ð	ŧ	Ð	ŧ	Ŧ	ŧ	Ŧ	Ð	ŧ	±	ŧ	±	Ŧ	6 1 ⊡	÷	÷	±	±	Œ	Ð	Ŧ	.
Mon	Ŧ																									Ξ
Tue	ŧ																									Ξ
Wed	_																									Ξ
Thu	ŧ																									Ξ
Fri	Ŧ																									Ξ
Sat	ŧ																									Ξ
Sun	Ŧ	_																								8
		Ξ	Ξ	Ξ	Ξ	-	Ξ	-	Ξ	Ξ	Ξ	Ξ	Ξ	Ξ	-	Ξ	Ξ	-	Ξ	Ξ	Ξ	Ξ	Ξ	Ξ	Ξ	
Exclu	de d	chec	ked	days	: (ma	ximu	im of	sev	en)																	
Tł 📃	nurs	day,	12.	luly 2	2007																	-				
			July																			=		7	<u>)</u>	
Sunday, 15 July 2007																										
			тылс 17 J																				6		014	_
						107																		-	OK	
	Wednesday, 18 July 2007																									

Time Mask with weekends excluded

Right-clicking on any hour displays a dialog box with 15 minute resolution. The **Repeat on all days** option will copy the selected hour across the entire week.



Note: For reports where data is binned into hours, excluding part of an hour in the Time Mask will exclude the entire hour.

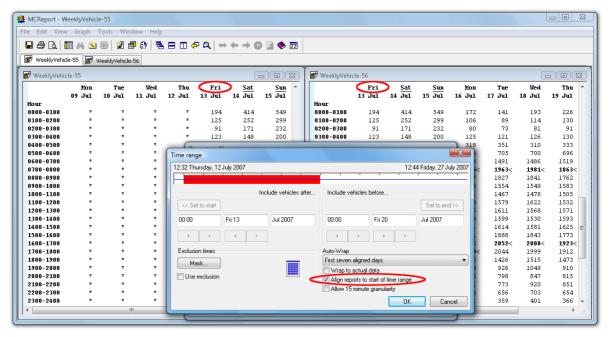


Setting partial hours

Specific dates can be excluded from a report by checking them in the **Exclude checked days** list at the bottom, up to a maximum of five. Use this feature for excluding dates that may adversely affect statistics, such as holidays.

Time Alignment

The **Align reports to start of time range** option changes the beginning of reports to the first time step (option checked), or the *natural* division (default unchecked). Take for example the Weekly Vehicle or Daily Classes reports. The natural division of these reports is weeks, starting at Monday (or Saturday for alternate weekends). Checking this option will start the report at the first day in the selected time range. This is extremely useful for printing a complete week of data on a single page.



A Weekly Vehicle Report, aligned to the first day (weekends underlined)

Units of Measurement

MCReport can display reports in either metric or non-metric units. MetroCount RSUs simply time-stamp sensor hits, so the raw data has no concept of units of speed or length. MCReport performs all internal calculations using SI units, and a report's Profile determines the units to be displayed.

The option to use metric or non-metric units can be found in a Profile's Advanced options, under the **General** page. The various units of measurement that will be used are displayed immediately below.

General Formal Header Colors Scheme Speed Mass Separation Adjust Profile Default Profile Outroe Outr	Profile
Default Profile Culture I Use metric measurement units Units - (meter, kilometer) (m/s, km/h) [kg, tonne) Saturday - Sunday Veckend Arithmetic rounding Test Result Round half up 3 500000 => Plus = 4, Minus = -3	General Format Header Colors Scheme Speed Mass Separation Adjust
Culture ↓ Use metric messurement units Units - (meter, kilometer) (m/s, km/h) [kg, tonne) Saturday - Sunday ↓ Weekend Anithmetic rounding Test Result Round half up ↓ 3,50000 => Plus = 4, Minus = -3	Profile file path
✓ Use metric messurement units Units - (meter, kilometer) (m/s, km/h) (kg, tonne) Saturday - Sunday ✓ Weekend Arithmetic rounding Test Round half up ✓ 3 500000 => Plus = 4, Minus = -3	Default Profile
Units - (meter, kilometer) (m/s, km/h) [kg, tonne) Saturday - Sunday - Weekend Anihmetic rounding Test Result Round half up - 3.3500000 => Plus = 4, Minus = -3	Culture
Saturday - Sunday Weekend Arithmetic rounding Test Round half up 3:500000 Plus = 4, Minus = -3	Use metric measurement units
Arithmetic rounding Round half up Test Result Round half up Flus = 4, Minus = -3	Units - (meter, kilometer) (m/s, km/h) (kg, tonne)
Round half up • 3500000 => Plus = 4, Minus = -3	Saturday - Sunday 🗸 Weekend
Round half up • 3500000 => Plus = 4, Minus = -3	
OK Cancel	Hound hair up
OK Cancel	
DK Cancel	
OK Cancel	
	OK Cancel

Selecting units of measurement

The units of measurement option also affects other options in a Profile, such as the speed range filter and speed bins. When the units of measurement are set via MCReport's **New user options** these other settings will be set to standard values in the Default Profile.

When toggling the units of measurement in a Profile as described above, other settings will be directly converted between metric and non-metric, which may result in non-standard values. Most options have a **Default** button available to quickly return to standard values.

Overview

MetroCount's time-stamped raw data collected using two parallel axle sensors enables MCReport to apply any axle-based classification scheme. Multiple schemes can be applied to the same data for different applications. As new standards and schemes are developed, they can be applied to existing data.

MCReport provides several built-in, highly optimised classification schemes called **OEM Schemes**, which are commonly used around the world. A range of user-defineable **External Schemes** are also provided.

Every scheme has two special classes: an unclassifiable vehicle class, and an unknown axle-group class. The unclassifiable vehicle class, usually designated as the last class, is a group of partitioned sensor hits considered to be a vehicle, but not matching any of the scheme's classes. The unknown axle-group class, designated as class zero, is a group of sensor hits that isn't considered a vehicle - usually fewer than two matching AB sensor hit pairs.

Every scheme has a set of classes that are enabled by default in a Profile's class filter, which usually includes all classes, except the two special classes. The unclassifiable vehicle class may be of interest for checking data quality, or suitability of a particular class scheme. A high percentage in this class may indicate a problem. Class zero can be generally considered as noise, and is only ever used for diagnostic purposes.

Selecting a Scheme

A classification scheme is selected in the **Scheme** page of a Profile's Advanced options. A shortcut to this page is by clicking on the **Scheme** button in a Profile's main dialog box, where the name of the currently selected scheme is displayed.

Report profile	
	and report settings g and report settings are here
Name	Default Profile Advanced)
Speed	Include vehicles with speeds between 10 km/h and 160 km/h.
Separation	No filter on Separation - (Headway)
Direction	North, East, South, West bound.
Classes	Include class 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Scheme	Classified vehicles - ARX
Time	From 13:00 Monday, 20 September 1993 to 14:24 Monday, 27 September 1993
	Disable filter

Shortcut to the Advanced option's Scheme page

The available schemes are presented in a tree, divided into OEM and External schemes. Selecting a scheme will provide a short description. Note that changing between schemes will reset the Profile's class filter to the selected scheme's default.

Profile	×
General Format Header Colors Scheme Speed Mass Separation A Class scheme Class scheme description Class scheme description Scheme FA Scheme F39 + Class scheme f30 + Classcheme f30 + <td>Toadi94. Il removas class 12. inserts a short two-ade class as</td>	Toadi94. Il removas class 12. inserts a short two-ade class as
Event count method Count events divided by setup divisor Interpolate binned data	• OK Cancel

Selecting a Classification Scheme

Aggregating a Scheme

Most classification schemes define a grouping of classes into similar types of vehicles. For example, schemes commonly group passenger vehicles into *light*, rigid trucks and buses into *medium*, and articulated vehicles into *heavy*.

Schemes that define a set of Aggregate classes have a + character after their name in the scheme tree. Selecting the **Aggregate the selected scheme** option will produce reports with the Aggregate classes instead of the base classes. The Profile's class filter will be automatically set to the defined aggregate classes.

Profile General Format Header Colors Scheme Speed Mass Separation Adjust Class scheme Class scheme description			
Lass scheme beschpion Lass scheme beschpion Lass scheme beschpion Lass scheme beschpion Lass scheme ARX is a notification of AustRoads94. It removes class 12, moves all other classes up by one, and inserts a short two-axie class as class one.	Summary of ARX Globals Names		×
	Class Class Name	Aggregate	Aggregate Name 🔄
AustRoads94 +	0 N/A	0	A0
→ ♣ NAASRA + E	1 MC	1	Light
Swedish + V Aggregate the selected class scheme	2 SV	1	Light
TNZ 1999 + Species=4 Details	🕂 🔶 3 SVT	1	Light
Scheme Axle	4 TB2	2	Medium
External schemes	5 TB3	2	Medium
	6 T4	2	Medium
	7 ART3	3	Heavy
S Chelsea	8 ART4	3	Heavy
- 😼 DfT-UK	9 ART5	3	Heavy
	10 ART6	3	Heavy
	11 DD	э	Home
Event count method Count events divided by setup divisor			Close
☑ Interpolate binned data			
OK. Cancel			

Combining classes using Aggregates

The mapping of base classes into Aggregate classes can be viewed by clicking the **Details** button. The **Names** page lists all of the base classes for the selected scheme, and the Aggregate classes they map to. For the following example, base classes 1-3 map to Aggregate class 1, base classes 4-6 to Aggregate class 2, and 7-12 to Aggregate class 3. As a general rule, the unclassifiable vehicle class will map to the same Aggregate class number, in this case 13.

A report's header also displays the Aggregate class map in condensed form. For example, **(ARX Aggregate (0 1 1 1 2 2 2 3 3 3 3 3 3 13))** represents the previous example. Count along for the base class (starting at zero), and the number is the Aggregate class.

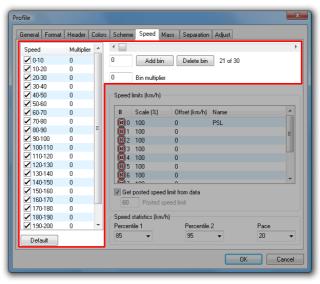


Note: The Aggregate mapping for OEM Schemes is not editable. Most classification scheme specifications define the Aggregates, just as they do the individual class rules. External Schemes are user-editable, and contain a section that sets the Aggregate mappings.

Speed Bins

Editing Speed Bins

Speed bins in MCReport are completely flexible. Given the raw data in MetroCount datasets, vehicles are binned during analysis, per the speed bins set in a report's Profile. A maximum of 30 speed bins can be set, and each can be enabled and disabled as required.



Modifying speed bins

Speed bin settings are located in the **Speed** page of the Advanced Profile options. The speed units (km/h or mph) are per the option in the **General** page. Speed bins are defined in the list on the left, with the check-boxes used to determine which bins will appear in reports. Vehicles falling in hidden bins are still included in statistical calculations.

The list of speed bins is contiguous. Each speed bin includes its lower bound, but not its upper bound. For example, the bin **50-60** includes all vehicles travelling 50 and above, but less than 60.

Speed bins are added by using the slider bar at the top. Moving the slider to the desired value and clicking the **Add bin** button will split the bin that contains that value, creating two new bins. For example, given the bin **10-20**, adding a bin at **15** will result in the bins **10-15** and **15-20**.

Selecting a bin and clicking the **Delete bin** button will remove the bin, and join the upper bound of the preceding bin to the lower bound of the following bin. For example, given the bins **10-20**, **20-30** and **30-40**, deleting **20-30** will leave **10-30** and **30-40**.

The **Default** button at the bottom will return the speed bins to a typical set of values.

Speed Bin Multipliers

Each speed bin has a user-defined weighting value called a **Multiplier**. Multiplying the total vehicles in each speed bin by the bin's multiplier, and summing the results gives a value called the **Speed Rating**. This value can be used for comparing sites, such as by the severity of speeding.

Changing a bin's multiplier is simply a matter of selecting the bin, and entering a number in the **Bin multiplier** box. The bin's multiplier will automatically update.

Posted Speed Limit

The Posted Speed Limit (PSL) is the speed limit at the site where data was collected, and is used as the basis for speed statistics such as the number of speeding vehicles. The PSL can be settings are located on the **Speed** page of the Advanced Profile options.

Speed 2 0-10	Multiple	- fil	<	Parkets bin	21 of 30	,		#	Scale (%)	04	Name	
110-20	0		ADD DR	Delete Del	210.30			#	Scale (%)	Offset (km/h)	Name	
20-30	0		0 Din multiplier					0	100	0	PSL	
✓ 30-40 ✓ 40-50	0	- 18	Speed limits (km/h)					90		-		
50-60			obeed must learned					60 1	100	5	PSL+5	
60-70	0		# Scale (%)	Offset (km/h)	Nane	<u>^</u>		601 602	110	0	PSL+10%	
70-80	0		B 0 100	0	PSL				110	0	F3L+10%	
2 80-90 2 90-100	0	-1	1 100 1 100	5	PSL+5 PSL+10%	1		60 3	100	0		
100-110	0	- 10	3 100	0	P36+105	_		18.				
110120	0		H 4 100	0				60 4	100	0		
120-130	0		5 100	0				605	100	0		
130140	0	_	6 100	0		-		1	100	U		
✓ 140-150 ✓ 150-160	0	- 10						606	100	0		
160-170		- 11	Get posted speed					87	100	-		
170180			60 Posted sp	sed limit				10.01 7	100	<u> </u>		
100-190	0		Speed statistics (km/h				1			r 57 - 15		
190-200	0	*	Percentile 1	Percentile	2	Pace 20		🔽 Get	postea speea	limit from data		
Default			15 +	95		20 .		60	Posted so			

Speed limits

The PSL can be automatically derived from the tagged datasets. With the **Get posted speed limit from data** option checked, MCReport will scan the **Description** field of the tagged datasets' headers, looking for a PSL in the following form:

- Must be enclosed in angle brackets < >
- Default is km/h. Append an 'm' or 'M' for mph.
- The PSL can appear anywhere in the description, but other angle brackets cannot be inserted when using this feature.

Example Site	Descriptions
km/h	mph
Hay St <60>	<40 mph> Speed test, Euston Road
<60km/h> Hay Street	ACPO test, Harrow Road <40m>
Hay St, <50 km/h> study	Harrow Road, PSL=<40 MPH>

With this option checked, if MCReport does not find a valid speed limit, or there are multiple tagged datasets with conflicting PSLs, the PSL will be set to zero.

The best time to insert the PSL into the Description field is when a RSU is setup, and when creating Site Lists. For existing datasets the PSL can be inserted into the description using the **Transform data file** feature in MCReport's File Tree.

When the automatic PSL option is unchecked, the PSL can be manually entered in the **Posted speed limit** box provided.

Speed Limits

The **Speed limits** list allows up to 10 additional speed thresholds to be set based on the PSL, using the formula (**PSL** * **Scale/100**) + **Offset**. The **Scale** column is a percentage, and **Offset** can be a positive or negative amount, in the same units as the PSL. Each additional limit can also be uniquely named.

To edit a speed threshold, simply double-click. Note that the first limit in the list is always the PSL, and cannot be changed.

110 Scale (percent) 0 Offset km/h PSL+10% Name	.imit = PSL *	Scale/100 + Offset
- Offsee Nillyn	110	Scale (percent)
PSL+10% Name	0	Offset km/h
Tianio -	PSL+10%	Name

Editing speed limit thresholds

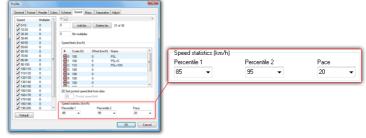
For example, given a PSL of 80, a scaling percentage of 110 will result in a speed threshold of 88. For a simple offset, leave the scaling percentage at 100 and use the Offset field.

Thresholds which are left as the same as the PSL (100% + 0) will not be displayed in reports.

Speed Percentiles and Pace

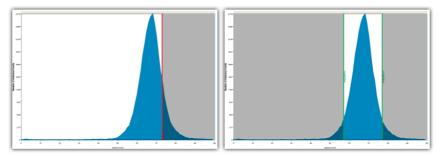
The **nth speed percentile** is the speed below which \mathbf{n} % of vehicles were travelling. For example, the commonly used 85th percentile is the speed below which 85% of vehicles were travelling. MCReport supports two speed percentiles, which can be set in 5% steps.

The **speed pace** is a continuous band of speeds **n km/h** or **mph** wide that contains the largest number of vehicles. The speed pace is a measure of the dispersion of speeds at a site, based on the number and percentage of vehicles within the pace. The speed pace can be set in 5 km/h or mph increments.



Speed statistics

For example, given a speed histogram, the 85th speed percentile will be a vertical line, with 85% of vehicles to the left. A 20km/h pace is a band 20km/h wide that contains the most vehicles.



Conceptual speed histogram examples showing 85th percentile, and 20km/h pace

Speed Statistics Block

Many speed-related reports combine the above speed limits and statistics into a compact block. An example of the form of this is provided below.

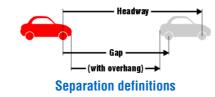
 $\label{eq:speed_limit} \begin{array}{l} \mbox{Vehicles} = 125765 \\ \mbox{Posted speed limit} = 80 \mbox{ km/h}, \mbox{Exceeding} = 84352 \mbox{ (}67.07\%\mbox{)}, \mbox{Mean Exceeding} = 86.88 \mbox{ km/h} \\ \mbox{Limit 1 (PSL+10%) (}80 \mbox{ * 110\%\mbox{)}} + 0 = 88 \mbox{ km/h}, \mbox{Exceeding} = 27223 \mbox{ (}21.65\%\mbox{)} \\ \mbox{Maximum} = 174.7 \mbox{ km/h}, \mbox{Minimum} = 0.0 \mbox{ km/h}, \mbox{Mean} = 83.2 \mbox{ km/h} \\ \mbox{85\% Speed} = 90.0 \mbox{ km/h}, \mbox{95\% Speed} = 95.8 \mbox{ km/h}, \mbox{Median} = 82.4 \mbox{ km/h} \\ \mbox{20 \mbox{ km/h} \mbox{Pace} = 73 - 93, \mbox{Number in Pace} = 107015 \mbox{ (}85.09\%\mbox{)} \\ \mbox{Variance} = 60.72, \mbox{Standard Deviation} = 7.79 \mbox{ km/h} \end{array}$

Separation

Headway vs Gap

Separation is the *time* in front of a vehicle to the last vehicle travelling in the same direction. The **Separation** page in the Advanced Profile options provides the option to define separation as:

- Headway time between the first axles of two vehicles.
- Gap time between the last axle and first axle of two vehicles.



When using gap, the **Estimate vehicle overhang** option makes a reasonable adjustment to the actual value to account for the distance between the detected axle and the physical end of the vehicle.

Profile		
General Format	Header Colors	Scheme Speed Mass Separation Adjust
Separation	Multiplier	11 of 30 used
♣ 0-0.5	0	Breakpoint
🕒 0.5-1	0	0 Add bin Delete bin
🕒 1-2	0	
🕒 2-4	0	0 Bin multiplier
4-8	0	o Bin multiplier
8-16	0	
16-32	0	Separation is Headway
32-64	0	Separation is Gap
64-128	0	Estimate vehicle overhang
128-1000	0	
🕒 Stop at 1000		
< III	- F	
Default		-
		OK Cancel

Separation definition

Separation Bins

Editing Separation Bins

Separation bins, like speed bins, are user-definable up to a maximum of 30 bins. The separation unit is seconds, and uses the separation definition option described above.

The list of separation bins is contiguous. Each separation bin includes its lower bound, but not its upper bound. For example, the bin **1-2** includes all vehicles with a separation of one second and above, but less than two.

Separation bins are added by entering a value in the **Breakpoint** box, and clicking the **Add bin** button. This will split the bin that contains the entered value, creating two new bins. For example, given the bin **0-0.5** adding a bin at **0.25** will result in the bins **0-0.25** and **0.25-0.5**.

Selecting a bin and clicking the **Delete bin** button will remove the bin, and join the upper bound of the preceding bin to the lower bound of the following bin. For example, given the bins **1-2**, **2-4** and **4-8**, deleting **2-4** will leave **1-4** and **4-8**.

The **Default** button at the bottom will return the separation bins to a typical set of values.

Separation Bin Multipliers

Each separation bin has a user-defined weighting value called a **Multiplier**. Multiplying the total vehicles in each separation bin by the bin's multiplier, and summing the results gives a value called the **Separation Rating**.

Changing a bin's multiplier is simply a matter of selecting the bin, and entering a number in the **Bin multiplier** box. The bin's multiplier will automatically update.

Estimated Mass

MCReport provides basic support for estimated pavement loading calculations, based on the volume and class distribution of traffic. The **Mass** page of the Advanced Profile options provides a table to enter estimated standard axles, freight mass and gross mass, per class of vehicle.

ieneral	Format	Header Colors 9	cheme Speed Mass Separation Adjust	
Class	ESA	Freight mass (kg)	Gross mass (kg)	
0	0	0	0	
1	0	0	0	
2	0	0	0	
3	0	0	0	
4	0.6	2000	8000	E
5	1.5	5000	13800	
6	3.6	9000	19900	
7	1.3	4000	13600	
8	1.7	5000	16800	
9	2.6	11000	24900	
10	3.1	16000	31000	
11	5.3	22000	42000	
12	5.7	33000	57200	
13	0	0	0	
14	0	0	0	
15	0	0	0	
16	0	0	0	-
				Clear

Estimated Mass table

To edit a row in the table, simply double-click. Units will be kilograms (kg) or pounds (lb) per the units option in the Advanced Profile's **General** page.

4	Vehicle class
0.6	Equivalent standard axles
2000	Average freight mass (kg)
8000	Average gross mass (kg)
	0K Cancel

Editing mass table rows

Note that this table is closely linked to the selected classification scheme, and may differ between regions and counties that use the same classification scheme. Values are normally derived from weigh-station data of regional vehicle types, and their freight and gross mass.

Reports that use the Estimated Mass table include the **Custom List** report, and **Daily Classes (Estimated Mass)**.

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