# **Traffic Data, Driver Behaviour**

# **Guide for finding issues**





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# 1 In General

# 1.1 Terminology

Traffic Studio uses the Transmodel terminology.

Transmodel	Others
Block	Runs
Duty	Shifts
Journey	Trip
Line	Route
Route	Route variant

# 1.2 What to Find and Where?

	Assignment Status	Daily Diagnostics	Event History	Journey Time / Link Summary	Line Report	Punctuality & Deviation	Route Checker	Traffic Log	Trip Playback
Early de- assignment	х						Х		
Early departure from timing stop point			Х	Х		Х		х	х
Early journey start			X	Х				х	
Extreme early departure				Х				Х	
Extreme late departure				Х				Х	
Journey incomplete					х		х	х	
Journey late to start point				Х			Х	х	
Journeys not driven / assigned	x	X	Х		Х		Х	х	
Late assignment	Х								
Late journey start			X	Х				х	
Off-route		Х			Х		Х		Х
Open door outside of stop point							х		Х
Part of route skipped		х					Х		



	Assignment Status	Daily Diagnostics	Event History	Journey Time / Link Summary	Line Report	Punctuality & Deviation	Route Checker	Traffic Log	Trip Playback
Stop passed despite stop request active							x		
Timetable adherence				Х		Х		х	Х

# 1.3 Brief Description of the Plugins

Under Scheduled Data and Driver Behaviours, we will point out which plugins can be used to find out various issues. To avoid describing each of them multiple times, we will give a brief guide in this section and refer to it. Please refer to the training material and/or the manual for more detailed information. All the plugins listed below can be exported to Excel.

Most reports can be sorted after multiple columns. Click on a column header to sort the table the first time, then use SHIFT while selecting additional column by clicking on them.

# 1.3.1 Assignment Status

This goes into details about all planned blocks for each of their trips so you can quickly identify any issues such as late assignment, early de assignment, double assignment, etc.

- 1. Select a day
- 2. Select a company
- 3. Generate

# 1.3.2 Daily Diagnostics

The report generates automatically for the latest traffic day, for the first company in the list (if you have access to more than one).

You can change the date and the click on Search. Afterward, you can change company, if applicable.

Click on any problem in the list to the bottom left side to display its 30-days trend in the right bottom chart. You can show multiple problems at the same time.

Expand a problem to see its top 10 offenders.

# 1.3.3 Event History

Event History is part of 3 plugins. You might want to look at Event Configuration to see which are activated and what their thresholds are. If you modify them, keep in mind that it will affect the data from the change date, not what has already been gathered. E.g., activating "Journey late" today will not provide any data on the late journeys that occurred yesterday.

Note: The thresholds and activation status in Event Configuration are by companies. If you have access to more than one, make sure to select the right one in the drop down at the top.

- 1. Select a time interval. The longer the interval, the longer it will take to generate the data. However, you will get better patterns.
- 2. Use the Event Filter to focus on one issue at a time if you want to use the Heat Map.



- 3. Use the free text filter if you want to look for specific journeys, line, stop points, vehicles, etc.
- 4. The Heat Map function is activated by clicking on the button at the far right. It is used with the Tiled Map, so make sure to have it visible.

# 1.3.4 Route Checker

Route Checker is often used for finding geography-related errors. However, as it lists all events, it can be useful for those which are not part of other reports. It works very similarly to Event History. Another difference is that you can draw an area on the map and see all events generated there, or narrow it to specific vehicles/lines before generating the report.

- 1. Select a time interval.
- 2. Select a type (vehicle, line or area).
- 3. Select filters. Note that if you're looking for one of a few specific events, it could be worth selecting them there.
- 4. Generate
- 5. Use available filters to narrow down the table to one event before activating the heat map. If you use any filter, remember to click on "update" to apply them.

# 1.3.5 Journey Time Report

A great report to analyse your timetables and see where you could make adjustments about driving time, stay time and departure times.

- 1. Select a time interval (dates). Remove specific dates and/or weekdays.
- 2. Optional but recommended: Select a time interval. You want to compare apples with apples. Morning rush hour is different than Sunday afternoon traffic.
- 3. Select a line.
- 4. Select a route.
- 5. Optional: Remove journeys
- 6. Click on Generate.

We recommend using the "Exclude journeys" filter to remove extreme deviations due to exceptions. Remember to click on "Filter" afterward to update the table.

There are two views to this report. To see the second one, use the "Grouped by departure" option at the top, then click on Filter.

Note: The Link Summary report works very similarly. The difference is that you can get all trips between two stop points, regardless of their lines or routes (as long as they share the same partial route). The stop points do not have to be consecutive.

#### 1.3.6 Line Report

The report summarises data by line. Clicking on a line will list all its planned journeys in the lower table, regardless if they were driven or not.

- 1. Select from and to dates. The longer the interval, the easier it will as the off-route numbers will be higher.
- 2. Remove dates & weekdays that might affect the data if you are aware of any.
- 3. Select one or many lines.



- 4. Remove Empty runs (untick the box) so you only look at scheduled trips with passengers. You can always add reinforcements if you know they should not deviate from the norm.
- 5. Click on Generate.

# 1.3.7 Punctuality & Deviation Report

Provides an overview for the punctuality of selected lines or companies. It can be a good starting point before delving further in.

Punctuality only tells you how often your lines are on time. Deviations divides all these departures in 30 seconds slots for a more detailed overview.

- 1. Select a time interval (dates).
- 2. Select a comparison level: line or company.
- 3. Punctuality only: Select the interval for data visualisation.
- 4. Select lines, either via "lines" or your Line groups
- 5. Select specific traffic type(s) and/or weekdays.
- 6. Click on Generate.

If you select a lot of lines, we recommend to export to Excel to be able to read the data more easily.

## 1.3.8 Route Checker

We're used mostly event History below, but Route Checker is just as valid for **geography**related issues. It does not require any activation and can be searched via vehicle, line or even a drawn area on the map. Use it in combination with the Tiled Map to see where all events have been generated, and use the Heat Map function to see patterns.

Route Checker's event filter will adjust to only show the generated events for your search. There are over 200 different types that can be listed.

- 1. Select a time interval. The longer the interval, the longer it will take to generate the data. However, you will get better patterns.
- 2. Pick a selection type: Vehicle, Line or Area.
  - a. Vehicle:
    - i. Select one or multiple vehicles
    - ii. Continue with step 3.
  - b. Line:
    - i. Select one line in the drop-down menu.
    - ii. Continue with step 3
  - c. Area:
    - i. Draw an area on the map with the mouse (rectangle).
    - ii. Select one or multiple vehicles
    - iii. Continue with step 3.
- 3. Under Filter, select one or multiple event types.
- 4. Under source, select one of multiple sources.
- 5. Generate the report.



# 1.3.9 Traffic Log Report

Traffic Log shows all the journeys with problematic issues.

- Journey not driven
- Journeys incomplete
- Journeys late to start point
- Late departures (from any stop point)\*
- Early departure (from any stop point)\*
- Late journeys start\*
- Early journeys start\*

How to generate:

- 1. Choose a time interval, there is time limit.
- 2. Modify the default Traffic Deviations Thresholds if needed (\*).
- 3. Select your line(s).
- 4. Generate.

The upper table summarises all the traffic deviations by line. The column with thresholds will adjust to your changes.

Click on any line to get a list of all the issues. You can sort them by column and filter the table with both the Deviation filter and the free-text filter.

If you export it to Excel, you can use various formulas to get statistics linked to stop points, journeys, vehicle ID, etc. in order to look after some patterns.

Note: For Late and early departures, the Deviation/Cause column will often have a +X, where X is the number of consecutive stop points with the same issue.

Example:

ł	Journey incomplete	360_250p_Fpabe	304M	Macksville	3581148495	Park Beach Plaza	2021-05-11 14:50:00			2021-05-11
	Early departure +6	360_405p_Fmapo	309M	Coffs Harbour	3581148585	Coffs Harbour Health Campus	2021-05-11 17:38:00	2021-05-11 17:35:32	-00:02:28	2021-05-11
٦	lourney incomplete	360 1150a Enabe	301M	Mackovilla	35811/8/06	Dark Reach Diaza	2021 05 11 11-50-00			2021 05 11

This row tells you that this specific trip started 2:28 minutes early from Coffs Harbour Health Campus and remained too early for the next **6** stop points according to the threshold (1 minute in this case). In total, the vehicle departed too early for **7** stop points in a row.

#### 1.3.10 Trip Playback

The report consists of a map and a table. The map shows the driven data for all involved vehicle(s). The table lists all the vehicle reports so you can follow them step by step.

When selecting a row, the data related to the journey will be displayed, i.e., the planned route and its stop points are going to be marked on the map. The vehicle icon will also reflect its status at the time: error symbols, time deviation colour, etc.

- 1. Select a date.
- 2. Select a time interval (hh:mm).
- 3. Select Vehicles, Lines or Blocks.
- 4. Check the items you want to investigate.
- 5. Click on Generate.



# 2 Scheduled Data

# 2.1 Assignments

In order to get the best information in the reports, drivers must be logging in and out of their trips/shifts/duties. Not doing so can lead to misleading results such as, but not limited to:

- Journeys not driven
- Incomplete trips
- Driven distance on-route
- Driven distance off-route
- Passenger counts
- Pass-by departures
- Punctuality

# 2.1.1 Traffic Log Report

Key Issue: Journeys not driven.

• Journeys not driven: The driver never logged in.

Filter the bottom table with "journeys not driven" to get a complete list of journeys without assignment.

You can sort it by journey (or even block) to see if there is a pattern of repetition for specific ones, as a starting point to investigate further.

In the example below, data was pulled for a whole month for line 363. Block SA14A has 29 non driven journeys.

- 20181708 x5
- 20181709 x12
- 20181710 x12



Line		Journeys (Reported/ Planned)	/	Departures (Repor Planned)	ted/	Journeys not driven	Journeys Incomplete	Journeys late to start point	0	Late Departure (+15 Minutes	5	Early D	)epartures Minutes)	Late (+
360 Busway	s North Coast		393/398	8	3,107/9,076	5	102	2	0		647		130	D
361 Busway	s North Coast		37/44		550/748	7	1	I	0		49		1	1
362 Fores	t North Coast		127/132	. 4	4,988/5,635	5	62	2	0		4		887	7
363 Fores	t North Coast		112/154	6,	6,800 / 10,639		107	7	0		209		1,511	1
Total		44,991 /	/ 54,	822,706 / 1,	138,779	9,138	18,316		0	12,9	968		126,003	
Line 363 Comp	any Forest N	lorth Coast	De	viation/Cause (1/9)	- (	<b>ર</b>								
Deviation/Cause	Journ	ey	Block	Destination	Vehicle	Stop Point	Pla	nned Departure	Act	ual Departure	Devia	ation	Date	Caus
Journey not driver	n	20181723	SA18P	Toormina Gardens	???	Toormina Gardens	202	1-04-22 13:40:00					2021-04-22	
Journey not driver	n	20181708	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-30 08:05:00					2021-04-30	
Journey not driver	n 🛛	20181708	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-04 08:05:00					2021-05-04	
Journey not driver	1	20181708	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-05 08:05:00					2021-05-05	
Journey not driver	1	20181708	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-06 08:05:00					2021-05-06	
Journey not driver	n	20181708	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-07 08:05:00					2021-05-07	
Journey not driver	n	20181709	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-19 09:30:00					2021-04-19	
Journey not driver	n	20181709	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-20 09:30:00					2021-04-20	
Journey not driver	n 🛛	20181709	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-21 09:30:00					2021-04-21	
Journey not driver	n 🛛	20181709	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-23 09:30:00					2021-04-23	
Journey not driver	n	20181709	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-26 09:30:00					2021-04-26	
Journey not driver	n	20181709	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-27 09:30:00					2021-04-27	
Journey not driver	n 🛛	20181709	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-30 09:30:00					2021-04-30	
Journey not driver	n	20181709	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-03 09:30:00					2021-05-03	
Journey not driver	n	20181709	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-04 09:30:00					2021-05-04	
Journey not driver	n	20181709	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-05 09:30:00					2021-05-05	
Journey not driver	n	20181709	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-06 09:30:00					2021-05-06	
Journey not driver	n	20181709	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-07 09:30:00					2021-05-07	
Journey not driver	n 🛛	20181710	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-19 10:55:00					2021-04-19	
Journey not driver	n 🛛	20181710	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-20 10:55:00					2021-04-20	
Journey not driver	n	20181710	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-21 10:55:00					2021-04-21	
Journey not driver	n	20181710	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-23 10:55:00					2021-04-23	
Journey not driver	n	20181710	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-26 10:55:00					2021-04-26	
Journey not driver	n	20181710	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-27 10:55:00					2021-04-27	
Journey not driver	n	20181710	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-04-30 10:55:00					2021-04-30	
Journey not driver	n	20181710	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-03 10:55:00					2021-05-03	
Journey not driver	n	20181710	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-04 10:55:00					2021-05-04	
Journey not driver	n	20181710	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-05 10:55:00					2021-05-05	
Journey not driver	n	20181710	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-06 10:55:00					2021-05-06	
Journey not driver	n	20181710	SA14A	Toormina Gardens	???	Toormina Gardens	202	1-05-07 10:55:00					2021-05-07	
Journey not driver	n	20181673	SA3P	Coffs Base Hospital	???	Toormina Gardens	202	1-05-14 14:40:00					2021-05-14	

#### Figure 1: Traffic Log Report, Journey not driven

If we quickly check the Line Report to get all planned journeys (next image), we can confirm that drivers have logged to that block and these journeys at other dates.



Line	Σ Pla Jour	anned neys	Σ Actual Journeys		Σ Planne Departu	d res	Σ Actua Depart	al ures	Σ Plann Distanc	ned Σ On-Route ce [km] Distance [km]		-Route Σ Off-Route ance [km] Distance [km		e Reported/ m] Planned distance [%]		
363 Forest N	lort	154		112		10639		7000		5,387.32		267.16		0.00		5.0
		_									•••					_
Traffic Day	Vehicle	Line		Block	Journey	Journey	Types	Destinatio	n	Planned	Departures	Actua	I Departures	Repo	orted Messages	Expe
19/04/2021	3581021980	363 Forest N	orth Coast	SA3P	20181673	Normal Jo	ourneys	Coffs Base I	Hospital		51		50		353	
18/05/2021	3581021980	363 Forest N	orth Coast	SA14A	20181710	Normal Jo	ourneys	Toormina G	ardens		73		72		438	
18/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181709	Normal Jo	ourneys	Toormina G	ardens		71		70		439	
18/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181708	Normal Jo	ourneys	Toormina G	ardens		73		73		471	
17/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181710	Normal Jo	ourneys	Toormina G	ardens		73		71		444	
17/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181709	Normal Jo	ourneys	Toormina G	ardens		71		69		422	
17/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181708	Normal Jo	ourneys	Toormina G	ardens		73		73		462	
14/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181710	Normal Jo	ourneys	Toormina G	ardens		73		71		449	
14/05/2021	3581021980	363 Forest N	orth Coast	SA14A	20181709	Normal Jo	ourneys	Toormina G	ardens		71		69		423	
14/05/2021	3581021980	363 Forest N	orth Coast	SA14A	20181708	Normal Jo	ourneys	Toormina G	ardens		73		48		340	
13/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181710	Normal Jo	ourneys	Toormina G	ardens		73		72		421	
13/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181709	Normal Jo	ourneys	Toormina G	ardens		71		70		419	
13/05/2021	3581021980	363 Forest N	orth Coast	SA14A	20181708	Normal Jo	ourneys	Toormina G	ardens		73		73		477	
12/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181710	Normal Jo	ourneys	Toormina G	ardens		73		71		448	
12/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181709	Normal Jo	ourneys	Toormina G	ardens		71		69		423	
12/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181708	Normal Jo	ourneys	Toormina G	ardens		73		73		458	
11/05/2021	3581021984	363 Forest N	orth Coast	SA14A	20181710	Normal Jo	ourneys	Toormina G	ardens		73		71		526	
11/05/2021	3581021984	363 Forest N	lorth Coast	SA14A	20181709	Normal Jo	ourneys	Toormina G	ardens		71		69		509	
11/05/2021	3581021984	363 Forest N	lorth Coast	SA14A	20181708	Normal Jo	ourneys	Toormina G	ardens		73		72		606	
10/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181710	Normal Jo	ourneys	Toormina G	ardens		73		71		424	
10/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181709	Normal Jo	ourneys	Toormina G	ardens		71		70		420	
10/05/2021	3581021980	363 Forest N	lorth Coast	SA14A	20181708	Normal Jo	ourneys	Toormina G	ardens		73		72		467	
07/05/2021		363 Forest N	lorth Coast	SA14A	20181710	Normal Jo	ourneys	Toormina G	ardens		73		0		0	
07/05/2021		363 Forest N	lorth Coast	SA14A	20181709	Normal Jo	ourneys	Toormina G	ardens		71		0		0	
07/05/2021		363 Forest N	lorth Coast	SA14A	20181708	Normal Jo	ourneys	Toormina G	ardens		73		0		0	
06/05/2021		363 Forest N	lorth Coast	SA14A	20181710	Normal Jo	ourneys	Toormina G	ardens		73		0		0	
06/05/2021		363 Forest N	lorth Coast	SA14A	20181709	Normal Jo	ourneys	Toormina G	ardens		71		0		0	
06/05/2021		363 Forest N	lorth Coast	SA14A	20181708	Normal Jo	ourneys	Toormina G	ardens		73		0		0	
05/05/2021		363 Forest N	lorth Coast	SA14A	20181710	Normal Jo	ourneys	Toormina G	ardens		73		0		0	
05/05/2021		363 Forest N	lorth Coast	SA14A	20181709	Normal Jo	ourneys	Toormina G	ardens		71		0		0	
05/05/2021		363 Forest N	lorth Coast	SA14A	20181708	Normal Jo	ourneys	Toormina G	ardens		73		0		0	
04/05/2021		363 Forest N	lorth Coast	SA14A	20181710	Normal J	ourneys	Toormina G	ardens		73		0		0	
04/05/2021		363 Forest N	lorth Coast	SA14A	20181709	Normal Jo	ourneys	Toormina G	ardens		71		0		0	
04/05/2021		363 Forest N	lorth Coast	SA14A	20181708	Normal Jo	ourneys	Toormina G	ardens		73		0		0	
03/05/2021	3581028452	363 Forest N	lorth Coast	SA14A	20181708	Normal Jo	ourneys	Toormina G	ardens		73		51		466	
03/05/2021		363 Forest N	lorth Coast	SA14A	20181710	Normal Jo	ourneys	Toormina G	ardens		73		0		0	
03/05/2021		363 Forest N	lorth Coast	SA14A	20181709	Normal Jo	ourneys	Toormina G	ardens		71		0		0	

#### Figure 2: Line report

It could be that all these 29 journeys were cancelled, but not done via Traffic Studio / updated in the traffic data import, or that additional training/reminders might be needed with the drivers.

#### 2.1.2 Assignment Status & Trip Playback

Assignment Status can help us digging further into block issues. Let's take the blocks from the section above, S414A. We had missing data on the 5<sup>th</sup> May.

Use the free text filter to quickly find that block in the list.

With the mouse over, I can get extra information for each assignment and journey. We see an attempt to log in by vehicle 5551 during the first journey.

202	1-05-0	7					
Q	Sa14a				No. of	Blocks : 1	
Bloc	k Start	End	Company	Vehicle	Driver	# Journeys with Problems	Block, Journey Graph
SA14	A 21-05-0 08:05	7 21-05-07 12:50	Forest North Coast	358102555	1	4	20181708 Manual Assignment 709 20181710 20181693
							Issued         5/7/2021 8:24:08 AM           Vehicle         3381025551           Driver         Ended           5/7/2021 8:31:55 AM

#### Figure 3: Assignment Status



Given how brief it was, we can look into how vehicle 5551 behaved that day with Trip Playback.

The driver began their day on duty SA13A at 8:09am. However, the first journey's status is "between" while the vehicle travels around, picking and leaving passengers, and is actually in Woolgoolga while it should be around Coffs Harbour at the time of the journey. Given that it never drove near the first stop, it remained in the dead run journey even as it started travelling.



Figure 4: Trip Playback

At 8:24am they manually assigned themselves to duty SA14A, with the same issue: not even close geographically to the planned route.



Figure 5: Trip Playback



At 8:31am, the driver reassigned themselves to the proper duty, WG14, the system recognised its position in comparison to its journey, and everything proceeded as it should.





#### Figure 6: Trip Playback

In this case, we can see that the driver made two wrong assignments before finally selecting the right duty, while driving and reporting to the wrong duty&journey for about 20 minutes.



# 2.2 Timetable Adherence

## 2.2.1 Adjusting a Timetable

## 2.2.1.1 Punctuality Report

This report can be a good first step to identify lines with poor punctuality.

Make sure to select a max of 32 lines, and to compare by line. We suggest using the largest interval, so you only get one number by line. We also suggest exporting the results to Excel to make it easier to read it.



#### Figure 7: Punctuality Report

	A	В	С
L	Punctuality Report	Count	Group
		2021-02-01 -	
3	Dates	2021-05-19	
ł	Filters	Show data for	
5	Compare	Per Line	
5			
7	Departures with Valid Report	21011	
3	Departures missing assignment	87	
)	Departures w/o valid report	100	
0	Departures w/o any report	7381	
1	Journeys with Valid Report	11618	
2	Journeys w/o valid report	41	
3	Journeys w/o any report	5464	
4			
5	Punctuality	'%'	
6	364 Forest North Coast, On Time	64	2021
7	363 Forest North Coast, On Time	45	2021
8	371 Forest North Coast, On Time	56	2021
9	370 Forest North Coast, On Time	44	2021
0	362 Forest North Coast, On Time	64	2021
1	372 Forest North Coast, On Time	39	2021
2	600 Surfside Buslines, On Time	69	2021
3	601 Surfside Buslines, On Time	75	2021
4	602 Surfside Buslines, On Time	68	2021
5	603 Surfside Buslines, On Time	72	2021
6	604 Surfside Buslines, On Time	75	2021
7	605 Surfside Buslines, On Time	74	2021
_			

Figure 8: Excel view of punctuality report

We decide that we want to start with line 601.



#### 2.2.1.2 Journey Time Report

Remember! Be sure to select day(s) and times where traffic should behave similarly. You don't want to summarise everything Monday morning rush hour with Sunday mid-afternoon, they just aren't the same.

We select line 601 and start with the "TAFE NSW Kingscliff -> Tweed Regional Museum, Kennedy D" route, during afternoon rush hours on weekdays only.

We then filter the results to exclude anything over 10 minutes late/early to remove exceptions.

The resulting table shows that most of the departures are late, with 98% journeys starting with an average of 2:10 minutes late, and the majority of the journeys/departures remaining around 2 minutes late throughout the route. It could be worth investigating why almost all journeys begin with such a late start. This could be a snowball effect between following journeys which could be fixed with a longer buffer in-between / more time for dead runs.

Fr	om:	TAFE NSW Kingscliff	~	Grouped b	y Departure, interv	ral: - ~	Exclude j	journeys with o	leviation more than	12					
	To:	Tweed Regional Museum, Kennedy	D ~	Time: D	eparture to Depar	ture 🗸		Deviation tim	e: 10 ~ 00	~					
				Show T	Time Accumulated		Traffic: Pla	anned only			► Fitte	r.			
	Ste	op Point Name	Stop Point ID	Avg Planned Drive Time	Average Drive Time	Maximum Drive Time	Average At Stop Time	Max At Stop Time	Average Door Open Time	Max Door Open Time	Average Early Deviation Time	Max Early Deviation Time	Average Late Deviation Time	Max Late Deviation Time	Average Absolute Deviation Time
	TA	E NSW Kingsdiff	248721	-	-			-	-	-	00:01:06 (3)	00:01:54	00:02:10 (218)	00:08:00	00:02:09 (221)
	Mo	Phail Ave after Cudgen Rd	248768	00:00:38 (429)	00:00:46	00:03:20	00:00:08	00:01:39	00:00:06 (227)	00:01:31	00:01:23 (4)	00:02:58	00:02:31 (223)	00:08:13	00:02:30 (227)
	Vik	ing St at Olga St	248769	00:01:35 (429)	00:01:05	00:01:46	00:00:00	00:00:34	00:00:00 (227)	00:00:25	00:00:50 (9)	00:03:19	00:02:05 (217)	00:08:14	00:02:02 (227)
	Ma	rine Pde at Moss St	248738	00:01:47 (429)	00:01:54	00:06:57	00:00:05	00:06:44	00:00:05 (229)	00:06:35	00:00:28 (10)	00:03:29	00:02:14 (218)	00:07:38	00:02:08 (229)
	Kin	gsdiff	248730	00:03:00 (429)	00:02:19	00:06:55	00:00:45	00:04:53	00:00:38 (232)	00:03:47	00:00:32 (7)	00:02:01	00:02:17 (225)	00:08:50	00:02:14 (232)
	Los	ien Way at Ibis Ct	248728	00:02:26 (429)	00:02:32	00:04:25	00:00:05	00:01:15	00:00:03 (233)	00:01:06	00:00:25 (6)	00:01:26	00:02:27 (227)	00:08:53	00:02:24 (233)
	Los	ien Way before Beach St	248750	00:00:50 (429)	00:00:55	00:02:01	00:00:04	00:01:41	00:00:03 (233)	00:01:28	00:00:18 (6)	00:00:53	00:02:36 (227)	00:08:57	00:02:33 (233)
	Kin	gsdiff St at Zephyr St	248748	00:00:41 (429)	00:00:55	00:02:00	00:00:02	00:01:19	00:00:02 (233)	00:01:13	00:00:24 (2)	00:00:48	00:02:49 (231)	00:09:07	00:02:48 (233)
	Kin	gscliff St after Pacific St	248747	00:00:19 (429)	00:00:16	00:00:39	00:00:00	00:00:17	00:00:00 (233)	00:00:11	00:00:13 (5)	00:00:52	00:02:49 (228)	00:09:02	00:02:46 (233)
	Kin	gsdiff St before Surf St	248745	00:00:44 (429)	00:00:39	00:01:16	00:00:04	00:01:16	00:00:03 (234)	00:01:10	00:00:21 (4)	00:00:46	00:02:48 (230)	00:08:59	00:02:45 (234)
	Kin	gscliff St before Shell St	248743	00:00:32 (429)	00:00:25	00:00:46	00:00:06	00:02:56	00:00:05 (234)	00:02:51	00:00:16 (7)	00:00:45	00:02:49 (227)	00:08:54	00:02:44 (234)
	Wo	mmin Bay Rd after Kingscliff S	248741	00:00:43 (429)	00:00:45	00:03:35	00:00:04	00:00:55	00:00:03 (236)	00:00:50	00:00:13 (8)	00:00:45	00:02:57 (228)	00:09:04	00:02:51 (236)
	Wo	mmin Bay Rd at Phillip St	248719	00:01:11 (429)	00:00:55	00:02:34	00:00:04	00:01:25	00:00:03 (236)	00:01:20	00:00:20 (11)	00:00:39	00:02:48 (224)	00:08:43	00:02:40 (236)
	Wo	mmin Bay Rd at Walsh St	248736	00:00:41 (429)	00:00:35	00:03:08	00:00:07	00:01:25	00:00:05 (236)	00:01:19	00:00:28 (6)	00:00:49	00:02:43 (230)	00:08:36	00:02:40 (236)
	Ch	nderah	24871	00:00:53 (429)	00:00:46	00:01:15	00:00:04	00:00:55	00:00:03 (236)	00:00:48	00:00:22 (9)	00:00:55	00:02:42 (227)	00:08:23	00:02:37 (236)
	Wa	ugh St after Chindera Bay Dr	248717	00:00:11 (429)	00:00:21	00:03:53	00:00:05	00:00:58	00:00:04 (236)	00:00:51	00:00:36 (3)	00:00:47	00:02:53 (233)	00:08:49	00:02:51 (236)
	Sex	ton Hill Dr after Terranora R	248669	00:04:50 (429)	00:03:17	00:10:10	00:00:06	00:01:31	00:00:04 (236)	00:01:25	00:00:55 (56)	00:02:33	00:02:06 (178)	00:06:58	00:01:48 (236)
	Mi	njungbal Dr after Rivendell Rd	248620	00:03:01 (429)	00:03:13	00:07:09	00:00:05	00:01:09	00:00:04 (237)	00:01:05	00:00:39 (39)	00:02:22	00:02:07 (197)	00:07:51	00:01:52 (237)
	Twe	ed City Shopping Centre, Minj	248644	00:00:58 (429)	00:01:22	00:05:30	00:00:57	00:04:17	00:00:48 (237)	00:04:10	00:00:27 (5)	00:01:40	00:03:02 (231)	00:08:40	00:02:58 (237)
	Sou	uth Tweed Heads	24861	00:02:00 (429)	00:01:25	00:03:28	00:00:11	00:02:56	00:00:06 (237)	00:02:47	00:00:29 (25)	00:02:10	00:02:56 (211)	00:07:50	00:02:39 (237)
	Mi	njungbal Dr at Lloyd St	248619	00:01:11 (429)	00:00:39	00:01:55	00:00:13	00:02:48	00:00:10 (237)	00:02:38	00:00:41 (38)	00:02:30	00:02:47 (199)	00:07:47	00:02:27 (237)
	Mi	njungbal Dr at Agnes St	248668	00:00:50 (429)	00:00:27	00:03:05	00:00:06	00:01:15	00:00:05 (237)	00:01:10	00:00:59 (40)	00:02:37	00:02:32 (197)	00:07:19	00:02:16 (237)
	Mi	njungbal Dr after Dry Dock Rd	248617	00:00:59 (429)	00:00:46	00:05:14	00:00:04	00:05:28	00:00:03 (237)	00:05:15	00:01:12 (35)	00:02:45	00:02:22 (200)	00:06:52	00:02:10 (237)
	Wł	arf St opp River Tce	248522	00:02:47 (429)	00:01:38	00:06:26	00:00:05	00:01:08	00:00:04 (237)	00:01:01	00:01:20 (80)	00:03:56	00:01:50 (156)	00:08:04	00:01:40 (237)
	Twe	eed Heads Civic and Cultural C	248520	00:00:43 (429)	00:00:49	00:02:14	00:00:02	00:00:44	00:00:02 (237)	00:00:36	00:01:19 (72)	00:03:53	00:01:52 (165)	00:09:37	00:01:42 (237)
	The	Tweed Hospital, Powell St	248515	00:00:30 (429)	00:00:32	00:01:56	00:00:07	00:01:38	00:00:05 (237)	00:01:30	00:01:37 (49)	00:03:54	00:01:43 (188)	00:09:28	00:01:42 (237)
	Tw	ed Heads Bowls Club, Florence	248533	00:00:57 (429)	00:00:39	00:05:12	00:00:05	00:03:46	00:00:03 (237)	00:03:35	00:01:10 (77)	00:04:10	00:01:49 (158)	00:09:05	00:01:35 (237)
	Twe	ed Heads Visitor Information	24851	00:02:03 (429)	00:02:21	00:06:41	00:00:53	00:04:45	00:00:45 (237)	00:04:38	00:00:46 (11)	00:03:45	00:01:59 (225)	00:09:33	00:01:55 (237)
	Ma	ntra Twin Towns, Griffith St	248540	00:01:38 (429)	00:00:49	00:01:46	80:00:00	00:01:04	00:00:05 (237)	00:00:50	00:00:34 (52)	00:04:44	00:01:45 (183)	00:08:12	00:01:29 (237)
	Gri	ffith St at Coolangatta East	300216	00:01:34 (429)	00:00:55	00:03:05	00:00:07	00:01:08	00:00:05 (237)	00:01:03	00:00:47 (85)	00:05:24	00:01:29 (152)	00:07:13	00:01:14 (237)
	Co	olangatta Central	300217	00:01:22 (429)	00:01:03	00:03:30	00:00:27	00:03:09	00:00:22 (237)	00:02:57	00:00:59 (43)	00:05:42	00:01:16 (194)	00:06:19	00:01:13 (237)
	Ma	rine Pde at Kirra Beach	300220	00:01:21 (429)	00:01:46	00:04:06	00:00:06	00:01:01	00:00:04 (237)	00:00:55	00:01:06 (25)	00:04:33	00:01:41 (212)	00:07:28	00:01:37 (237)
	Lar	ham Street Park, Miles St	42251	00:00:56 (429)	00:01:08	00:03:37	00:00:07	00:01:21	00:00:04 (237)	00:01:15	00:00:59 (21)	00:03:19	00:01:57 (216)	00:08:12	00:01:52 (237)
	Mi	es St opp Kirra Park	42253	00:00:47 (429)	00:00:57	00:01:59	00:00:04	00:01:03	00:00:03 (235)	00:00:58	00:01:02 (17)	00:03:05	00:02:08 (218)	00:08:32	00:02:03 (235)
	Du	cat St opp Caloola Dr	248512	00:00:56 (429)	00:00:43	00:05:45	00:00:06	00:00:42	00:00:04 (234)	00:00:35	00:00:57 (22)	00:03:27	00:02:04 (212)	00:08:51	00:01:57 (234)
	Du	cat St after Compass Way	248532	00:00:55 (429)	00:00:43	00:03:15	00:00:04	00:00:44	00:00:03 (235)	00:00:32	00:01:00 (32)	00:07:03	00:02:02 (202)	00:09:11	00:01:53 (235)
	Du	cat St at Meridian Way	248529	00:00:31 (429)	00:00:29	00:02:49	00:00:03	00:02:36	00:00:02 (235)	00:01:09	00:00:56 (38)	00:07:07	00:02:09 (195)	00:09:02	00:01:56 (235)
	Ker	nnedy Dr opp Rose St	248528	00:01:12 (429)	00:02:02	00:07:10	00:00:09	00:02:16	00:00:06 (235)	00:02:07	00:01:13 (21)	00:06:26	00:02:58 (214)	00:09:40	00:02:49 (235)
	Ker	nnedy Dr before Gray St	248510	00:00:22 (429)	00:00:18	00:00:59	00:00:09	00:02:16	00:00:07 (235)	00:02:03	00:01:27 (18)	00:06:36	00:02:58 (217)	00:09:57	00:02:51 (235)
	17	3 Kennedy Dr	248525	00:01:45 (429)	00:00:41	00:03:31	00:00:05	00:00:29	00:00:03 (233)	00:00:23	00:01:05 (69)	00:07:43	00:02:48 (163)	00:09:14	00:02:17 (233)
	Ker	nnedy Dr after Limosa Rd	248523	00:01:10 (429)	00:00:34	00:12:53	00:00:03	00:01:04	00:00:02 (233)	00:00:58	00:01:18 (98)	00:08:30	00:02:49 (135)	00:09:58	00:02:11 (233)
	Two	eed Regional Museum, Kennedy D	248517	00:01:05 (429)	00:00:22	00:07:04	2		-	-	-	-	-	-	- ~

#### Figure 9: Journey Time Report

If we check at the other view "Grouped by Departure", we can also see a difference between average driving times from 46:57 to 54:41 for the same route, depending on the journeys. Perhaps different timetables for different times of the day might be helpful.



Fror	n: TAFE NSW Kingscliff	$\sim$	Grou	uped by Depa	rture, interva	l:	~ 🗸 🖂 E	xclude jour	neys with de	eviation more	than:			
т	o: Tweed Regional Museum, Kenned	y D 🗸	Tin	ne: Departu	re to Departu	ire	$\sim$	De	aviation time	./ 10 ~	00 ~			
				Show Time Ad	cumulated		Tra	ffic: Planne	ed only	•		$\sim$	F	İter
Þ	Planned Departure:		14:27:00	14:57:00	15:27:00	15:57:00	16:27:00	16:57:00	17:27:00	17:57:00	18:27:00	18:57:00	19:27:00	19:57:00
	Journey:	3	40:i601	41:i601O	42:i6010	43:i601	44:i601O	45:i601	46:i601	47:i601O	48:i601O	4:i601O	49:i601	50:i601
	# Observations:	429	25 (37)	19 (31)	22 (34)	21 (36)	22 (37)	12 (33)	17 (36)	24 (38)	16 (38)	15 (35)	15 (36)	13 (38)
	Stop Point													
	TAFE NSW Kingscliff	00:00												
	McPhail Ave after Cudgen Rd	00:38	00:55	00:59	01:13	00:55	00:54	00:48	00:50	00:55	00:51	00:46	00:42	00:45
	Viking St at Olga St	02:13	02:01	02:08	02:19	02:01	01:59	01:49	01:52	02:03	01:57	01:50	01:44	01:51
	Marine Pde at Moss St	04:00	03:50	03:51	04:16	03:47	03:52	03:30	04:08	04:05	04:10	03:38	03:48	03:56
	Kingscliff	07:00	06:47	07:32	07:24	06:43	07:05	06:22	07:09	07:15	07:14	06:30	06:26	06:52
	Lorien Way at Ibis Ct	09:26	09:16	10:19	10:03	09:18	09:35	08:55	09:40	09:54	10:00	09:00	09:00	09:27
	Lorien Way before Beach St	10:16	10:14	11:12	11:09	10:18	10:33	09:48	10:48	10:55	10:57	09:55	09:59	10:23
	Kingscliff St at Zephyr St	10:57	11:05	12:15	12:04	11:21	11:28	10:55	11:44	11:52	12:02	10:47	10:51	11:14
	Kingscliff St after Pacific St	11:16	11:20	12:31	12:21	11:37	11:42	11:10	12:02	12:10	12:19	11:03	11:14	11:30
	Kingscliff St before Surf St	12:00	12:02	13:11	13:06	12:18	12:28	11:49	12:44	12:58	13:01	11:45	11:55	12:18
	Kingscliff St before Shell St	12:32	12:31	13:42	13:41	12:49	13:00	12:15	13:17	13:28	13:36	12:11	12:21	12:41
	Wommin Bay Rd after Kingscliff S	13:15	13:11	14:30	14:23	13:40	13:48	13:06	14:06	14:19	14:20	13:31	13:19	13:19
	Wommin Bay Rd at Phillip St	14:26	14:12	15:35	15:23	14:39	14:49	14:00	15:05	15:19	15:13	14:26	14:17	14:13
	Wommin Bay Rd at Walsh St	15:07	14:59	16:20	16:07	15:22	15:30	14:39	15:44	15:58	15:58	15:00	14:52	14:46
	Chinderah	16:00	15:45	17:05	17:02	16:08	16:21	15:27	16:31	16:44	16:49	15:49	15:39	15:53
	Waugh St after Chindera Bay Dr	16:11	16:27	17:26	17:34	16:37	16:48	15:51	16:58	17:13	17:12	16:06	15:55	16:14
	Sexton Hill Dr after Terranora R	21:01	20:05	20:49	21:12	20:02	20:33	18:59	20:19	20:20	20:12	19:08	19:04	19:09
	Minjungbal Dr after Rivendell Rd	24:02	23:52	23:54	24:22	23:18	23:42	22:26	23:32	23:48	23:27	22:29	22:13	22:23
	Tweed City Shopping Centre, Minj	25:00	26:23	26:45	27:05	25:43	26:01	25:01	25:24	26:08	25:27	24:47	23:54	24:09
	South Tweed Heads	27:00	28:19	28:36	28:41	27:16	27:43	26:36	27:08	27:31	26:48	26:21	25:34	25:23
	Minjungbal Dr at Lloyd St	28:11	29:04	29:35	29:32	28:13	28:48	27:26	28:01	28:13	27:40	27:08	26:26	26:19
	Minjungbal Dr at Agnes St	29:01	29:37	30:04	29:59	28:43	29:15	28:03	28:34	28:42	28:04	27:54	27:19	27:00
	Minjungbal Dr after Dry Dock Rd	30:00	30:37	30:45	30:53	29:41	30:01	28:48	29:14	29:25	28:56	28:51	28:12	28:03
	Wharf St opp River Tce	32:47	32:33	32:28	32:42	31:16	31:46	30:35	30:50	31:10	30:35	30:31	29:55	29:47
_	Tweed Heads Civic and Cultural C	33:30	33:30	33:29	33:34	32:08	32:39	31:27	31:38	31:57	31:21	31:18	30:48	30:36
	The Tweed Hospital, Powell St	34:00	34:15	34:13	34:16	32:49	33:19	31:58	32:19	32:32	31:53	31:55	31:35	31:07
	Tweed Heads Bowls Club, Florence	34:57	35:01	34:55	35:09	33:28	34:07	32:38	32:59	33:12	32:35	32:32	32:13	32:07
	Tweed Heads Visitor Information	37:00	38:20	37:47	38:19	36:37	36:53	36:13	36:01	36:45	36:13	36:00	35:25	35:21
	Mantra Twin Towns, Griffith St	38:38	39:22	38:44	39:20	37:39	38:00	37:13	36:55	37:33	37:01	36:54	36:17	36:09
	Griffith St at Coolangatta East	40:12	40:33	39:46	40:15	38:39	39:14	38:13	38:01	38:32	37:52	37:46	37:13	37:03
	Coolangatta Central	41:34	42:03	41:24	41:49	40:10	40:38	40:12	39:33	40:09	39:14	39:10	38:42	38:07
	Marine Pde at Kirra Beach	42:55	43:59	43:17	43:54	42:19	42:47	42:10	41:28	41:49	40:54	40:47	40:18	39:45
	Lanham Street Park, Miles St	43:51	45:18	44:40	45:18	43:40	44:20	43:30	42:44	42:49	41:59	41:43	41:19	40:42
	Miles St opp Kirra Park	44:38	46:34	45:54	46:11	44:47	45:31	44:23	43:45	43:40	42:47	42:29	42:11	41:25
	Ducat St opp Caloola Dr	45:34	47:29	46:43	47:18	45:37	46:16	45:18	44:38	44:27	43:28	43:09	42:52	42:05
	Ducat St after Compass Way	46:29	48:16	47:42	48:07	46:17	47:07	46:06	45:23	45:14	44:11	43:58	43:41	42:47
	Ducat St at Meridian Way	47:00	49:01	48:38	48:50	46:47	47:45	46:28	45:45	45:37	44:36	44:23	44:04	45:09
	Kennedy Dr opp Kose St	48:12	51:36	51:32	52:09	49:28	50:15	48:18	47:36	47:13	46:08	46:04	45:53	45:08
	Kennedy Dr before Gray St	48:34	52:10	52:08	52:36	49:58	50:39	48:50	48:00	47:36	46:27	46:42	45:53	45:29
	176 Kennedy Dr	50:19	52:57	52:57	53:29	50:45	51:20	49:49	48:52	48:20	46:59	47:13	46:37	46:12
	Kennedy Dr after Limosa Kd	51:29	53:44	53:24	54:03	51:24	52:10	50:29	49:20	48:43	46:13	47:38	47:10	46:38
	Iweed Kegional Museum, Kennedy D	52:34	54:19	53:42	54:41	51:43	52:30	50:49	49:39	49:01	48:38	48:40	47:31	46:57

#### Figure 10: Journey Time Report - 2nd view

#### 2.2.2 Specific Events

#### Plugin: Traffic Log

Key Issue: Late journey start, Early journey start, Journeys late to start point. Look for patterns.

- Journeys started late & Journeys late to start point: It is possible that there is not enough time between both journeys for a buffer in case of delays, which can also cause a snowball effect and affects multiple consecutive journeys.
- Journeys started early: It is possible that the starting stop point does not offer the possibility for the driver to wait long enough, forcing them to start earlier than planned.



# 2.3 Geography

# 2.3.1 Stop Points

Each stop point has a circle with a 25 meters radius. This circle determinates when a vehicle has arrived and departed a stop point. You can display this by selecting a stop in Planned Traffic. They are also marked when displaying a route via Planned Traffic and in the Trip Playback report.

Some stop can have a terminal geofence, which is visible in the map if you have the Geofence plugin activated. In these cases, the geofence overrides the circle.

## 2.3.1.1 Event History

Key event: "Open door outside stop".

- 1. Filter the table with only "Open door outside stop".
- 2. Use the Heat Map function to identify problematic area. Double-click on any row or zoom in on the map to investigate the issues. You can use the free text filter to narrow the table to a specific stop point, but keep in mind that it will only filter the door opening FROM that stop point, not those TOWARDS that stop, i.e., have not arrived yet.

In the image below, we see all the events on the map, the red areas are those with the highest occurrence.

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	select: None		Latitude: -32,15701 Longitude: 156,95068
Drivers × w	tessage log × — My Displa	s x V Event Monitor x P Geofences x V Traffic Data importer x W Active Vehicles x II- Lines x 44 Report Points x III Report Sheets	* Koad Situation *
2021-04-28	- 2021-05-06 - Se	earch Event Filter (1/28) V Q 46721/304987	🥏
Origin	Event Type	Event Description	Modified Time
3581439145	Open door outside stop	Vehicle 3581439145, line 963 Busabout Wagga, journey 17:o963w Wagga Wagga, stop Wagga Wagga Base Hospital, Edwar , distance 273	21:35:15
3581298150	Open door outside stop	Vehicle 3581298150, line 603 Surfside Buslines, journey 17:i603OPc1w_TW3 Tweed Heads, stop Ti Tree Ave at Cassidy Cres , distance 235	21:29:17
3581047957	Open door outside stop	Vehicle 3581047957, line 572 Buslines Group, journey 572-1-R-C0005-17 Dubbo City Centre, stop Delroy Park Shops, Baird Dr , distance 728	21:15:35
3581439145	Open door outside stop	Vehicle 3581439145, line 963 Busabout Wagga, journey 17:o963w Wagga Wagga, stop Hunter St opp Dove St walkway, distance 293	21:09:01
3581439145	Open door outside stop	Vehicle 3581439145, line 963 Busabout Wagga, journey 17:o963w Wagga Wagga, stop Edward St opp Yanda Lane , distance 161	20:55:53
3581298150	Open door outside stop	Vehicle 3581298150, line 603 Surfside Buslines, journey 18:o603OPc1w_TW3 Pottsville , stop Tweed Coast Rd at Pandanus Pde , distance 239	20:51:33
3581439145	Open door outside stop	Vehicle 3581439145, line 963 Busabout Wagga, journey 17:o963w Wagga Wagga, stop Wagga Wagga Local Court , distance 581	20:48:59
3581439151	Open door outside stop	Vehicle 3581439151, line 960 Busabout Wagga, journey 15:o960w Lake Albert, stop Kooringal High School, Ziegler A , distance 137	20:46:22
3581049087	Open door outside stop	Vehicle 3581049087, line 571 Buslines Group, journey 571-1-R-C0005-3 Dubbo City Centre, stop Leichhardt St after Eyre St , distance 96	20:42:13
3581434005	Open door outside stop	Vehicle 3581434005, line 965 Busabout Wagga, journey 7:o965w Forest Hill, stop Wagga Wagga Local Court , distance 604	20:36:25
3581027204			
00 0001027204	Open door outside stop	Vehicle 3581027204, line 372 Forest North Coast, journey 20182178 Woolgoolga, stop Solitary Islands Way at Holloway , distance 109	20:25:11
3581439144	Open door outside stop Open door outside stop	Vehicle 3581027204, line 372 Forest North Coast, journey 20182178 Woolgoolga, stop Solitary Islands Way at Holloway, distance 109 Vehicle 3581439144, line 966 Busabout Wagga, journey 10x0966w Gobbagombalin, stop Estella Public School , distance 246	20:25:11 20:20:42
3581439144 3581148702	Open door outside stop Open door outside stop Open door outside stop	Vehicle 3581027204, line 372 Forest North Coast, journey 20182178 Woolgoolga, stop Solitary Islands Way at Holloway, distance 109 Vehicle 3581439144, line 966 Busabout Wagga, journey 10x966w Gobbagombalin, stop Estella Public School , distance 246 Vehicle 3581148702, line 365 Busways North Coast, journey 365,815p,Fpark1 Coffs Harbour, stop Coffs Harbour TAFE, Harbour Dr , distance 257	20:25:11 20:20:42 20:18:37
3581439144 3581148702 3581298150	Open door outside stop Open door outside stop Open door outside stop Open door outside stop	Vehicle 3581027204, line 372 Forest North Coast, journey 20182178 Woolgoolga, stop Solitary Islands Way at Holloway, distance 109 Vehicle 3581439144, line 966 Busabout Wagga, journey 10x3966w Gobbagombalin, stop Estella Public School , distance 246 Vehicle 3581148702, line 365 Busways North Coast, journey 365,815p,Fpark1 Coffs Harbour, stop Coffs Harbour TAFE, Harbour Dr., distance 257 Vehicle 3581298150, line 605 Surfside Buslines, journey 4i605OPc1w_TW6 Tweed City, stop Tweed City Shopping Centre, Minj , distance 666	20:25:11 20:20:42 20:18:37 20:12:07

The area below shows a lot of "open door outside stops" which affect multiple stops.

Figure 11: Event History





Figure 12: Heat map from Event History's data

Below is a good example of a stop point which is wrongly located in the geography data. This can affect punctuality reports, completion status, passenger counts, etc., when it comes to the **Riverina Anglican College** as well as the related trips and lines.



Figure 13: Location of the events compared to the stop point's location from the traffic data

Similar as above, though it is more questionable to which stop point these boarding and alighting belong.



	George 5	
St		
126 Webbs Siding Rd Webbs Siding Road		
	•	Ironbark Rd at Webbs Siding Rd
		<b>O G</b>
	N	

Figure 14: Distance between the recorded events and the stop points in the traffic data

In the example below, the door opening reports are linked to **Mitchell Hwy at Hight Park Rd**, about 1.4km away, while the map shows that they are likely within 100m from **High Park Rd at River**.



Figure 15: Distance between recorded events and the stop points in the traffic data



## 2.3.1.2 Route Checker

#### Key event: Unexpected door opening

Another way to look for wrongly positioned stop point is Route Checker. However, the events listed will not have as much information as Event History. However, they do not need to be activated, so if you haven't done it before in Events, then you can still look for it via Route Checker. You can also search by vehicle, line and area.

In the example below, we looked for all vehicles, during 2 weeks. We found 45 535 reports with "unexpected door open". We turned on the Heat Map to more easily identify the worse offenders.



Figure 16: Route Checker and heat map

We zoom in at one of the redder area, in this case Piggabeen Rd at Skyline Dr, to see that all unexpected door open are quite off from the stop point in the system. They are however, right in front of a building. Either the stop point is wrongly located, or the driver allows passengers to board/alight in front of that building.





Figure 17: Route Checker - Unexpected door open events, well outside the stop point area

We can add the "Door open" event to our search, to see if there are any around the stop point, to help confirm which of our two hypotheses might be right.



Figure 18: Route Checker - Unexpected door open (purple) and door open (blue) events, both well outside the stop point area

The result shows us all door opening (blue), and "unexpected door open" (purple), to be in front of the building. There are no door opening at all near the stop point, making it highly probable that the geography is wrong in the traffic data.

# 2.3.2 Route & Off-route

There can be many reasons for variations.

- Differences between scheduled data and driven route. This can be due to erroneous route data, planned detours due to road works which have not been added to the scheduled data, etc.
- Exceptional events such as accidents, weather, etc.
- Driver behaviour, e.g., skipping parts of the route.

#### 2.3.2.1 Line Report & Trip Playback

To find lines (routes) with unusual off-route, we use the Line Report and dig further with the Trip Playback (alt. Vehicle History).



The upper table lists all the selected lines. Sort the table by clicking on the "Off-route distance" column header and look for any results that might be too high.

Click on a line to list ALL trips during the selected period. You can then sort it by "Off-route distance" to quickly identify those with issues.

- Look for patterns to identify a difference between scheduled data and driven data. E.g., same trips/route patterns having similar off-route distances.
- A few meters should be normal. Scheduled data for route patterns are never 100% accurate. Consider this if a) your line covers large distances and b) your line has a lot of trips.

In the example below, we look at Line 922 which has 318km off-route in the past 30 days.

By sorting with "off-route distance", we can identify 49 trips (out of 57) with off-route values ranging between 3 and 10 km.

🗐 Blo	ock Graph ×	🖶 Duty Grap	h × 🕙 Tile	ed Map 🗙 🕓 Li	ne Report ×										
<b>ا</b>	Line			Σ Planned Journeys	Σ Actual Journeys	Σ Planned Departures	Σ Actual Departures	Σ Planne Distance	d 1 [km] [	Σ On-Route Distance [km]	Σ Off-Route Distance [ki	n] [%]	ted/ ed distance		
	963 Busabo	ut Wagga		3	76 301	11214	836	4	7,442.46	5,437.7	1	338.07	77.6		
	922 Junee B	Buses			57 55	1584	119	11	2,986.90	2,646.5		318.70	99.3		
	556 Ogdens	s Coaches		1	76 174	2706	228	12 1	0,527.35	9,158.6		263.41	89.5		
	965 Busabo	ut Wagga		3	50 278	2424	165	5	5,184.05	3,565.9		252.67	73.7		
	969 Busabo	ut Wagga		5	97 471	8865	662	:0	7,626.57	5,446.7		237.18	74.5		
	D840 QCity	Transit		1	31 63	1040	32	9	556.57	338.5		231.30	102.4		
	360 Busway	s North Coast		3	85 362	8817	821	2 2	5,421.48	24,211.6		228.81	96.1		
	S246 Makeh	hams Coaches			26 23	624	42	5	2,029.24	707.6		225.11	46.0		
	574 Buslines	s Group		1	18 47	986	43	7	3.922.57	1,945.7		219.27	55.2		
	S264 QCity	Transit			36 35	240	17	3	640.27	632.7		208.84	131.4		
	830 QCity Ti	ransit		9	94 970	32583	3077	2 1	9,249.06	14,974.7		197.40	78.8		
	S554 Braidw	vood Buses			26 26	351	23	6	1,114.46	1,035.5		188.73	109.9		
	836 QCity T	ransit		2	27 213	10099	673	0	4,266.25	2,567.9		186.59	64.6		
	601 Surfside	e Buslines		17	82 1222	75246	5030	IO 3	9,834.72	26,164.3		171.02	66.1		
	S148 Surfsid	de Buslines			17 12	595	29	16	957.08	621.5		165.74	82.3		
	S307 Buswa	iys North Coast			13 13	91	9	10	849.03	851.6		131.32	115.8		
	842 QCity Ti	ransit		1.	27 83	5748	334	6	9,360.89	4,351.8		126.26	47.8		
	S306 Buswa	ys North Coast			13 13	65	6	5	833.29	835.3		126.17	115.4		
	891 Sapphir	re Coast BL		1	14 114	3006	278	0	5,881.20	1,926.1		124.99	34.9		
	S245 Buswa	ys North Coast			13 13	156	14	0	844.40	823.3		116.01	111.2		
	S249 Makeh	nams Coaches			26 24	247	1/	9	2.535.27	2,006.0		110.66	83.5		
	S251 QCity	Iransit			24 24	348	34	4	1,239.88	1,2/9.8		108.98	112.0		
	358 Busway	/s North Coast		4	07 377	6090	565	0 2	1,499.76	19,900.8		108.84	93.1		
	Traffic Day	Vehicle	Line	Block	Journey	Journey Types	Destination D	anned epartures	Actual Departures	Reported Messages	Expected P Messages [	nanneu Distance [km]	On-Route Distance [km]	Off-Route Distance [km]	Reported/Planned distance [%]
	29/04/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-3	Normal Journeys	Junee	28	18	3 537	539	48.72	50.03	9.43	122.1
	21/04/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-3	Normal Journeys	Junee	28	18	3 493	495	48.72	49.61	9.33	121.0
	29/04/2021	3581366689	922 Junee E	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 347	347	37.11	37.02	9.22	124.6
	28/04/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 334	334	37.11	36.45	9.16	122.9
	19/04/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 318	318	37.12	37.12	8.72	123.5
	04/05/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 309	309	37.23	37.12	8.68	123.0
	05/05/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 312	315	37.24	37.06	8.63	122.7
	23/04/2021	3581366689	922 Junee E	Buses 922PM	922-1-H-A0035-3	Normal Journeys	Junee	28	12	2 499	501	48.72	48.81	8.19	117.0
	20/04/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 322	322	37.12	37.02	8.01	121.3
	23/04/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 354	356	37.12	36.58	7.98	120.0
	27/04/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 342	342	37.12	36.65	7.96	120.2
	22/04/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 330	330	37.12	36.60	7.95	120.0
	21/04/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 312	314	37.12	36.56	7.95	119.9
	26/04/2021	3581366689	922 Junee E	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 335	335	37.12	36.60	7.94	120.0
	30/04/2021	3581366689	922 Junee E	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 334	334	37.11	36.56	7.92	119.8
	03/05/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-2	Normal Journeys	Junee	12	12	2 349	351	37.11	36.53	7.90	119.7
	26/04/2021	3581366689	922 Junee E	Buses 922PM	922-1-H-A0035-3	Normal Journeys	Junee	28	15	5 528	528	48.72	48.60	7.90	116.0
	28/04/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-3	Normal Journeys	Junee	28	12	2 481	481	48.72	48.56	7.87	115.8
	15/04/2021	3581366689	922 Junee E	Buses 922PMH0	DL 922-1-H-B0019-2	Normal Journeys	Junee	26	14	4 339	339	48.72	45.22	7.12	107.4
	22/04/2021	3581366689	922 Junee B	Buses 922PM	922-1-H-A0035-3	Normal Journeys	Junee	28	17	7 505	507	48.72	50.09	6.99	117.2

Figure 19: Line Report



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	Image: Control of the second	<ul> <li>399/399</li> <li>Journey Inde 922-1-H</li> <li>922-1-H</li> <li>922-1-H</li> <li>922-1-H</li> <li>922-1-H</li> <li>922-1-H</li> </ul>	n In. Source Con Stated C. Rizmourice Stat. Off Rout., Rizmourice Stat. Off Rout., Rizmourice Stat. 6 Started C. Rizmourice Stat.	17.47:11 17.47:11 10.000 Deciders Star free 628 0001:30 628 0001:30 622 0001:30 202 0002:04 488 00:02:19	Triffelding (57 spin) 2001)         Triffelding (57 spin) 2001) <t< th=""><th>899 OK (0/77) 8993 OK (0/77) 8994 Invalid Stop (0/37) 8996 Invalid Stop (0/37) 8996 Invalid Stop (0/37) 8898 OK (0/77)</th><th>Paret Son GPS heading Off-could Back on route Repeation, back from off-route GPS heading</th><th>00 Label (0/6)</th></t<>	899 OK (0/77) 8993 OK (0/77) 8994 Invalid Stop (0/37) 8996 Invalid Stop (0/37) 8996 Invalid Stop (0/37) 8898 OK (0/77)	Paret Son GPS heading Off-could Back on route Repeation, back from off-route GPS heading	00 Label (0/6)
	Image: Control of the second	399/399         Journey         Inde           922-1-HL.         922-1-HL.         922-1-HL.           922-1-HL.         922-1-HL.         922-1-HL.	P. Nursey Son I Started C. Ritzmanice Stat. Of Rout., Ritzmanice Stat. Started C. Ritzmanice Stat. G Rout., Ritzmanice Stat. 6 Started C. Ritzmanice Stat. 6 Started C. Ritzmanice Stat.	17747111 17747111 1774711 1	124/00/2014         124/00/2014         124/00/2014         55/00/2011           17/4/00/2014         46/00/2014         66/00/2011         66/00/2011         66/00/2011           17/4/00/2014         66/00/2011         17/4/4/00/2014         66/00/2011         66/00/2011         66/00/2011           17/4/4/10/2014         66/00/2011         17/4/4/10/2014         66/00/2011         66/00/2011         66/00/2011         66/00/2011         17/4/4/10/2014         66/00/2011         17/4/4/10/2014         66/00/2011         17/4/4/10/2014         66/00/2011         17/4/4/10/2014         17/4/4/10/2014         17/4/4/2014         66/00/2011         17/4/4/4/2014         17/4/4/2014 </th <th>Store         Store           8883         OK (5/77)           8884         Invalid Store (0x37)           8885         OK (5/77)           8896         Invalid Store (0x37)           8896         OK (0/77)           8899         OK (0/77)</th> <th>Fast         Soc           6/3 heating         Off-route           Back on route         Back on route           6/5 heating         Off-route           G/5 heating         Off-route           G/5 heating         Off-route</th> <th>Label (0/6)            control         Event seq. no. 5           10785         ^           10785         10785           10787         10788           10798         10790           10790         10791</th>	Store         Store           8883         OK (5/77)           8884         Invalid Store (0x37)           8885         OK (5/77)           8896         Invalid Store (0x37)           8896         OK (0/77)           8899         OK (0/77)	Fast         Soc           6/3 heating         Off-route           Back on route         Back on route           6/5 heating         Off-route           G/5 heating         Off-route           G/5 heating         Off-route	Label (0/6)            control         Event seq. no. 5           10785         ^           10785         10785           10787         10788           10798         10790           10790         10791
	Image: Control of the set of the	<ul> <li>399/399</li> <li>kourney Inde 922-1-H</li> <li>922-1-H</li> <li>922-1-H</li> <li>922-1-H</li> <li>922-1-H</li> <li>922-1-H</li> <li>922-1-H</li> <li>922-1-H</li> <li>922-1-H</li> </ul>	r h Jones Son P Banad L Remaines Statu Of Rost, Remaines Statu Of Rost, Remaines Statu 6 Santa L Remaines Statu 6 Santa L Remaines Statu	17747111  titico Duluto Que Sea 628 000130 628 000130 622 000130 202 000204  488 000219 754 000220 943 000220	Notice         School fact         Schol fact         School fact <th< th=""><th>883 n. mbs - 1005 flass 883 OK (b/77) 8834 (Iwaid Step (b/37) 8835 OK (b/77) 8836 (Iwaid Step (b/37)) 8839 OK (b/77) 8839 OK (b/77)</th><th>East See CHS heading CHS head</th><th>20 Laber (0/6)</th></th<>	883 n. mbs - 1005 flass 883 OK (b/77) 8834 (Iwaid Step (b/37) 8835 OK (b/77) 8836 (Iwaid Step (b/37)) 8839 OK (b/77) 8839 OK (b/77)	East See CHS heading CHS head	20 Laber (0/6)
	Image: Control of the set of the	<ul> <li>399/399</li> <li>Journey Inde</li> <li>922-11-H</li> </ul>	Sanado Cane     Sanado Ramanica San.     Sanado Ramanica San.     Sanado Ramanica San.     Sanado Ramanica San.     Sanado R. Ramanica San.	17747:11	1746/09 (29 April 2021)         1746/09 (29 April 2021)         1746/09 (29 April 2021)           1746/09 (29 April 2021)         1746/09 (29 April 2021)         1746/09 (29 April 2021)           1746/09 (29 April 2021)         1746/09 (29 April 2021)         1746/09 (29 April 2021)           1746/09 (29 April 2021)         1746/09 (29 April 2021)         1746/09 (29 April 2021)           1746/09 (29 April 2021)         1746/09 (29 April 2021)         1746/09 (29 April 2021)           1746/09 (29 April 2021)         1746/09 (29 April 2021)         1746/09 (29 April 2021)           1746/09 (29 April 2021)         1746/09 (29 April 2021)         1746/09 (29 April 2021)           1746/09 (29 April 2021)         1746/09 (29 April 2021)         1746/09 (29 April 2021)           1746/09 (29 April 2021)         1746/09 (29 April 2021)         1746/09 (29 April 2021)           1746/09 (29 April 2021)         1746/09 (29 April 2021)         1746/09 (29 April 2021)	8893 OK (6/77) 8894 (wald Step (6/37) 8895 (ok (6/37) 8896 (wald Step (6/37) 8899 OK (6/37) 8899 OK (6/37) 8899 OK (6/37)	Cash         Cash           fast         Cash           Gift heading         Chronols           Back on route         Reposition task from di-route           C/R heading         C/R heading           C/R heading         C/R heading           C/R heading         C/R heading	Usbar (0/6)         •           10785         5           10785         10786           10785         10786           10786         10787           10787         10788           10799         10799           10799         10799           10799         10799           10798         10798
	Image: Control of the contro	▼ 399/399 Journey Inde 922-1-H 922-1-H 922-1-H 922-1-H 922-1-H 922-1-H 922-1-H 922-1-H 922-1-H	Annuel State     Teamore State     Granues State	17x47x11	Notice         Statis (size)         Statis (size)           114469 (29 April 2021) 1154469 (29 April 2021)         1154469 (29 April 2021)         1154469 (29 April 2021)           115446 (29 April 2021) 115446 (29 April 2021)         115446 (29 April 2021)         115446 (29 April 2021)           115446 (29 April 2021) 11546 (20 April 2021)         115446 (29 April 2021)         115446 (29 April 2021)           115456 (29 April 2021) 11546 (20 April 2021)         115456 (29 April 2021)         115456 (29 April 2021)           115456 (29 April 2021) 115456 (20 April 2021)         115456 (29 April 2021)         115456 (29 April 2021)           115456 (29 April 2021) 115456 (20 April 2021)         115456 (29 April 2021)         115456 (29 April 2021)           115456 (29 April 2021) 115456 (29 April 2021)         115456 (29 April 2021)         115456 (29 April 2021)	BB3         CK (b/7)           BB4         Invalid Stop (b/37)           BB5         CK (b/7)           BB5         CK (b/7)           BB6         Invalid Stop (b/37)           BB6         OK (b/7)           BB7         OK (b/7)           BB80         OK (b/7)           B90         OK (b/7)           B90         OK (b/7)           B90         OK (b/7)           B90         OK (b/7)	C heat C heating C heating C heat C heating C	00 Luber (0.46) + 10785 10785 10785 10785 10786 10787 10786 10791 10793 10793
	Image: Control of the set of the	▼ 399/399 Journey Inde 922-1-HL. 922-1-HL. 922-1-HL. 922-1-HL. 922-1-HL. 922-1-HL. 922-1-HL. 922-1-HL. 922-1-HL.	Annote Con	174/7111 628 000130 628 000130 628 000130 622 000130 622 000130 622 000130 624 000219 754 000219 1160 000211 1169 000221 1160 000221	174409 (25 April 2021)         174409 (25 April 2021)         2010           174409 (25 April 2021)         174409 (25 April 2021)         174409 (25 April 2021)           174409 (25 April 2021)         174416 (25 April 2021)         174416 (25 April 2021)           174416 (25 April 2021)         174416 (25 April 2021)         174416 (25 April 2021)           174469 (25 April 2021)         174416 (25 April 2021)         174416 (25 April 2021)           174469 (25 April 2021)         174469 (25 April 2021)         174459 (25 April 2021)           174449 (25 April 2021)         174459 (25 April 2021)         174459 (25 April 2021)           174449 (25 April 2021)         174459 (25 April 2021)         174459 (25 April 2021)           174459 (25 April 2021)         174459 (25 April 2021)         174459 (25 April 2021)           17459 (25 April 2021)         17459 (25 April 2021)         17459 (25 April 2021)	BB3         OK (6/77)           BB4         Iwaid Step (6/37)           BB5         CK (6/77)           BB5         CK (6/77)           BB90         CK (6/77)           BB90         CK (6/77)           B901         CK (6/77)           B902         CK (6/77)           B903         CK (6/77)           B904         CK (6/77)           B905         CK (6/77)           B905         CK (6/77)	Carl Construction	Label (0.46)         •           10785         6           10785         10785           10785         10785           10799         10791           10792         10793           10794         10794
	Image: Control of the second	<ul> <li>399/399</li> <li>Journey Inde 922-1-HL</li> <li>922-1-HL</li> </ul>	Annuel Gra-     Annuels Annuels Annuels     Annue	1747211 428 000130 428 000130 429 000130 420 000219 440 000219 754 000220 440 000220 1754 000220 1755 000220 1758 000226 1758 000226	Notes         State (Inc.         State (Inc. <th< th=""><th>Note         Note         Base           8893         OK (bir77)         8896         (bir07)           8895         CK (bir77)         8896         (bir077)           8890         CK (bir77)         8900         (CK (bir77)           8900         CK (bir77)         8901         (CK (bir77)           8903         CK (bir77)         8903         (CK (bir77)           8903         CK (bir77)         8903         (CK (bir77)</th><th>Construction of the sector of</th><th>Laber (0)(6)</th></th<>	Note         Note         Base           8893         OK (bir77)         8896         (bir07)           8895         CK (bir77)         8896         (bir077)           8890         CK (bir77)         8900         (CK (bir77)           8900         CK (bir77)         8901         (CK (bir77)           8903         CK (bir77)         8903         (CK (bir77)           8903         CK (bir77)         8903         (CK (bir77)	Construction of the sector of	Laber (0)(6)
	Image: Control of the set of the	<ul> <li>J39/J399</li> <li>Acurney Inde 922-1-HL.</li> <li>922-1-HL.</li> </ul>	Annuel Con     A	1747h11 240 000130 248 000130 248 000130 248 000130 248 000204 248 000204 248 000204 248 00020 248 000000 248 00000	Transmission         Status factor         Status factor         Status factor           1744409 (29 April 2021)         1744409 (29 April 2021)         1744409 (29 April 2021)         1744409 (29 April 2021)           1744409 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)           1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)           1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)           1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)           1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)           1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)           1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)           1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)         1744410 (29 April 2021)	Oct Base         Dot 5 Base           6893         OK (B/77)           8894         Iward Step (D/37)           8895         OK (B/77)           8896         Iward Step (D/37)           8990         OK (B/77)           8991         OK (D/77)           8992         OK (D/77)           8993         OK (D/77)	Dear         Dear           Off heading         Off- Off-could           Basic An radie         Resolven, back from off-route           Off-heading         Off- Off-basing           Off-basing         Off- Off-basing           Off-basing         Off- Off-basing           Off-basing         Off- Off-basing           Off-basing         Off- Off- Dameter           Off-basing         Off- Off- Dameter           Off-basing         Off- Dameter           Off-basing         Off- Dameter           Off-basing         Off- Dameter           Off-Dameter         Off- Off- Dameter	Label (0,4)         -           10765         -           107765         -           107765         -           107765         -           107765         -           107767         -           107768         -           107791         -           107792         -           107793         -           107794         -           10795         -           10795         -           10795         -
	Image: Control of the set of the	<ul> <li>399/399</li> <li>Kurney India</li> <li>922-11-K.</li> <li>922-12-K.</li> </ul>	Annote Con     Con	174/h11  174/h11  174/h1  174  174  174  174  174  174  174  1	11/14/09 (29 April 2021)         12/14/09 (29 April 2021)         12/14/09 (29 April 2021)           17/14/09 (29 April 2021)         17/14/09 (29 April 2021)         17/14/09 (29 April 2021)           17/14/09 (29 April 2021)         17/14/09 (29 April 2021)         17/14/16 (29 April 2021)           17/14/09 (29 April 2021)         17/14/16 (29 April 2021)         17/14/16 (29 April 2021)           17/14/16 (29 April 2021)         17/14/16 (29 April 2021)         17/14/16 (29 April 2021)           17/14/16 (29 April 2021)         17/14/16 (29 April 2021)         17/14/16 (29 April 2021)           17/14/16 (29 April 2021)         17/14/16 (29 April 2021)         17/14/16 (29 April 2021)           17/14/16 (29 April 2021)         17/14/16 (29 April 2021)         17/14/16 (29 April 2021)           17/14/16 (29 April 2021)         17/14/16 (29 April 2021)         17/14/16 (29 April 2021)           17/14/16 (29 April 2021)         17/14/16 (29 April 2021)         17/14/16 (29 April 2021)           17/14/16 (29 April 2021)         17/14/16 (29 April 2021)         17/14/16 (29 April 2021)           17/14/16 (29 April 2021)         17/14/16 (29 April 2021)         17/14/16 (29 April 2021)           17/14/16 (29 April 2021)         17/14/16 (29 April 2021)         17/14/16 (29 April 2021)           17/14/16 (29 April 2021)         17/14/16 (29 April 2021)         17/14/16 (29 April 2021) <th>Mole Base           8893         OK (0x77)           8894         Invade Store (0x37)           8895         OK (0x77)           8896         OK (0x77)           8999         OK (0x77)           8990         OK (0x77)           8990         OK (0x77)           8991         OK (0x77)           8992         OK (0x77)           8993         OK (0x77)           8993         OK (0x77)           8995         OK (0x77)           8995         OK (0x77)           8995         OK (0x77)</th> <th>Cash Cash Cash Cash Cash Cash Cash Cash</th> <th>Label (0)(6)         -           10         Event (0)(6)         -           10         Funct (0)(6)         -           10         10787         -           10788         -         -           10799         -         -           10792         -         -           10795         -         -           10795         -         -           10795         -         -           10795         -         -           10795         -         -           10795         -         -           10795         -         -           10795         -         -           10795         -         -           10797         -         -</th>	Mole Base           8893         OK (0x77)           8894         Invade Store (0x37)           8895         OK (0x77)           8896         OK (0x77)           8999         OK (0x77)           8990         OK (0x77)           8990         OK (0x77)           8991         OK (0x77)           8992         OK (0x77)           8993         OK (0x77)           8993         OK (0x77)           8995         OK (0x77)           8995         OK (0x77)           8995         OK (0x77)	Cash Cash Cash Cash Cash Cash Cash Cash	Label (0)(6)         -           10         Event (0)(6)         -           10         Funct (0)(6)         -           10         10787         -           10788         -         -           10799         -         -           10792         -         -           10795         -         -           10795         -         -           10795         -         -           10795         -         -           10795         -         -           10795         -         -           10795         -         -           10795         -         -           10795         -         -           10797         -         -
	Image: Control of the second	<ul> <li>393/393</li> <li>40214</li> <l< th=""><th>Annuel Con-     Tarine C. Romannes Stat.     Of Rock. Romannes Stat.     Of Rock. Romannes Stat.     Of Rock. Romannes Stat.     Of Rock. Romannes Stat.     Samed C. Romannes Stat.     Samed Stat.     Samed C. Romannes Stat.     Samed Stat.     Samed C. Romannes Stat.     Samed Stat.     Samed Stat.     Samed C. Romannes Stat.     Samed Stat.     Samed C. Romannes Stat.     Samed Stat.</th><th>17x7711           Database         Database         Database           62         000130         000130           62         000130         000120           62         000120         000220           754         000220         000220           1100         000220         1100           1125         000226         1154           1154         000226         1154           1000         000226         1100</th><th>Initial         Status day         Status day         Status day           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)&lt;</th><th>Non Back         Non Back           8893         OK (N/7)           8894         Iward Step (N/7)           8895         OK (N/7)           8896         Iward Step (N/7)           8896         OK (N/7)           8990         OK (N/7)           8991         OK (N/7)           8992         OK (N/7)           8993         OK (N/7)           8994         OK (N/7)           8995         OK (N/7)</th><th>Fact         For           Child heading         Child heading           Child heading<th>Label (2)4() - (2) Event 4(2)4() - 10756 10756 10756 10757 10759 10759 10759 10759 10759 10759 10759 10759 10759 10759 10759 10756 10757 10756 10756 10756 10756 10757 10756</th></th></l<></ul>	Annuel Con-     Tarine C. Romannes Stat.     Of Rock. Romannes Stat.     Of Rock. Romannes Stat.     Of Rock. Romannes Stat.     Of Rock. Romannes Stat.     Samed C. Romannes Stat.     Samed Stat.     Samed C. Romannes Stat.     Samed Stat.     Samed C. Romannes Stat.     Samed Stat.     Samed Stat.     Samed C. Romannes Stat.     Samed Stat.     Samed C. Romannes Stat.     Samed Stat.	17x7711           Database         Database         Database           62         000130         000130           62         000130         000120           62         000120         000220           754         000220         000220           1100         000220         1100           1125         000226         1154           1154         000226         1154           1000         000226         1100	Initial         Status day         Status day         Status day           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)         1/34649 (29 April 2021)           1/34649 (29 April 2021)         1/34649 (29 April 2021)<	Non Back         Non Back           8893         OK (N/7)           8894         Iward Step (N/7)           8895         OK (N/7)           8896         Iward Step (N/7)           8896         OK (N/7)           8990         OK (N/7)           8991         OK (N/7)           8992         OK (N/7)           8993         OK (N/7)           8994         OK (N/7)           8995         OK (N/7)	Fact         For           Child heading         Child heading           Child heading <th>Label (2)4() - (2) Event 4(2)4() - 10756 10756 10756 10757 10759 10759 10759 10759 10759 10759 10759 10759 10759 10759 10759 10756 10757 10756 10756 10756 10756 10757 10756</th>	Label (2)4() - (2) Event 4(2)4() - 10756 10756 10756 10757 10759 10759 10759 10759 10759 10759 10759 10759 10759 10759 10759 10756 10757 10756 10756 10756 10756 10757 10756
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Figure 20: Trip Playback

# 2.3.2.2 Event History & Trip Playback

Key events: "Part of route skipped".

Plugins: Event History & Trip Playback

This event will be triggered once the vehicle is back on route, with a distance from the latest on-route stop point before the vehicle went off-route.





Figure 21: Event History - Part of route skipped events

Example below shows where the vehicle driving duty CH1 went off-route for 1407 meters from **Sandy Beach Dr Opp Acacia Ave** (lower right in dark blue) and then came back on-route close to **5 Solitary Islands Way** (event is marked as a light blue ring).

We used the free-text filter for "Sandy Beach Opp" to find all related events, to see if that could be a one-off or if there might be a pattern. We got 7 events for 5 different dates.



Figure 22: Distance between the logged events and the associated stop point

You can investigate further with **Trip Playback** where you can easily compare the planned route to how the vehicle drove.

Narrow down the time to the trip (202105180 is planned between 17:24 and 18:15) and use Blocks as your selection type. Search for CH1 to make it easier to select it.



Figure 23: Trip Playback



The blue line is the planned route, the green is driven data. From a quick overview, we can already see 2 portions which were skipped.

The lower skipped route, below, shows both on the map (no green overlay on the blue trail) and in the table (Index in Journey goes from 24<sup>th</sup> stop to 32<sup>nd</sup>, telling us it skipped 7 stop points). The vehicle went from being 9 minutes late to almost 7 minutes.



Figure 24: The difference between the logged route (green) and the planned route (blue).

The second skipped route, the one we detected in Event History, also shows that the driver went from being 4 minutes late to almost 1 minute early, and that they skipped 4 stops (going from 35<sup>th</sup> to 39<sup>th</sup> stop in the journey).



Figure 25: The difference between the logged route (green) and the planned route (blue).



# 2.3.2.3 Event History #2

# Key event: Off-route

Use Event History to identify the most frequent locations where vehicles go off-route.



#### Figure 26: Event History

# 2.3.2.4 Daily Diagnostics

Numerous issues are listed in Daily Diagnostics, such as

- Links off route
- Journeys with off route

Select a completed traffic day to get the list of all issues for that date. If you tick a specific issue, you will also get the % for the past 30 days from that date so you can identify any trend.

You can expand any problem to get a list of the top 10 causes.





Figure 27: Daily Diagnostics, Busways North Coast, 2021-05-12

In the image above, we get the following list for the links with the most off-route. For example, the link between **Tyndale** and **Maclean Cemetery, Camero St** had 3 off-route reports on the 12<sup>th</sup> May 2021.

# Links off route

- 24603(Tyndale )-24634(Maclean Cemetery, Cameron St ) 3
- 246068(Bligh St at Charles Lane )-24621(Coldstream St at River St ) 3
- 246314(Maclean Cemetery, Cameron St)-24603(Tyndale) 1
- 24632(Maclean )-24603(Tyndale ) 1
- 246326(Maclean High School, Woombah St )-246343(Gulmarrad Public School, Brooms ) 1
- 24639(Palmers Island Public School, Ya)-246439(Yamba Rd before Treelands Dr) 1
- 246427(Yamba St at Ager St )-246428(Clarence St at Coldstream St ) 1
- 246433(Blue Dolphin Holiday Resort, Yam )-246434(Shores Dr after Yamba Rd ) 1
- 246435(Shores Dr at Park Ave )-246436(The Mainbrace opp Binnacle Ct ) 1
- 246438(Yamba West )-246310(Palmers Island Public School, Ya ) 1

# **3** Driver Behaviours

# 3.1 Traffic Log Report

Key Issues:

- Journey not driven: The driver could have forgotten to log in.
- Journeys incomplete: The driver could have skipped a part of their assignment.
- Journeys late to start point
- Late departures (from any stop point)\*
- Early departure (from any stop point)\*
- Late journeys start\*



Early journeys start\*

Traffic Log can help finding patterns (sort by blocks and/or journeys). You can change some thresholds (what flags a departure/journey as late/early), so make sure to pick values that help you to identify the issues you're looking for.

You can sort the upper table by column to find the line(s) with the most issues, then click on that line to see all journeys with issues. Be sure to use the filter if you want to focus on one or two at a time. Be aware that some journeys might trigger more than one issue, so they'll be listed together in the first column.

Since all journeys are listed, you can easily open it in Detail report, Trip Playback, vehicle history, etc. to look more closely into it. If you think it might be related to the timetable, i.e., a lot of journeys have a similar issue, check out the route in Journey Time report or even the specific link in Link Summary report.

Line	đ	Journeys Reported/ Planned)		Departures (I Plann	Reported/ ed)		Journeys not driven	Journeys Incomplete		Journeys start po	late to pint	Late Depa (+15 Min	rtures utes)	Early Departu (-1 Minute:	res ;)	Late Journeys (+ 15 Minut	Start es)	Early Journeys Start (-1 Minutes)	Departures Reinforced	Journe Reinfor	ed
351 Busways North	n Coast	1	99/206		370	/794	7		42		0		2		104		1	0	C	1	0
352 Busways North	n Coast	1	12/118		137	/ 380	6		6		0		5		37		2	0	C	1	0
356 Busways North	n Coast	1	24/132		1,171/1	,540	8		27		0		11		100		0	1	C	1	0
357 Busways North	n Coast		8/8		1-	4/32	0		1		0		0		0		0	0	c	1	0
358 Busways North	n Coast	3	90/398		5,376/6	5,342	8		63		0		21		260		0	0	c	ł.,	0
359 Busways North	n Coast		80/88		160	/ 352	8		4		0		3		28		1	0	C	1	0
360 Busways North	n Coast	3	93 / 398		8,107/9	9,076	5		102		0		647		130		1	0	C		0
361 Busways North	n Coast		37/44		550	/748	7		1		0		49		1		2	1	C	1	0
362 Forest North	n Coast	1	27/132		4,98875	5,635	5		62		0		4		887		0	6	C	1	0
363 Forest North	n Coast	1	12/154		6,800/10	),639	42		107		0		209		1,511		1	2	C	1	0
364 Forest North	n Coast	з	89 / 506		14,125/20	0,736	117		248		0		40		3,389		0	24	C	1	0
365 Busways North	n Coast	ε	57/865		15,587/17	7,512	8		210		0		42		75		0	0	C	1	0
366 Busways North	n Coast	7	93/797		7,917/9	9,563	4		207		0		1		19		0	1	C	ł.	0
367 Busways North	n Coast	7	32/736		14,221/15	5,811	4		248		0		88		181		1	0	C	1	0
368 Busways North	n Coast	2	18/220		5,310/5	5,808	2		90		0		6		405		1	0	C	1	0
369 Busways North	n Coast	e	71/748		3,89075	5,786	77		186		0		3		72		2	1	C	1	0
370 Forest North	n Coast	1	86/270		9,421/17	7,188	84		142		0		412		1,873		6	12	C	ł.	0
371 Forest North	n Coast		32/66		397	/968	34		12		0		0		90		0	1	C	1	0
Total	4	4,991 /	54,	822,706	/ 1,138,7	79	9,138	1	8,316		0		12,968	126	003		343	1,790	0		0
Line 360 Company Bu	usways No	orth Coast		Deviation/Caus	e (9/9)	•	۹.														
Deviation/Cause	Journey		Block	Destination	Vehicle	Sto	op Point		Planned I	Departure	Actual D	eparture	Deviation	Date	Cause	Comment					
Journey incomplete	360_950	la_Fpabe	801M	Macksville	358114849	5 Pari	k Beach Plaza	2	2021-04-1	8 09:50:00				2021-04-18							
Late departure +22	360_938	a_Fmapo	301M	Coffs Harbour	358114687	7 Uru	unga Public School, Bo	wra St 2	2021-05-0	7 10:17:00	2021-05-0	07 10:33:00	00:16:0	0 2021-05-07							
Journey incomplete	360_150	p_Fpabe	303M	Macksville	358114849	5 Pari	k Beach Plaza	2	2021-05-0	7 13:50:00				2021-05-07							
Journey incomplete	360_1157p	p_Fpark1	321M	Macksville	358114898	B Parl	k Ave opp Little St	2	2021-05-0	7 23:57:00				2021-05-07							
Early departure +1	360_1254p	p_Fmapo	304M	Coffs Harbour	358114849	5 340	) Pine Creek Way	2	2021-05-0	7 14:02:00	2021-05-0	07 14:00:05	-00:01:5	5 2021-05-07							
Early departure	360_1254p	p_Fmapo	304M	Coffs Harbour	358114849	5 Too	ormina Rd opp Dews A	ve 2	2021-05-0	7 14:08:00	2021-05-0	07 14:06:54	-00:01:0	6 2021-05-07							
Journey incomplete	360_950	a_Fpabe	103M	Macksville	358114849	5 Pari	k Beach Plaza	2	2021-05-0	7 09:50:00				2021-05-07							
Journey incomplete	360_350	p_Fpabe	305M	Macksville	358114665	B Pari	k Beach Plaza	2	2021-05-0	7 15:50:00				2021-05-07							
Early departure	360_350	p_Fpabe	305M	Macksville	358114665	B Peli	ican Caravan Park, Giin	agay W 2	2021-05-0	7 17:15:00	2021-05-0	07 17:13:32	-00:01:2	8 2021-05-07							
Journey incomplete	360_728	p_Fpabe	321M	Macksville	358114898	B Pari	k Beach Plaza	2	2021-05-0	7 19:28:00				2021-05-07							
Journey incomplete	360_250	p_Fpabe	702M	Macksville	3581148484	4 Pari	k Beach Plaza	2	2021-05-0	8 14:50:00				2021-05-08							
Early departure	360_250	p_Fpabe	702M	Macksville	3581148484	4 Peli	ican Caravan Park, Giin	agay W 2	2021-05-0	8 16:16:00	2021-05-0	08 16:14:47	-00:01:1	3 2021-05-08							
Early departure	360 549r	- Emano	703M	Coffs Harbour	358114869	5 Vali	la Community Prescho	ol Valla 2	2021-05-0	8 18:18:00	2021-05-0	08 18:16:15	-00:01:4	5 2021-05-08							

Figure 28: Traffic Log Report

# 3.2 Event History

Key events:

- Early departure from timing stop point
- Journey late
- Journey not assigned
- Journey started early
- Journey started late
- Open door outside stop

Timing stop points are stops where drivers are expected to leave on time, i.e., they should be able to wait longer if they are too early compared to the timetable.

Use this tool to see where the unwanted behaviours occur. There might be a geographic pattern that cause them.

Examples:



- Early departures from timing stop point
  - Vehicles have no room to stay and wait without hindering traffic or other vehicles.
- Journey started late
  - Can be linked to timetables, where there isn't enough time between journeys to absorb a late deviation, a driver change, a driver break, etc. This can cause a snowball effect to the following journeys.

🕽 💽 🔭 Select:	· None ·	Latitude: -36.66842 Longitude: 151.11694
rers 🗙 📟 Message log	😦 🖿 My Displays 🗙 🕸 Event Monitor 🗙 🏴 Geofences 🗙 🚱 Traffic Data Importer 🗙 🎼 Active Vehicles 🗙 🎼 Eines 🗙 🗛 Report Points 😒 🗟 Report Sheets 🗙 🛦 Road Situation 🗙 🎼 Route Checker 🗴	S Event History ×
21-04-28 - 2	1021-05-06 • Search Event Filter (1/28) • Q 682/304987	e
	Event Type Event Description	Modified Ti
1608402	Early departure from Line 830 QCity Transit journey 20765284 Queanbeyan started early from timing point 'City West Marcus Clarke St '. Deviation: -00:01:01.	21:04:59
1021984	Early departure from Line 364 Forest North Coast journey 20181825 Toormina started early from timing point 'Toormina Gardens '. Deviation: -00:02:54.	19:42:24
1021984	Early departure from Line 364 Forest North Coast journey 20181824 Toormina Gardens started early from timing point 'Toormina Gardens '. Deviation: -00:01:05.	18:49:13
11436677	Early departure from Line 966 Busabout Wagga journey 8x966w Wagga Wagga started early from timing point 'Baylis St after Morgan St '. Deviation: -00:02:05.	16:52:20
11423685	Early departure from Line S556 Braidwood Buses journey S55-6-1-H-A0029-2 Captain's Flat started early from timing point "Foxlow St at Wattle Ave ". Deviation: -00:02:53.	16:52:12
1071125	Early departure from Line S540 Scarlett Buses journey S54-0-1-H-A0013-5 Yankees Gap started early from timing point 'Snowy Mountains Hwy opp 1775', Deviation: -00:01:05,	16:08:57
1297868	Early departure from Line \$173 Surfside Buslines journey 18:NSWschool2_out Tweed Heads started early from timing point 'Undisfarre Anglican Grammar Sch '. Deviation: -00:01:22.	15:48:44
1298147	Early departure from Line \$157 Surfixide Buslines journey 80X9SWschool2_out Tweed Heads West started early from timing point 'St Joseph's College '. Deviation: -00:02:14.	15:42:46
11298167	Early departure from Line S153 Surfixide Buslines journey 5xo609Pc1w_schT221 Tweed Heads started early from timing point St Joseph's College 1. Deviation: -00:02:14.	15:33:46
1022018	Early departure from Line 5940 Forest North Coast journey 20182065 Korora started early from timing point 'Coffs Harbour High School, Edinb '. Deviation: -00:02:08.	15:33:03
1606570	Early departure from Line S214 QCity Transit journey 20765211 Yass started early from timing point 'Daramalan College Covper St '. Deviation: -00:02:33.	15:32:29
31298170	End dependence from the CATA C while B other in an 2000 AICH when in a Trand Hand set of an Aich and A	15:30:22
Braaaaaa	carry departure from "Line 5171 Surside Busines journey 55550xHSWschool2_out Iweed neads stated early from timing point Kingsoint righ school. Oxford 5. Deviation: -UCU2:42.	100000
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1296953	Early departure from Line 3 / 7 Journale busines journey 3350mSwischool2, out inwed neads statistice early from timing point Angloant fagis actions. Uxold 3 - Uxolation - UXO242. Early departure from Line 5188 Surfside Busines journey 10NSWschool2, 12 Casuarina started early from timing point 'Lindisfame Anglican Grammar Sch '. Deviation000244. Early departure from Line 5170 Surfside Busines journey 5NSWschool2, out Kingschift started early from timing point 'Lindisfame Anglican Grammar Sch '. Deviation0002451.	15:27:19 15:27:12
11296953 1188014	Lany departure from Line 5/17 Surtice balance journey 53:504:504:002-001 (reed needs started early from himing plant, kingbard high school, Voota's J. Veedation: 4002/44. Early departure from Line 5/178 Surtice Bulances journey 10:505/Wichool2_2012 (Zausaina started early from timing point 'Lindiafare Anglican Grammar 5h'. Deviation: -0002/44. Early departure from Line 5/178 Surtice Bulances journey 55:50%:chool2_001 (Started early from timing point 'Lindiafare Anglican Grammar 5h'. Deviation: -0002/51. Early departure from Line 52/16 Allens Coaches journey 52:1-61-1H:40040-2 Curawarras started early from timing point 'Lindiafare Anglican Grammar 5h'. Deviation: -0002/51.	15:27:19 15:27:12 15:24:59
11299289 11296953 11188014 11025554	Early departure from Line 5/17 surface balance journey 350/SWschool2_Out (weed needs started early from timing point Lingsfare Anglican Grammar Sch : Deviation: -000244. Early departure from Line 5/18 Surface Bulances journey 105/SWschool2_Out (Singsfaff started early from timing point Lingsfare Anglican Grammar Sch : Deviation: -000251. Early departure from Line 5/16 Allens Coaches journey 535/SWschool2_Out (Singsfaff started early from timing point Lingsfare Anglican Grammar Sch : Deviation: -000251. Early departure from Line 5216 Allens Coaches journey 521-61-14-A0040-2 Currawama started early from timing point Lingsfare Anglican Origonal School : Deviation: -000251. Early departure from Line 5364 Forest North Coast journey 20182161 Korora started early from timing point St. John Paul College : Deviation: -000253.	1527:19 15:27:12 15:24:59 15:24:30
11299289 11296953 11188014 11025554 11185135	Larly departure from Line 3/1 Surtice basines journey 330-Kristwickouz, out reved needs started early from timing point Langiard many school. Votori 3 : Verbalater - Votocita.  Early departure from Line 5/10 Surtice Busines journey 10NSWschool2, 2U Causarina started early from timing point Lindisfare Anglican Grammar Sh. <sup>1</sup> . Deviation: -0002:44. Early departure from Line 5/10 Surtice Busines journey 51NSWschool2, 2U Causarina started early from timing point Lindisfare Anglican Grammar Sh. <sup>1</sup> . Deviation: -0002:51. Early departure from Line 5216 Allens Coaches journey 521-61-1H-A0040-2 Currawara started early from timing point Lindisfare Anglican Grammar Sh. <sup>1</sup> . Deviation: -0002:51. Early departure from Line 5216 Allens Coaches journey 2016:2161 Korora started early from timing point Lindisfare Anglican Grammar Sh. <sup>1</sup> . Deviation: -0002:51. Early departure from Line 5216 Allens Coaches journey 2016:2161 Korora started early from timing point St. John Paul College : Deviation: -0002:38. Early departure from Line 5216 Allens Coaches journey 2016:216-1H-A0040-2 Lochart started early from timing point St. John Paul College : Deviation: -0001:30.	1527/19 1527/12 152459 152430 152336

#### Figure 29: Event History - Early Departure from timing stop point events

# 3.3 Route Checker

Key events:

- Stop passed despite stop request active.
- Any other event from other plugins, or event you are interested in that you cannot find elsewhere. Remember that we monitor over 200 different types of events.

In the example below, we're looking at drivers who have ignored a stop request. We selected the last week, all vehicles and only that specific event from the Event Type filter, before generating the report.

The result is 943 events. We turned on the Heat Map (far right) to see where most of them happened on the map. Keep in mind that they are shown on the map AFTER passing a stop, i.e., leaving the 25 meters radius around it.

This event can happen due to a few reasons:

- The driver did not notice/ignored the stop request
- The request was made too close to the stop for the driver to be able to stop in a safe manner



• The stop point is wrongly located in the traffic data. In this case, it would likely be further ahead on the route, or further to the side, than what is in the system.



Figure 30: Route Checker - Stop passed despite stop request active events

If you think it might be the driver, right-click on that row and select Vehicle History to see exactly where the stop request button was pressed.

We look at vehicle 8152. Selecting the History from the right-click menu takes us directly to that specific day, and even select that event in the table. To simplify the example, I've narrowed the History table for the time interval between the stop request and the "stop passed despite stop request active".

Vehicle History	358129815	2																
Vehicles (1/741)	-	3581298152	• *															
2021-05-31 15:10	Update	٩			Eve	nt Filter (33,	/33) 💌 11/11											
From: 13:10 021-05-31	From: 13:10 C																	
Vehicle	Vehicle st	Passengers	Block	Line	Duty	Driver	Destination	Journey	Index in	. Journey	Stop	Distance	Deviation	Stay time	Event	Speed (km/h)	Odometer	System time
3581298152	STOP		77418 Su	S175 Surfsi	N1227 S	Phil TO	Cobaki	37:NSWs		3 Started (	Wharf St opp Ri	77	00:03:00		Stop passed despite stop request active	53.14	388303	15:10:18 (31
3581298152	STOP		77418 Su	S175 Surfsi	N1227 5	Phil TO	Cobaki	37:NSWs		Started (	Wharf St opp Ri	Stop poi	00:03:09	00:00:00	Stop point pass-by	52.78	388251	15:10:14 (31
3581298152	STOP		77418 Su	S175 Surfsi	N1227 S	Phil TO	Cobaki	37:NSWs		2 Started (	Tweed Heads So	2132	00:03:21		GPS heading	50.00	388084	15:10:03 (31
3581298152	STOP		77418 Su	S175 Surfsi	N1227 S	Phil TO	Cobaki	37:NSWs		2 Started (	Tweed Heads So	1939	00:03:03		GPS heading	52.60	387892	15:09:19 (31
3581298152	STOP		77418 Su	S175 Surfsi	N1227 S	Phil TO	Cobaki	37:NSWs		2 Started (	Tweed Heads So	1786	00:03:13		Time deviation update	55.19	387724	15:09:08 (31
3581298152	STOP		77418 Su	S175 Surfsi	N1227 S	Phil TO	Cobaki	37:NSWs		2 Started (	Tweed Heads So	1531	00:03:34		Odometer	56.66	387539	15:08:56 (31
3581298152	STOP		77418 Su	S175 Surfsi	N1227 S	Phil TO	Cobaki	37:NSWs		2 Started (	Tweed Heads So	1342	00:03:44		Journey time updated	56.09	387280	15:08:40 (31
5301230132			77410 Su	ST/S SUISI	N1227 3	PHILITO	Соракі	57:1454V5		z Statteu (	Iweed neads 50	1512	00:05:45		Odometer	55.15	507200	15:00:59 (51
3581298152	STOP		77418 Su	S175 Surfsi	N1227 S	Phil TO	Cobaki	37:NSWs		2 Started (	Tweed Heads So	1086	00:03:28		Stop request activated	0.00	387026	15:07:52 (31
	_	_							_					_				
3581298152			77418 Su	S175 Surfsi	N1227 S	Phil TO	Cobaki	37:NSWs		2 Started (	Tweed Heads So	843	00:03:18		Odometer	51.66	386707	15:07:10 (31

Figure 31: Vehicle history for vehicle 8152





Figure 32: Logged route for vehicle 8152, showing where the stop request was pressed (bottom) and the next stop point on the route (top)

The table shows us that there was over 2 minutes, and 1225 meters, between the two events. The map also shows that it was pressed a little bit back, and not near any stop involved in that route. This is definitely a case of driver behaviour.

If you suspect that a stop point might be wrongly located, we would suggest to do a search by area, and draw an area around the stop point (stop points if they are close enough), and add a second event "Unexpected door open". You could even add "Door open". Start by filtering to "Unexpected door open" to see how many you have, if there might be a pattern or just a few "one-off". If unsure, as there could be a lot of pass-by, look at "door open" to see if they happen near the stops, or outside of the 25 meters radius ring.

In this example, we looked at Minjungbal Dr after Rivendell Rd and Minjunbal Dr before Soorley St, where we have 6 "Stop passed despite stop request active". They all show between the stop points, 4 heading South and 2 heading North (grey dots with black arrows showing heading).





Figure 33: Route Checker - Stop passed despite stop request active (left) and door open (right)

Adding "unexpected door open" only show one event. This does not feel like wrong geography so far. We also turn on "door open" to see if we can get any confirmation, and the results show 283 door open events, within each stop point circles (light blue dots). This confirms that the stop points are rightly located, and these 6 events must be driver related.