
TRICS Consortium Limited

TRICS PFS Comparative Analysis

April 2022



Ian Coles
Project Manager



Contents

1.	Introduction	2
2.	TRICS Petrol Filling Station Land-Use Sub-Category Definitions	2
3.	Survey Samples & Method of Analysis.....	3
4.	Comparative Results	5
5.	Observations	6
	APPENDIX A	9

Tables

Table 1:	TRICS survey samples used in the technical analysis.	3
Table 2:	Weekday (Monday-Friday) Total Vehicle trip rate comparisons	5
Table 3:	Weekend (Saturday-Sunday) Total Vehicle trip rate comparisons	5
Table 4:	Percentage and trip generation differences (weekdays).....	7
Table 5:	Percentage and trip generation differences (weekend days).....	8
Table 6:	Comparison of weekday (Monday-Friday) and weekend (Saturday-Sunday) percentage differences in trip generation for the 13/B sub-category against the 13/A sub-category.....	8

1. Introduction

- 1.1. TRICS has been undertaking vehicle (and from 2000 onwards multi-modal) surveys at petrol filling stations for many years, with the introduction of the 13/B (PFS with Retail) land use sub-category being introduced at a later stage in the development of the database (surveys at 13/A (Petrol Filling Station) sites having been undertaken over a longer period).
- 1.2. In recent years, the results of our annual TRICS User Survey have shown that petrol filling stations remain popular amongst the TRICS Community, especially the 13/B (PFS with Retail) sub-category. Because of this, we have continued undertaking surveys at PFS sites across the various TRICS regions.
- 1.3. Petrol filling stations have significantly changed since the first TRICS surveys were undertaken, hence the introduction of the 13/B sub-category that includes significant retail elements. There are now sufficient surveys in the database to allow us to undertake a technical analysis which compares trip generation between the two petrol filling station TRICS land use sub-categories. Although the survey sample does not allow for more detailed breakdowns, the intention of this technical analysis was to provide some basic initial comparative information, which the survey sample is sufficient to achieve. It should be noted that the survey sample has also allowed us to provide a split of surveys across two time periods, to allow for some time-related context.
- 1.4. The aim of this technical note is not to provide any reasoning for any of the results obtained. Instead, the aim is to provide TRICS users and the wider transport planning community with clear, comparative trip rate data across the two TRICS petrol filling station land use sub-categories, which is to be interpreted by practitioners using their own professional judgement. We offer no explanations or suggestions to explain any of the results, but we have provided detail on the survey selection criteria and the method used in the analysis.

2. TRICS Petrol Filling Station Land-Use Sub-Category Definitions

- 2.1. It is important for readers to understand the differences between the two TRICS petrol filling station land use sub-categories. The 13/A (Petrol Filling Station) sub-category is more of what may be called a “traditional” PFS, in that it would only have a small retail element selling limited “essential” items. The 13/B (PFS with Retail) sub-category was introduced into the database when an increasing number of petrol filling stations with larger retail elements (often run by a different company to the fuel company) started to become operational, and it is this latter category of PFS site that is now more commonplace.
- 2.2. The official TRICS definitions of the petrol filling station land use sub-categories (which are also present within the TRICS system within its Help files) are as follows. In both cases, trip rates can be calculated by Site Area or Filling Bays.

13/A (Petrol Filling Station)

“Traditional” petrol filling station with on a small shopping element such as a newsagent-type store.

13/B (PFS with Retail)

Petrol filling station with a significant retail element, possibly a smaller version of a branded supermarket or an extended store run by the PFS company

3. Survey Samples & Method of Analysis

- 3.1 It was important from the outset that there were sufficient surveys within the TRICS database for both sub-categories of petrol filling station sites to allow a robust comparative analysis to take place. This meant that the site selection process could not be overly broken down to the extent that the sample sizes would render the results unreliable, but we still needed to provide enough variation to make the exercise worthwhile, and the database was sufficient in size to achieve this.
- 3.2 An initial analysis of the availability and variation of surveys within the TRICS database meant that the survey selection criteria could consist of the following elements:
- (i) All included surveys would have been undertaken no earlier than 01/01/2000.
 - (ii) Sets of analyses would be split between surveys undertaken during 2000-2009 and surveys undertaken from 2010 onwards, with an additional analysis including all surveys regardless of their dates.
 - (iii) Sets of analyses would also be split by weekday (Monday-Friday) and weekend (Saturday-Sunday) surveys.
 - (iv) The main TRICS location types to be included would be Suburban Area, Edge of Town, and Neighbourhood Centre (excluding villages). This was the largest compatible grouping of main TRICS location types that would give us the biggest workable data set (see the TRICS Good Practice Guide for more information on location type compatibility).
- 3.3 These selection criteria allowed us to obtain the survey samples shown in the following table. Note that the samples are first broken down by date range, followed by the number of surveys for Mondays to Fridays and then Saturdays to Sundays.

TRICS Land Use Sub-Category	2000-2021*		2000-2009		2010-2021	
	Mon-Fri	Sat-Sun	Mon-Fri	Sat-Sun	Mon-Fri	Sat-Sun
13/A (Petrol Filling Station)	40	15	24	11	16	4
13/B (PFS with Retail)	64 #	39	30	19	35	20
Total	104	54	54	30	51	24

**The survey sample for 13/A ends in 2020, whilst the sample for 13/B ends in 2021 (availability of data, not an intent in the selection process).*

Discrepancy (64 surveys does not equal the sum of the 30 and 35 surveys) is due to TRICS survey inclusion rules for re-surveys and is not an error.

Table 1: TRICS survey samples used in the technical analysis.

- 3.4 It is recognised that there is one particularly small data set, that being 4 surveys for the 13/A Saturday-Sunday 2010-2021 entry in Table 1. However, given the range of the analysis and the overall average of sample sizes, this is not considered an anomaly significant enough to become an issue in the robustness of the results of this exercise. It is also not considered

significant enough to exclude the various splits as obtained using the selection criteria outlined in 3.2.

3.5 Having undertaken the survey selection process and achieved workable survey samples, the numerous average trip rate calculations could then take place. It was decided that the following method would be used:

- (i) All trip rates would be calculated using the Filling Bays option, meaning that all trip rate results would be presented per 1 filling bay.
- (ii) All trip rates displayed would be Total Vehicle rates, so would include the 7 standard TRICS vehicle classifications combined (cars, taxis, motorcycles, light goods vehicles, public service vehicles, OGV1 (up to and including 3 axles) and OGV2 (over 3 axles)).
- (iii) Only total trip rates (combined arrivals and departures) would be presented, seeing as arrivals and departures at petrol filling station sites tend to be largely identical for each hourly survey period given the nature of these developments.
- (iv) Trip rates would be shown for the 0700-1000, 1600-1900 and 0700-1900 time periods for each calculation undertaken, along with the Total Survey period (the period covering the beginning of the earliest starting survey to the end of the latest finishing survey).
- (v) Trip rates would also be shown for the peak (total two-way) hour for each calculation undertaken, with that hourly period displayed.

3.6 It is recognised that the 0700-1000 and 1600-1900 periods are considered more relevant for weekday surveys than for weekend surveys (given these tend to be the vehicular commute peaks which don't apply at weekends), but it was decided to display the comparison tables of the trip rate calculation results identically for the Monday-Friday and Saturday-Sunday data sets just to provide a direct comparison, so that basic differences in trip generation between weekdays and weekends could be easily observed.

4. Comparative Results

4.1. The first set of comparative results are for the weekday (Monday-Friday) analysis, and these are shown in Table 2.

Survey Dates and Land use sub-categories	Survey Days	Trip Rate 0700-1000	Trip Rate 1600-1900	Trip Rate 0700-1900	Total Survey Trip Rate	Peak Hour Period	Trip Rate
2000-2021 *							
13/A (Petrol Filling Station)	40	45.173	46.202	179.176	218.762	1700-1800	16.121
13/B (PFS with Retail)	64	53.040	62.459	225.718	287.904	1700-1800	21.502
2000-2009							
13/A (Petrol Filling Station)	24	50.839	51.065	198.053	235.421	1700-1800	18.079
13/B (PFS with Retail)	30	58.096	72.632	251.200	331.338	1800-1900	25.456
2010-2021							
13/A (Petrol Filling Station)	16	35.901	38.123	147.958	182.589	1500-1600	12.892
13/B (PFS with Retail)	35	48.104	53.289	201.835	251.983	1200-1300	18.571

*The survey sample for 13/A ends in 2020, whilst the sample for 13/B ends in 2021 (availability of data, not an intent in the selection process).

Table 2: Weekday (Monday-Friday) Total Vehicle trip rate comparisons
(all trips shown are total trips (arrivals plus departures) per 1 filling bay)

4.2. The second set of comparative results are for the weekend (Saturday-Sunday) analysis, and these are shown in Table 3.

Survey Dates and Land use sub-categories	Survey Days	Trip Rate 0700-1000	Trip Rate 1600-1900	Trip Rate 0700-1900	Total Survey Trip Rate	Peak Hour Period	Trip Rate
2000-2021 *							
13/A (Petrol Filling Station)	15	26.988	35.178	154.861	183.087	1100-1200	16.725
13/B (PFS with Retail)	39	39.140	66.888	237.652	295.162	1200-1300	24.148
2000-2009							
13/A (Petrol Filling Station)	11	28.711	38.086	169.768	197.364	1100-1200	18.447
13/B (PFS with Retail)	19	46.207	85.942	293.706	378.660	1200-1300	30.044
2010-2021							
13/A (Petrol Filling Station)	4	21.267	25.001	103.000	125.875	1100-1200	10.700
13/B (PFS with Retail)	20	32.707	49.196	185.731	223.674	1100-1200	19.279

*The survey sample for 13/A ends in 2020, whilst the sample for 13/B ends in 2021 (availability of data, not an intent in the selection process).

Table 3: Weekend (Saturday-Sunday) Total Vehicle trip rate comparisons
(all trips shown are total trips (arrivals plus departures) per 1 filling bay)

5. Observations

- 5.1. TRICS does not intend to provide any explanations, suggestions or reasoning behind the comparative results that have been obtained through this technical analysis. Therefore, any speculative conclusions to be drawn from the results presented in this technical note will be down to the professional judgement of practitioners, and none will be the opinion of TRICS Consortium Limited. However, we can provide some technical observations that may allow such a process to take place.
- 5.2. For every trip rate calculation result shown in Tables 2 and 3, trip rates are significantly higher for the 13/B (PFS with Retail) sub-category than for the 13/A (Petrol Filling Station) sub-category.
- 5.3. For weekdays (Monday-Friday) there are significantly lower overall trip rates (for both sub-categories and for every survey period shown in Table 2) for surveys undertaken during the 2010-2021 period compared to surveys undertaken during the 2000-2009 period. Looking at the Total Survey Trip Rate figures, the results show a 22.4% reduction in trip rates for the 13/A sub-category, and a 23.9% reduction in trip rates for the 13/B sub-category.
- 5.4. For weekends (Saturday-Sunday) there are also significantly lower overall trip rates (for both sub-categories and for every survey period shown in Table 3) for surveys undertaken during the 2010-2021 period compared to surveys undertaken during the 2000-2009 period. Looking at the Total Survey Trip Rate figures, the results show a 36.2% reduction in trip rates for the 13/A sub-category, and a 40.9% reduction in trip rates for the 13/B category.
- 5.5. For weekdays (Monday-Friday) including surveys undertaken from 2000 until 2009, trip generation for the 13/B sub-category was 14.3% higher than for the 13/A sub-category during the 0700-1000 survey period. For the 1600-1900 period the difference was 42.2%, for the 0700-1900 period the difference was 26.8%, and for the total survey duration the difference was 40.7%. The peak hour for the 13/A sub-category was 1700-1800, whilst for the 13/B sub-category it was 1800-1900, and the difference in trip generation for the peak hours was 40.8%. Table 4 presents all the weekday percentage differences along with the trip generation differences.
- 5.6. For weekdays (Monday-Friday) including surveys undertaken from 2010 until 2021, trip generation for the 13/B sub-category was 34.0% higher than for the 13/A sub-category during the 0700-1000 survey period. For the 1600-1900 period the difference was 39.8%, for the 0700-1900 period the difference was 36.4%, and for the total survey duration the difference was 38.0%. The peak hour for the 13/A sub-category was 1500-1600, whilst for the 13/B sub-category it was 1200-1300, and the difference in trip generation for the peak hours was 44.1%. Table 4 presents all the weekday percentage differences along with the trip generation differences.
- 5.7. Table 4 also shows the differences in the 13/B results compared to the 13/A results, both in terms of trip rates and percentages, for the overall 2000-2021 weekday surveys combined.

Survey date range	Period 0700-1000	Period 1600-1900	Period 0700-1900	Total Survey Period	Peak Hour Difference
2000-2021					
13/B Trip rate difference	+7.867	+16.257	+46.542	+69.142	+5.381
13/B Percentage difference	+17.4%	+35.2%	+26.0%	+31.6%	+33.4%
2000-2009					
13/B Trip rate difference	+7.257	+21.567	+53.147	+95.917	+7.377
13/B Percentage difference	+14.3%	+42.2%	+26.8%	+40.7%	+40.8%
2010-2021					
13/B Trip rate difference	+12.203	+15.166	+53.877	+69.394	+5.679
13/B Percentage difference	+34.0%	+39.8%	+36.4%	+38.0%	+44.1%

Table 4: Percentage and trip generation differences (weekdays)
(all figures showing 13/B results higher than 13/A results) – Weekday (Monday-Friday)

- 5.8. For weekends (Saturday-Sunday) including surveys undertaken from 2000 until 2009, trip generation for the 13/B sub-category was 60.9% higher than for the 13/A sub-category during the 0700-1000 survey period. For the 1600-1900 period the difference was 125.7%, for the 0700-1900 period the difference was 73.0%, and for the total survey duration the difference was 91.9%. The peak hour for the 13/A sub-category was 1100-1200, whilst for the 13/B sub-category it was 1200-1300, and the difference in trip generation for the peak hours was 62.9%. Table 5 presents all the weekend percentage differences along with the trip generation differences.
- 5.9. For weekends (Saturday-Sunday) including surveys undertaken from 2010 until 2021, trip generation for the 13/B sub-category was 53.8% higher than for the 13/A sub-category during the 0700-1000 survey period. For the 1600-1900 period the difference was 96.8%, for the 0700-1900 period the difference was 80.3%, and for the total survey duration the difference was 77.7%. The peak hour for both sub-categories was 1100-1200, and the difference in trip generation for this peak period was 80.2%. Table 5 presents all the weekend percentage differences along with the trip generation differences.
- 5.10. Table 5 also shows the differences in the 13/B results compared to the 13/A results, both in terms of trip rates and percentages, for the overall 2000-2021 weekend surveys combined.

Survey date range	Period 0700-1000	Period 1600-1900	Period 0700-1900	Total Survey Period	Peak Hour Difference
2000-2021					
13/B Trip rate difference	+12.152	+31.710	+82.791	+112.075	+7.423
13/B Percentage difference	+45.0%	+90.1%	+53.5%	+61.2%	+44.4%
2000-2009					
13/B Trip rate difference	+17.496	+47.856	+123.938	+181.296	+11.597
13/B Percentage difference	+60.9%	+125.7%	+73.0%	+91.9%	+62.9%
2010-2021					
13/B Trip rate difference	+11.440	+24.195	+82.731	+97.799	+8.579
13/B Percentage difference	+53.8%	+96.8%	+80.3%	+77.7%	+80.2%

Table 5: Percentage and trip generation differences (weekend days)
(all figures showing 13/B results higher than 13/A results) – Weekend (Saturday-Sunday)

- 5.11. We can also directly compare the percentage differences in trip generation for the 13/B sub-category compared to the 13/A sub-category between the weekday and weekend sets of results, and this shows a much higher set of differences for the weekend results. This comparison is shown in Table 6.
- 5.12. Table 6 also shows no emerging pattern within the differences in trip generation for the 13/B sub-category compared to the 13/A sub-category when the 2000-2009 and 2010-2021 splits are compared, with the differences being higher for some survey periods across the two splits and lower for others.

Survey date range and included days	Period 0700-1000	Period 1600-1900	Period 0700-1900	Total Survey Period	Peak Hour Difference
2000-2021					
Weekday (Mon-Fri)	+17.4%	+35.2%	+26.0%	+31.6%	+33.4%
Weekend (Sat-Sun)	+45.0%	+90.1%	+53.5%	+61.2%	+44.4%
2000-2009					
Weekday (Mon-Fri)	+14.3%	+42.2%	+26.8%	+40.7%	+40.8%
Weekend (Sat-Sun)	+60.9%	+125.7%	+73.0%	+91.9%	+62.9%
2010-2021					
Weekday (Mon-Fri)	+34.0%	+39.8%	+36.4%	+38.0%	+44.1%
Weekend (Sat-Sun)	+53.8%	+96.8%	+80.3%	+77.7%	+80.2%

Table 6: Comparison of weekday (Monday-Friday) and weekend (Saturday-Sunday) percentage differences in trip generation for the 13/B sub-category against the 13/A sub-category.



APPENDIX A

Full TRICS Calculation Results Tables

Time Range	ARR.		DEP.		TOT.				
	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate			
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00	11	8	3.114	11	8	2.841			
07:00-08:00	39	8	7.105	39	8	6.885			
08:00-09:00	40	8	7.969	40	8	7.851			
09:00-10:00	40	8	7.708	40	8	7.655			
10:00-11:00	40	8	7.385	40	8	7.280			
11:00-12:00	40	8	7.109	40	8	7.012			
12:00-13:00	40	8	7.432	40	8	7.422			
13:00-14:00	40	8	7.469	40	8	7.509			
14:00-15:00	40	8	7.158	40	8	7.134			
15:00-16:00	40	8	7.509	40	8	7.382			
16:00-17:00	40	8	7.273	40	8	7.491			
17:00-18:00	40	8	7.981	40	8	8.140			
18:00-19:00	40	8	7.612	40	8	7.705			
19:00-20:00	33	8	6.419	33	8	6.562			
20:00-21:00	18	8	4.573	18	8	4.747			
21:00-22:00	18	8	3.533	18	8	3.547			
22:00-23:00	1	8	2.125	1	8	2.125			
23:00-24:00									
Total Trip Rates:			109.474			109.288			218.762

Table A1: Trip rate calculation results for 13/A (Monday-Friday) 2000-2020

Time Range	ARR.		DEP.		TOT.				
	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate			
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00	1	12	1.500	1	12	1.500			
07:00-08:00	23	8	8.135	23	8	7.948			
08:00-09:00	24	8	8.980	24	8	8.786			
09:00-10:00	24	8	8.507	24	8	8.483			
10:00-11:00	24	8	8.199	24	8	8.119			
11:00-12:00	24	8	7.831	24	8	7.741			
12:00-13:00	24	8	8.104	24	8	8.060			
13:00-14:00	24	8	8.244	24	8	8.348			
14:00-15:00	24	8	7.746	24	8	7.662			
15:00-16:00	24	8	8.090	24	8	8.005			
16:00-17:00	24	8	7.891	24	8	8.080			
17:00-18:00	24	8	8.940	24	8	9.139			
18:00-19:00	24	8	8.463	24	8	8.552			
19:00-20:00	20	8	6.842	20	8	6.836			
20:00-21:00	5	10	4.420	5	10	4.940			
21:00-22:00	5	10	3.640	5	10	3.440			
22:00-23:00	1	8	2.125	1	8	2.125			
23:00-24:00									
Total Trip Rates:			117.657			117.764			235.421

Table A2: Trip rate calculation results for 13/A (Monday-Friday) 2000-2009



Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00	10	8	3.368	10	8	3.053	10	8	6.421
07:00-08:00	16	8	5.463	16	8	5.190	16	8	10.653
08:00-09:00	16	8	6.289	16	8	6.298	16	8	12.587
09:00-10:00	16	8	6.380	16	8	6.281	16	8	12.661
10:00-11:00	16	8	6.033	16	8	5.884	16	8	11.917
11:00-12:00	16	8	5.909	16	8	5.802	16	8	11.711
12:00-13:00	16	8	6.314	16	8	6.364	16	8	12.678
13:00-14:00	16	8	6.182	16	8	6.116	16	8	12.298
14:00-15:00	16	8	6.182	16	8	6.256	16	8	12.438
15:00-16:00	16	8	6.545	16	8	6.347	16	8	12.892
16:00-17:00	16	8	6.248	16	8	6.512	16	8	12.760
17:00-18:00	16	8	6.388	16	8	6.479	16	8	12.867
18:00-19:00	16	8	6.198	16	8	6.298	16	8	12.496
19:00-20:00	13	8	5.720	13	8	6.110	13	8	11.830
20:00-21:00	13	8	4.650	13	8	4.650	13	8	9.300
21:00-22:00	13	8	3.480	13	8	3.600	13	8	7.080
22:00-23:00									
23:00-24:00									
Total Trip Rates:			91.349			91.240			182.589

Table A3: Trip rate calculation results for 13/A (Monday-Friday) 2010-2020

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00	1	8	0.250	1	8	0.250	1	8	0.500
06:00-07:00	4	8	1.067	4	8	0.967	4	8	2.034
07:00-08:00	13	9	3.063	13	9	2.910	13	9	5.973
08:00-09:00	15	9	4.511	15	9	4.348	15	9	8.859
09:00-10:00	15	9	6.141	15	9	6.015	15	9	12.156
10:00-11:00	15	9	7.985	15	9	7.956	15	9	15.941
11:00-12:00	15	9	8.481	15	9	8.244	15	9	16.725
12:00-13:00	15	9	7.563	15	9	7.859	15	9	15.422
13:00-14:00	15	9	7.859	15	9	7.793	15	9	15.652
14:00-15:00	15	9	7.556	15	9	7.644	15	9	15.200
15:00-16:00	15	9	6.896	15	9	6.859	15	9	13.755
16:00-17:00	15	9	6.570	15	9	6.489	15	9	13.059
17:00-18:00	15	9	5.681	15	9	5.852	15	9	11.533
18:00-19:00	15	9	5.267	15	9	5.319	15	9	10.586
19:00-20:00	9	8	4.421	9	8	4.355	9	8	8.776
20:00-21:00	6	8	3.583	6	8	3.771	6	8	7.354
21:00-22:00	6	8	2.313	6	8	2.375	6	8	4.687
22:00-23:00	1	8	2.500	1	8	2.375	1	8	4.875
23:00-24:00									
Total Trip Rates:			91.706			91.381			183.087

Table A4: Trip rate calculation results for 13/A (Saturday-Sunday) 2000-2020



Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00	9	9	3.272	9	9	3.086	9	9	6.358
08:00-09:00	11	10	4.686	11	10	4.457	11	10	9.143
09:00-10:00	11	10	6.667	11	10	6.543	11	10	13.210
10:00-11:00	11	10	8.810	11	10	8.819	11	10	17.629
11:00-12:00	11	10	9.371	11	10	9.076	11	10	18.447
12:00-13:00	11	10	8.229	11	10	8.638	11	10	16.867
13:00-14:00	11	10	8.752	11	10	8.562	11	10	17.314
14:00-15:00	11	10	8.724	11	10	8.819	11	10	17.543
15:00-16:00	11	10	7.619	11	10	7.552	11	10	15.171
16:00-17:00	11	10	7.133	11	10	7.057	11	10	14.190
17:00-18:00	11	10	6.229	11	10	6.448	11	10	12.677
18:00-19:00	11	10	5.552	11	10	5.667	11	10	11.219
19:00-20:00	5	9	5.174	5	9	4.978	5	9	10.152
20:00-21:00	2	9	5.500	2	9	6.056	2	9	11.556
21:00-22:00	2	9	2.944	2	9	2.944	2	9	5.888
22:00-23:00									
23:00-24:00									
Total Trip Rates:			98.662			98.702			197.364

Table A5: Trip rate calculation results for 13/A (Saturday-Sunday) 2000-2009

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00	1	8	0.250	1	8	0.250	1	8	0.500
06:00-07:00	4	8	1.067	4	8	0.967	4	8	2.034
07:00-08:00	4	8	2.500	4	8	2.433	4	8	4.933
08:00-09:00	4	8	3.900	4	8	3.967	4	8	7.867
09:00-10:00	4	8	4.300	4	8	4.167	4	8	8.467
10:00-11:00	4	8	5.100	4	8	4.933	4	8	10.033
11:00-12:00	4	8	5.367	4	8	5.333	4	8	10.700
12:00-13:00	4	8	5.233	4	8	5.133	4	8	10.366
13:00-14:00	4	8	4.733	4	8	5.100	4	8	9.833
14:00-15:00	4	8	3.467	4	8	3.533	4	8	7.000
15:00-16:00	4	8	4.367	4	8	4.433	4	8	8.800
16:00-17:00	4	8	4.600	4	8	4.500	4	8	9.100
17:00-18:00	4	8	3.767	4	8	3.767	4	8	7.534
18:00-19:00	4	8	4.267	4	8	4.100	4	8	8.367
19:00-20:00	4	8	3.267	4	8	3.400	4	8	6.667
20:00-21:00	4	8	2.433	4	8	2.400	4	8	4.833
21:00-22:00	4	8	1.933	4	8	2.033	4	8	3.966
22:00-23:00	1	8	2.500	1	8	2.375	1	8	4.875
23:00-24:00									
Total Trip Rates:			63.051			62.824			125.875

Table A6: Trip rate calculation results for 13/A (Saturday-Sunday) 2010-2020



Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00	2	9	1.444	2	9	1.222	2	9	2.666
06:00-07:00	39	9	4.890	39	9	4.536	39	9	9.426
07:00-08:00	64	8	8.610	64	8	8.349	64	8	16.959
08:00-09:00	64	8	9.228	64	8	9.013	64	8	18.241
09:00-10:00	64	8	8.991	64	8	8.849	64	8	17.840
10:00-11:00	64	8	8.491	64	8	8.429	64	8	16.920
11:00-12:00	64	8	8.537	64	8	8.556	64	8	17.093
12:00-13:00	64	8	10.052	64	8	10.019	64	8	20.071
13:00-14:00	64	8	9.571	64	8	9.653	64	8	19.224
14:00-15:00	64	8	9.007	64	8	8.938	64	8	17.945
15:00-16:00	64	8	9.494	64	8	9.472	64	8	18.966
16:00-17:00	64	8	9.754	64	8	9.994	64	8	19.748
17:00-18:00	64	8	10.787	64	8	10.715	64	8	21.502
18:00-19:00	64	8	10.603	64	8	10.606	64	8	21.209
19:00-20:00	56	8	8.466	56	8	8.734	56	8	17.200
20:00-21:00	45	8	6.247	45	8	6.543	45	8	12.790
21:00-22:00	42	9	4.465	42	9	4.563	42	9	9.028
22:00-23:00	12	9	3.104	12	9	3.472	12	9	6.576
23:00-24:00	6	9	2.148	6	9	2.352	6	9	4.500
Total Trip Rates:			143.889			144.015			287.904

Table A7: Trip rate calculation results for 13/B (Monday-Friday) 2000-2021

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00	5	9	6.957	5	9	6.239	5	9	13.196
07:00-08:00	30	8	9.612	30	8	9.452	30	8	19.064
08:00-09:00	30	8	10.108	30	8	10.076	30	8	20.184
09:00-10:00	30	8	9.584	30	8	9.264	30	8	18.848
10:00-11:00	30	8	9.428	30	8	9.284	30	8	18.712
11:00-12:00	30	8	9.528	30	8	9.660	30	8	19.188
12:00-13:00	30	8	10.740	30	8	10.704	30	8	21.444
13:00-14:00	30	8	10.044	30	8	10.176	30	8	20.220
14:00-15:00	30	8	9.868	30	8	9.760	30	8	19.628
15:00-16:00	30	8	10.668	30	8	10.612	30	8	21.280
16:00-17:00	30	8	11.100	30	8	11.184	30	8	22.284
17:00-18:00	30	8	12.500	30	8	12.392	30	8	24.892
18:00-19:00	30	8	12.736	30	8	12.720	30	8	25.456
19:00-20:00	23	9	9.878	23	9	10.240	23	9	20.118
20:00-21:00	12	9	8.602	12	9	8.932	12	9	17.534
21:00-22:00	8	9	5.841	8	9	5.928	8	9	11.769
22:00-23:00	6	9	4.808	6	9	5.346	6	9	10.154
23:00-24:00	3	10	3.567	3	10	3.800	3	10	7.367
Total Trip Rates:			165.569			165.769			331.338

Table A8: Trip rate calculation results for 13/B (Monday-Friday) 2000-2009



Time Range	ARR.		DEP.		TOT.				
	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00	2	9	1.444	2	9	1.222	2	9	2.666
06:00-07:00	34	9	4.562	34	9	4.266	34	9	8.828
07:00-08:00	35	9	7.681	35	9	7.349	35	9	15.030
08:00-09:00	35	9	8.329	35	9	7.963	35	9	16.292
09:00-10:00	35	9	8.389	35	9	8.393	35	9	16.782
10:00-11:00	35	9	7.718	35	9	7.634	35	9	15.352
11:00-12:00	35	9	7.617	35	9	7.587	35	9	15.204
12:00-13:00	35	9	9.309	35	9	9.262	35	9	18.571
13:00-14:00	35	9	9.020	35	9	9.034	35	9	18.054
14:00-15:00	35	9	8.218	35	9	8.191	35	9	16.409
15:00-16:00	35	9	8.419	35	9	8.433	35	9	16.852
16:00-17:00	35	9	8.450	35	9	8.826	35	9	17.276
17:00-18:00	35	9	9.235	35	9	9.188	35	9	18.423
18:00-19:00	35	9	8.748	35	9	8.842	35	9	17.590
19:00-20:00	34	9	7.369	34	9	7.569	34	9	14.938
20:00-21:00	34	9	5.510	34	9	5.783	34	9	11.293
21:00-22:00	34	9	4.138	34	9	4.238	34	9	8.376
22:00-23:00	6	9	1.463	6	9	1.667	6	9	3.130
23:00-24:00	3	8	0.375	3	8	0.542	3	8	0.917
Total Trip Rates:			125.994			125.989			251.983

Table A9: Trip rate calculation results for 13/B (Monday-Friday) 2010-2021

Time Range	ARR.		DEP.		TOT.				
	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00	20	9	1.871	20	9	1.700	20	9	3.571
07:00-08:00	37	8	4.609	37	8	4.263	37	8	8.872
08:00-09:00	39	8	6.472	39	8	6.321	39	8	12.793
09:00-10:00	39	8	8.898	39	8	8.577	39	8	17.475
10:00-11:00	39	8	10.380	39	8	10.330	39	8	20.710
11:00-12:00	39	8	11.867	39	8	11.750	39	8	23.617
12:00-13:00	39	8	12.086	39	8	12.062	39	8	24.148
13:00-14:00	39	8	11.099	39	8	11.139	39	8	22.238
14:00-15:00	39	8	10.207	39	8	10.506	39	8	20.713
15:00-16:00	39	8	10.071	39	8	10.127	39	8	20.198
16:00-17:00	39	8	11.031	39	8	10.923	39	8	21.954
17:00-18:00	39	8	11.256	39	8	11.262	39	8	22.518
18:00-19:00	39	8	11.222	39	8	11.194	39	8	22.416
19:00-20:00	33	8	8.258	33	8	8.655	33	8	16.913
20:00-21:00	29	8	6.280	29	8	6.391	29	8	12.671
21:00-22:00	26	8	4.237	26	8	4.365	26	8	8.602
22:00-23:00	6	9	4.333	6	9	4.574	6	9	8.907
23:00-24:00	3	9	3.269	3	9	3.577	3	9	6.846
Total Trip Rates:			147.446			147.716			295.162

Table A10: Trip rate calculation results for 13/B (Saturday-Sunday) 2000-2021



Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00	3	9	3.077	3	9	2.885	3	9	5.962
07:00-08:00	17	8	5.500	17	8	5.188	17	8	10.688
08:00-09:00	19	8	7.532	19	8	7.250	19	8	14.782
09:00-10:00	19	8	10.577	19	8	10.160	19	8	20.737
10:00-11:00	19	8	12.756	19	8	12.814	19	8	25.570
11:00-12:00	19	8	14.212	19	8	14.077	19	8	28.289
12:00-13:00	19	8	15.006	19	8	15.038	19	8	30.044
13:00-14:00	19	8	13.577	19	8	13.718	19	8	27.295
14:00-15:00	19	8	12.327	19	8	12.699	19	8	25.026
15:00-16:00	19	8	12.647	19	8	12.686	19	8	25.333
16:00-17:00	19	8	13.795	19	8	13.596	19	8	27.391
17:00-18:00	19	8	14.442	19	8	14.346	19	8	28.788
18:00-19:00	19	8	14.942	19	8	14.821	19	8	29.763
19:00-20:00	13	8	11.065	13	8	11.636	13	8	22.701
20:00-21:00	9	8	8.960	9	8	9.120	9	8	18.080
21:00-22:00	6	9	6.961	6	9	7.216	6	9	14.177
22:00-23:00	3	9	7.115	3	9	7.308	3	9	14.423
23:00-24:00	2	9	4.611	2	9	5.000	2	9	9.611
Total Trip Rates:			189.102			189.558			378.660

Table A11: Trip rate calculation results for 13/B (Saturday-Sunday) 2000-2009

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate	No. Days	Ave. BAYS	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00	17	8	1.653	17	8	1.486	17	8	3.139
07:00-08:00	20	8	3.845	20	8	3.470	20	8	7.315
08:00-09:00	20	8	5.488	20	8	5.458	20	8	10.946
09:00-10:00	20	8	7.339	20	8	7.107	20	8	14.446
10:00-11:00	20	8	8.173	20	8	8.024	20	8	16.197
11:00-12:00	20	8	9.690	20	8	9.589	20	8	19.279
12:00-13:00	20	8	9.375	20	8	9.298	20	8	18.673
13:00-14:00	20	8	8.798	20	8	8.744	20	8	17.542
14:00-15:00	20	8	8.238	20	8	8.470	20	8	16.708
15:00-16:00	20	8	7.679	20	8	7.750	20	8	15.429
16:00-17:00	20	8	8.464	20	8	8.440	20	8	16.904
17:00-18:00	20	8	8.298	20	8	8.399	20	8	16.697
18:00-19:00	20	8	7.768	20	8	7.827	20	8	15.595
19:00-20:00	20	8	6.470	20	8	6.756	20	8	13.226
20:00-21:00	20	8	5.083	20	8	5.173	20	8	10.256
21:00-22:00	20	8	3.411	20	8	3.500	20	8	6.911
22:00-23:00	3	9	1.750	3	9	2.036	3	9	3.786
23:00-24:00	1	8	0.250	1	8	0.375	1	8	0.625
Total Trip Rates:			111.772			111.902			223.674

Table A12: Trip rate calculation results for 13/B (Saturday-Sunday) 2010-2021