



TRICS Consortium Limited

TRICS Vehicle Occupants Analysis for Selected Development Types 2023

January 2023

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1. Introduction

- 1.1. TRICS first undertook multi-modal surveys in 2000, which saw the introduction of the new Vehicle Occupants count in the database, along with new Pedestrian and Public Transport Users count types. As multi-modal TRICS surveys evolved these counts were further split, and from 2008 the Vehicle Occupants mode split was represented in TRICS pie charts by separate “Single Vehicle Occupant” and “Multi-Vehicle Occupant” percentages, whereas before 2008 it had been represented by just the total “Vehicle Occupants” percentage.
- 1.2. At least half of TRICS surveys in the annual data collection programme are now multi-modal surveys, which for 22 years has allowed us to build up a large database of people counts. These regional multi-modal surveys are also supplemented by specifically commissioned TRICS SAM (Standardised Assessment Methodology) surveys, all of which are multi-modal in nature.
- 1.3. The Vehicle Occupants count provides our users with a further layer of information, as it is split by vehicles with different numbers of occupants and is also supplemented by an Occupancy Split bar chart accessible from within individual survey counts. This is considered valuable information as it provides users with a good indication of car-sharing and multiple occupancy on a site-by-site basis, in addition to providing the total inbound and outbound number of occupants for each survey period. This count has also been recently enhanced with the addition of average inbound/outbound occupancy figures across all survey periods, which is a handy and quick reference for users.
- 1.4. Multi-modal surveys (and therefore Vehicle Occupants counts) have been undertaken across a wide variety of TRICS land use sub-categories as part of our regular annual programme. As a result, we now have sufficient data for a set of Vehicle Occupants analyses for selected sub-categories within the database, and this technical note presents the results. Although the survey samples do not allow for breakdowns by many variables, the intention of this technical analysis was to provide some basic information on the Vehicle Occupants count across a good representative mix of development types, including analyses of trip generation and modal split, broken down by central and outer TRICS location types.
- 1.5. 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 Vehicle Occupants count data across a range of 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. Defining & Explaining the Vehicle Occupants Count

- 2.1. Before the survey selection criteria and method of analysis is presented, it is important to explain the definition, the structure and the various nuances of the Vehicle Occupants count so that it can be fully understood, and to avoid any potential confusion. The text within this section of the report has been extracted from the 2023 TRICS Good Practice Guide (with a small number of adjustments made), which contains a section dedicated to understanding the Vehicle Occupants count.
- 2.2. In all cases (with the exception of school surveys – see the 2023 TRICS Good Practice Guide), the Vehicle Occupants count includes all occupants of vehicles who are visiting any surveyed site but excludes all drivers of vehicles who are picking up and dropping off passengers at a site (and are therefore not considered to be visiting a site themselves). This rule applies to occupants of all vehicle types (except bus and coach passengers who are recorded separately), with taxi drivers being treated the same way as drivers of private vehicles who are picking up/dropping off passengers. However, it is important to note that if a driver of a vehicle physically visits a site in the same way as a passenger does, then the driver will be included in the Vehicle Occupants count.
- 2.3. Two examples can be given to illustrate the inclusion or exclusion of drivers and passengers of vehicles in the Vehicle Occupants count. The first example is a driver of a private car with two passengers arriving at a site, with the two passengers being dropped off and the driver then leaving the site. In this case, one car would be recorded arriving and then departing, and two vehicle occupants (the two passengers) would be recorded arriving. The second example is a driver of a private car with two passengers arriving at a site, and all three people in the car visiting the site. In this case, one car would be recorded arriving, and three vehicle occupants (the two passengers plus the driver) would be recorded arriving. When presenting reports that include Vehicle Occupants counts or trip rates, it is considered good practice that TRICS users clarify that such counts exclude drivers of vehicles picking up/dropping off passengers.
- 2.4. The rules for the inclusion and exclusion of vehicle occupants apply as much as possible through TRICS multi-modal surveys. However, at some survey sites this will be more difficult than at others, so the exclusion of drivers of vehicles picking up/dropping off passengers at some sites may not always be possible. At some larger sites where observation of all pick-up and drop-off activity may not be fully achievable (for example perhaps at some large residential developments, industrial estates, or retail parks), and where the nature of a site means that interviews to enable this information to be obtained cannot be undertaken, the Vehicle Occupants count may include some drivers that are not physically visiting sites. However, in such instances the overall level of trip activity would probably be at the higher end of the scale, and as such it is not considered that these exceptions would have much of an impact on the overall survey counts. For most surveys we can identify and exclude pick-up and drop-off trips either through observation or interview (or a combination of both), so we do not consider the exceptions to be a significant statistical issue.



2.5. The Vehicle Occupants count is presented in a different way to other count types in the TRICS database (see *Figure 1*). Whereas all other count types display single columns for arrivals and departures through the survey periods, the Vehicle Occupants count provides a split of vehicles with 1 occupant, 2 occupants, 3 occupants, up to a maximum of 7 occupants. This split is obtained through observations or by interviews during TRICS surveys, and this allows the total number of vehicle occupants per count period to be calculated, with this being presented in the final column for arrivals and departures, with the sum of both being displayed in the Totals column in the same way as for all other count types. Note that the average occupants per vehicle figures are also displayed.

Survey Dates		VEHICLE OCCUPANTS																				
Thursday 18/11/21		This count consists of car occupants, light goods vehicle occupants, motorcycle riders and OGV occupants Taxi drivers and drivers of private vehicles picking up/dropping off passengers at the site are excluded from the count																				
MODE		Note on car sharing and vehicle occupants inclusion																				
<input type="radio"/> Total Vehicles <input type="radio"/> Servicing Vehicles <input type="radio"/> Total People <input type="radio"/> Cars <input type="radio"/> Taxis <input type="radio"/> Motor Cycles <input type="radio"/> LGVs <input type="radio"/> PSVs <input type="radio"/> OGVs <input type="radio"/> Cyclists <input type="radio"/> Scooters <input checked="" type="radio"/> Vehicle Occupants <input type="radio"/> Pedestrians <input type="radio"/> Public Transport Users <input type="radio"/> Bus/Tram Passengers <input type="radio"/> Total Rail Passengers <input type="radio"/> Coach Passengers		Bracketed figures assume initial number at site to be 0																				
		Occupancy per Vehicle Arriving							Avg Per Veh	Occupancy per Vehicle Departing							Avg Per Veh	Totals	Avg Per Veh	Accumulation		
Time		1	2	3	4	5	6	7	Arr 1435	1.4	1	2	3	4	5	6	7	Dep 1422	1.4	Totals 2857	1.4	Accumulation
00:00-01:00																						
01:00-02:00																						
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20:00-21:00																						
21:00-22:00																						
22:00-23:00																						
23:00-24:00																						
Total		745	237	51	12	3	0	0	677	263	57	12	0	0	0							

Figure 1 - Example of a TRICS Vehicle Occupants count

2.6. Using the figures shown in *Figure 1* as an example, the method of calculating the sum of vehicle occupant arrivals can be explained. If we look at the 1000-1100 inbound period there are 34 vehicles with 1 occupant, 6 vehicles with 2 occupants, 3 vehicles with 3 occupants and 1 vehicle with 4 occupants. Therefore, the total number of inbound vehicle occupants for this period can be calculated using the following formula: $34 + (6*2) + (3*3) + (1*4) = 59$

2.7. It should also be noted that the first arrivals “1” column does not just show the number of inbound vehicles with just a driver that visited the site. The vehicle occupants within this column will be a combination of drivers on their own that arrived at the site, and single passengers who are picked up/dropped off by a driver who is not visiting the site. The same approach continues through the “2”, “3”, “4” columns etc. The total number of vehicles with 1 occupant, 2 occupants, etc are also displayed at the bottom of each column. It is important to realise that these horizontal totals represent vehicles, not occupants.

- 2.8. It is important to understand that the Vehicle Occupants count does not differentiate between site-visiting drivers and passengers. Therefore, TRICS users will need to make their own estimations based on assumptions with regards to this, applying their professional judgement. It should be made clear in reporting that any such assumptions used to estimate any drivers/passengers split were made outside of the TRICS process, with the user’s own method used to estimate this split also being clearly explained. Should auditors of reports see splits between drivers and passengers without such explanatory detail they should contact whoever produced the report for further clarification.
- 2.9. The Vehicle Occupants count can assist users in providing an indication of the level of “car sharing” taking place at any individual multi-modal site. Again, users would need to make some assumptions and apply their professional judgement after examining a Vehicle Occupants count to arrive at estimates for car sharing activity, so if presenting such estimates in reports their assumptions and methods used should always be clearly explained.
- 2.10. Something else to note is that the number of vehicles with 1 occupant, 2 occupants, 3 occupants etc in the Vehicle Occupants count may not necessarily equal the corresponding number of vehicles (for a survey period or direction) in the Total Vehicles count, as any vehicles with 0 occupants would not be represented in the Vehicle Occupants count. For example, if a car driver drops a passenger off at a site being surveyed and then drives away, although the vehicle will be recorded as both an arrival and a departure in the Total Vehicles count, it will only be recorded as a vehicle with 1 occupant arrival in the Vehicle Occupants count, with it being excluded from the departures count.
- 2.11. To view the vehicle occupancy split in a more visual format, users can click on the “Occupancy Split” icon at the top of the count screen, and an Occupancy Split Graph (see *Figure 2*) will then be displayed. In this graph the total number of vehicles is shown on the y axis, with the occupants per vehicle shown on the x axis.

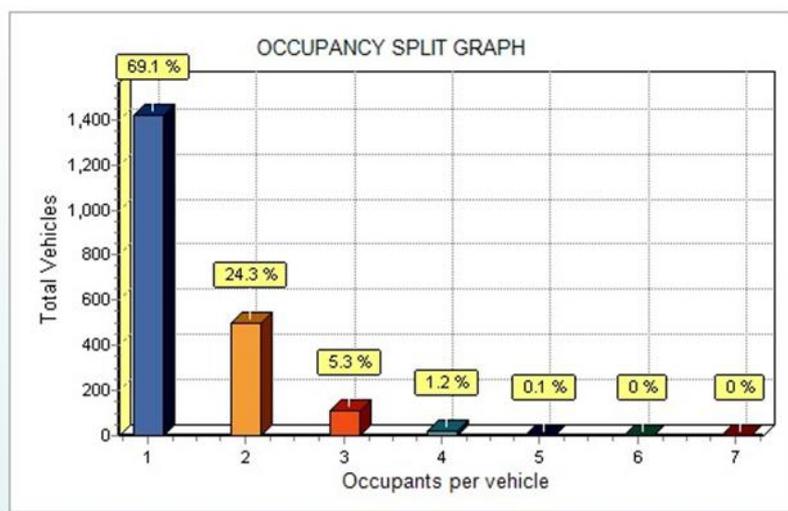


Figure 2 - Example of a TRICS Occupancy Split graph for a Vehicle Occupants count.

- 2.12. There is one exception to the rules of inclusion in the TRICS Vehicle Occupants count, and this applies in the case of multi-modal surveys at schools (note that school sites are not included in this report). Any parents or guardians who physically enter the boundaries of a school within a vehicle are included within the Vehicle Occupants count, but any parents or guardians who park anywhere outside a school will not be included (their vehicles will be included in the relevant vehicles count in all cases), unless they are visiting the school for a specific meeting or other event (note that all staff using vehicles are recorded as vehicle occupants whether they park on-site or off-site). It should also be noted that all parents or guardians who walk to/from school with their children or use public transport are always included in the appropriate mode within the multi-modal count. This exception is designed to ensure that the Vehicle Occupants count is not over-represented in multi-modal school surveys, given the rules stated for all other development types as detailed within this section of the report. It is considered good practice for users to explain this exception in their reports if TRICS trip rate analyses are undertaken for school sites.
- 2.13. A note explaining the TRICS Vehicle Occupants count is also available as a PDF when viewing any Vehicle Occupants count for an individual TRICS site. The button that accesses this note is shown near the top of the image in *Figure 1*, called “Note on car sharing and vehicle occupants inclusion”.

3. Survey Samples & Method of Analysis

- 3.1. It was important from the outset that there were sufficient surveys within the TRICS database to allow a robust trip generation 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 be undertaken no earlier than 01/01/2008. This was to ensure that the breakdown of single vehicle occupants and multi vehicle occupants could be displayed in mode split pie charts (as this split of the vehicle occupants percentage was only introduced for surveys undertaken from 2008 onwards).
 - (ii) All sets of analyses would consist of surveys undertaken on weekdays (Monday-Friday) only, as there were insufficient surveys at weekends for most land uses (and weekend surveys would only have been relevant for a small number of land uses).
 - (iii) Separate sets of analyses would be undertaken for two TRICS Main Location type groupings. These would consist of the “Central” grouping (Town Centre and Edge of Town Centre Main Location types) and the “Outer” grouping (Suburban Area, Neighbourhood Centre (excluding villages) and Edge of Town Main Location types).
- 3.3. It should be noted that a split of survey samples by size or scale could not be achieved, as the survey samples would have been too small for any reliable or robust results to have been obtained. The selection criteria is considered to be relatively minimal, although sufficient enough to allow us to undertake a useful set of analyses examining average (mean) trip rates for the Vehicle Occupants counts within each set of surveys.
- 3.4. It is also important to note that trip rates were unable to be calculated using the same trip rate calculation parameter across all of the land use sub-categories that were to be included in this analysis. Although most of the land uses would have trip rates calculated per 100m² of Gross Floor Area (GFA), for the Residential categories the trip rates would need to be calculated per 1 Dwelling, and the Leisure Centre category would need to be calculated per 1 hectare of Site Area (so as to include external areas such as sports pitches). Therefore, readers of this report should be aware that we are not presenting “like for like” trip rates for each of the land uses.
- 3.5. The outlined selection criteria allowed us to obtain the survey samples shown in [Table 1](#). Note that the samples are broken down by the “Central” and “Outer” TRICS Main Location types (as explained in [3.2](#)). Also note that TRICS version 7.9.4 (issued in December 2022) was used for all calculations.

TRICS Land Use Sub-Category	Survey Days						
	Central Location Type Grouping*			Outer Location Type Grouping*			
	TC	EOTC	Total	SA	NC	EOT	Total
01/A (Food Superstore)	14	5	19	9	6	12	27
01/C (Discount Food Store)	2	18	20	8	7	14	29
02/A (Office)	27	39	66	19	6	17	42
03/A (Houses Privately Owned)	0	18	18	53	7	95	155
03/C (Flats Privately Owned)	9	42	51	43	13	9	65
05/G (GP Surgery)	2	13	15	11	8	6	25
06/A (Hotel)	14	13	27	9	1	12	22
07/C (Leisure Centre)	4	15	19	12	4	10	26
Totals	72	163	235	164	52	175	391

*Key: TC=Town Centre, EOTC=Edge of Town Centre, SA=Suburban Area, NC=Neighbourhood Centre (excluding villages), EOT=Edge of Town.

Table 1: TRICS survey samples used in the technical analysis

3.6. There are some points to note regarding the survey samples shown in **Table 1**. We do not consider that any of these points compromise the validity of the results of this series of analyses, but nonetheless it is worth mentioning each of them. These observations are as follows:

- (i) There were only 2 Town Centre surveys available for 01/C (Discount Food Stores), with the remaining 18 surveys in the Central location grouping being Edge of Town Centre.
- (ii) There were no Town Centre surveys available for 03/A (Houses Privately Owned), with all 18 of the surveys in the Central location grouping being Edge of Town Centre. This is not surprising as it is difficult to find housing estates (as opposed to blocks of flats) in very central locations.
- (iii) The vast majority of surveys (155) for 03/A (Houses Privately Owned) were situated in the Outer location grouping, with there being 18 surveys in the Central location grouping. Again, this is not surprising given the nature of this land use sub-category.
- (iv) There were only 2 Town Centre surveys available for 05/G (GP Surgeries), with the remaining 13 surveys in the Central location grouping being Edge of Town Centre.

3.7. 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) Trip rates would be calculated (where possible) using the Gross Floor Area (GFA) option, with all results presented per 100m² of GFA. This applied to all sub-categories except the two Residential land uses, where trip rates per 1 Dwelling were calculated, and the Leisure Centre sub-category, where trip rates per 1 Hectare of Site Area were calculated. As a result, users should note that for these exceptions trip rates cannot be considered a like-for-like comparison.

- (ii) Vehicle Occupants trip rates would be calculated separately for the Central location grouping and the Outer location grouping. In each case, the total survey duration trip rates (covering the earliest start time to the latest finish time for each separate set of surveys) would be presented first.
- (iii) To provide additional context to the Vehicle Occupants trip rates, Total Vehicles and Total People trip rates for the same full survey duration would also be calculated.
- (iv) Having calculated the Vehicle Occupants and Total Vehicles trip rates for the full survey duration, we could then divide Vehicle Occupants by Total Vehicles to provide some further context. Here we must provide an important caveat and clarification. As explained in 2.10, the number of vehicles with 1 occupant, 2 occupants, 3 occupants, etc in the Vehicle Occupants count table (see Figure 1) will not necessarily match the corresponding number of vehicles in the Total Vehicles count for any inbound or outbound survey period. This is because drivers of vehicles picking up or dropping off passengers at surveyed sites are excluded from the Vehicle Occupants count (see 2.10). Although any such vehicle arrivals or departures would be included in the Total Vehicles Count, the same vehicles would only be recorded in the Vehicle Occupants count table if there were site-visiting passengers in the vehicle or if the driver was not picking up/dropping off passengers but actually visiting the site being surveyed (see 2.2 and 2.3). **Therefore, the Vehicle Occupants/Total Vehicles ratio shown in this set of analyses does not show an average number of occupants per vehicle.** An exact average calculation of occupants per vehicle across any set of surveys is not possible using TRICS (this can only be achieved by looking at an individual Vehicle Occupants count where such averages are presented (see Figure 1).
- (v) The total 2-way (arrivals plus departures) Vehicle Occupants peak hour would then be presented, with the corresponding trip rate shown. For each individual set of surveys, this would represent the average hourly period with the highest inbound plus outbound Vehicle Occupants trip rates. There is an important caveat and condition to note here. **For every set of surveys, this peak hour needed to have trip rates present for every survey otherwise it could not be shown as the peak hour in the results tables.** This is to avoid any misleading weighting and bias in average trip rates that the full set of surveys had not contributed to. For example, if there were 26 surveys in a selected set, but the two-way peak period represented only 2 surveys (say right at the end of the survey, noting that individual survey start and finish times often differ), then this would not be selected as the peak hour. Instead, the period with the highest two-way trip rates where all 26 surveys were included in the average would be displayed.
- (vi) Vehicle Occupants mode split percentages (combined arrivals plus departures) would also be presented for each set of surveys. These would be taken from the average mode split pie charts for each set of surveys in the analysis (see Appendix B). As all of the surveys would have been undertaken from 01/01/2008 (see 3.2), they would all have had the mode split breakdown of “Single Vehicle Occupants” and “Multi Vehicle Occupants” available. For clarification, the “Single Vehicle Occupants” mode split pie

chart percentage represents the number of occupants that were either single passengers being picked up or dropped off at a site being surveyed, or single occupant drivers who were arriving at and departing from a site being surveyed. The Multi Vehicle Occupants mode split pie chart percentage represents occupants of two or more in vehicles who visited a site being surveyed (including drivers if they actually visited a site). After presenting the Single Vehicle Occupants and Multi Vehicle Occupants mode split percentages, the sum of the two would also be displayed, representing the total Vehicle Occupants mode split percentage. There is one further caveat and clarification to be aware of here. **Average mode split pie charts in TRICS can only be calculated using trip rate figures for the period where data is available for every survey in a selected set.** For example, if there are 26 surveys in a selected set, and trip rate data is only available for all 26 surveys for the period 0800-2000, then the 2-way total mode split percentages will only include that period. If, for example, there were 20 surveys with data available for the 2000-2100 period, then this data would be excluded from the mode split percentage calculation.

- (vii) After each set of results had been presented for each land use sub-category, a combined comparative summary table of results including each sub-category would then be presented, displaying the Vehicle Occupants divided by Total Vehicles ratio, the 2-way Peak Hour time period, and the Mode Split percentages, split by the Central and Outer location groupings.

4. Vehicle Occupants Trip Generation & Mode Split Results

- 4.1. The first set of results are for the 01/A (Food Superstore) TRICS land use sub-category, and these are shown in **Table 2**. All trip rates shown are per 100m² of GFA.

01/A Food Superstores: Weekday Trip Rates per 100m² GFA

Location Categories	Full Survey Duration (Total 2-Way Trip Rates)					Total Peak Hour (2-Way Trip Rates)		Mode Splits		
	Survey Days (Mon-Fri)	Veh. Occ. Trip Rate	Tot. Veh. Trip Rate	Tot. People Trip Rate	Veh. Occ. Div. by Tot. Veh.*	2-Way Veh. Occ. Peak Hour	Veh. Occ. Trip Rate	Single Vehicle Occ.	Multi Vehicle Occ.	Total Vehicle Occ.
Town Centre	14									
Edge of Town Centre	5	109.605	82.130	277.236	1.335	1500-1600	9.938	20.7%	18.6%	39.3%
Suburban Area	9									
Neighbourhood Centre	6									
Edge of Town	12	127.475	91.112	151.363	1.399	1200-1300	11.131	39.8%	47.2%	87.0%

*Total Vehicles includes vehicles picking up/dropping off passengers, whilst Vehicle Occupants excludes drivers of such vehicles.

Table 2: Vehicle Occupants analysis results for 01/A (Food Superstores)

- 4.2. The second set of results are for the 01/C (Discount Food Superstore) TRICS land use sub-category, and these are shown in **Table 3**. All trip rates shown are per 100m² of GFA.

01/C Discount Food Stores: Weekday Trip Rates per 100m² GFA

Location Categories	Full Survey Duration (Total 2-Way Trip Rates)					Total Peak Hour (2-Way Trip Rates)		Mode Splits		
	Survey Days (Mon-Fri)	Veh. Occ. Trip Rate	Tot. Veh. Trip Rate	Tot. People Trip Rate	Veh. Occ. Div. by Tot. Veh.*	2-Way Veh. Occ. Peak Hour	Veh. Occ. Trip Rate	Single Vehicle Occ.	Multi Vehicle Occ.	Total Vehicle Occ.
Town Centre	2									
Edge of Town Centre	18	141.268	99.814	177.135	1.415	1600-1700	13.766	35.7%	44.8%	80.5%
Suburban Area	8									
Neighbourhood Centre	7									
Edge of Town	14	142.245	102.446	184.591	1.388	1500-1600	13.128	33.6%	44.2%	77.8%

*Total Vehicles includes vehicles picking up/dropping off passengers, whilst Vehicle Occupants excludes drivers of such vehicles.

Table 3: Vehicle Occupants analysis results for 01/C (Discount Food Stores)

4.3. The third set of results are for the 02/A (Office) TRICS land use sub-category, and these are shown in **Table 4**. All trip rates shown are per 100m2 of GFA.

02/A Offices: Weekday Trip Rates per 100m2 GFA

Location Categories	Full Survey Duration (Total 2-Way Trip Rates)					Total Peak Hour (2-Way Trip Rates)		Mode Splits		
	Survey Days (Mon-Fri)	Veh. Occ. Trip Rate	Tot. Veh. Trip Rate	Tot. People Trip Rate	Veh. Occ. Div. by Tot. Veh.*	2-Way Veh. Occ. Peak Hour	Veh. Occ. Trip Rate	Single Vehicle Occ.	Multi Vehicle Occ.	Total Vehicle Occ.
Town Centre	27									
Edge of Town Centre	39	7.158	6.494	22.320	1.102	0800-0900	1.012	24.5%	7.4%	31.9%
Suburban Area	19									
Neighbourhood Centre	6									
Edge of Town	17	11.236	10.129	17.662	1.109	0800-0900	1.417	49.5%	13.5%	63.0%

*Total Vehicles includes vehicles picking up/dropping off passengers, whilst Vehicle Occupants excludes drivers of such vehicles.

Table 4: Vehicle Occupants analysis results for 02/A (Offices)

4.4. The fourth set of results are for the 03/A (Houses Privately Owned) TRICS land use sub-category, and these are shown in **Table 5**. All trip rates shown are per 1 Dwelling.

03/A Houses Privately Owned: Weekday Trip Rates per 1 Dwelling

Location Categories	Full Survey Duration (Total 2-Way Trip Rates)					Total Peak Hour (2-Way Trip Rates)		Mode Splits		
	Survey Days (Mon-Fri)	Veh. Occ. Trip Rate	Tot. Veh. Trip Rate	Tot. People Trip Rate	Veh. Occ. Div. by Tot. Veh.*	2-Way Veh. Occ. Peak Hour	Veh. Occ. Trip Rate	Single Vehicle Occ.	Multi Vehicle Occ.	Total Vehicle Occ.
Town Centre	0									
Edge of Town Centre	18	6.742	5.267	10.843	1.280	0800-0900	0.803	39.2%	28.6%	67.8%
Suburban Area	53									
Neighbourhood Centre	7									
Edge of Town	95	7.116	5.187	8.917	1.372	0800-0900	0.808	41.8%	40.3%	82.1%

*Total Vehicles includes vehicles picking up/dropping off passengers, whilst Vehicle Occupants excludes drivers of such vehicles.

Table 5: Vehicle Occupants analysis results for 03/A (Houses Privately Owned)

4.5. The fifth set of results are for the 03/C (Flats Privately Owned) TRICS land use sub-category, and these are shown in **Table 6**. All trip rates shown are per 1 Dwelling.

03/C Flats Privately Owned: Weekday Trip Rates per 1 Dwelling

Location Categories	Full Survey Duration (Total 2-Way Trip Rates)					Total Peak Hour (2-Way Trip Rates)		Mode Splits		
	Survey Days (Mon-Fri)	Veh. Occ. Trip Rate	Tot. Veh. Trip Rate	Tot. People Trip Rate	Veh. Occ. Div. by Tot. Veh.*	2-Way Veh. Occ. Peak Hour	Veh. Occ. Trip Rate	Single Vehicle Occ.	Multi Vehicle Occ.	Total Vehicle Occ.
Town Centre	9									
Edge of Town Centre	42	2.525	1.935	5.836	1.305	1800-1900	0.272	23.9%	21.3%	45.2%
Suburban Area	43									
Neighbourhood Centre	13									
Edge of Town	9	2.953	2.212	5.825	1.335	0800-0900	0.280	27.9%	21.8%	49.7%

*Total Vehicles includes vehicles picking up/dropping off passengers, whilst Vehicle Occupants excludes drivers of such vehicles.

Table 6: Vehicle Occupants analysis results for 03/C (Flats Privately Owned)

4.6. The sixth set of results are for the 05/G (GP Surgery) TRICS land use sub-category, and these are shown in **Table 7**. All trip rates shown are per 100m2 GFA.

05/G GP Surgeries: Weekday Trip Rates per 100m2 GFA

Location Categories	Full Survey Duration (Total 2-Way Trip Rates)					Total Peak Hour (2-Way Trip Rates)		Mode Splits		
	Survey Days (Mon-Fri)	Veh. Occ. Trip Rate	Tot. Veh. Trip Rate	Tot. People Trip Rate	Veh. Occ. Div. by Tot. Veh.*	2-Way Veh. Occ. Peak Hour	Veh. Occ. Trip Rate	Single Vehicle Occ.	Multi Vehicle Occ.	Total Vehicle Occ.
Town Centre	2									
Edge of Town Centre	13	53.071	40.382	81.150	1.314	1500-1600	6.010	35.8%	29.2%	65.0%
Suburban Area	11									
Neighbourhood Centre	8									
Edge of Town	6	68.486	53.940	97.466	1.270	1000-1100	8.028	41.1%	29.5%	70.6%

*Total Vehicles includes vehicles picking up/dropping off passengers, whilst Vehicle Occupants excludes drivers of such vehicles.

Table 7: Vehicle Occupants analysis results for 05/G (GP Surgeries)

4.7. The seventh set of results are for the 06/A (Hotel) TRICS land use sub-category, and these are shown in **Table 8**. All trip rates shown are per 100m2 GFA.

06/A Hotels: Weekday Trip Rates per 100m2 GFA

Location Categories	Full Survey Duration (Total 2-Way Trip Rates)					Total Peak Hour (2-Way Trip Rates)		Mode Splits		
	Survey Days (Mon-Fri)	Veh. Occ. Trip Rate	Tot. Veh. Trip Rate	Tot. People Trip Rate	Veh. Occ. Div. by Tot. Veh.*	2-Way Veh. Occ. Peak Hour	Veh. Occ. Trip Rate	Single Vehicle Occ.	Multi Vehicle Occ.	Total Vehicle Occ.
Town Centre	14									
Edge of Town Centre	13	7.380	5.315	16.948	1.389	0900-1000	0.598	17.3%	23.6%	40.9%
Suburban Area	9									
Neighbourhood Centre	1									
Edge of Town	12	12.088	9.247	14.982	1.307	0800-0900	0.916	43.6%	34.9%	78.5%

*Total Vehicles includes vehicles picking up/dropping off passengers, whilst Vehicle Occupants excludes drivers of such vehicles.

Table 8: Vehicle Occupants analysis results for 06/A (Hotels)

4.8. The eighth set of results are for the 07/C (Leisure Centre) TRICS land use sub-category, and these are shown in **Table 9**. All trip rates shown are per 1 Hectare of Site Area.

07/C Leisure Centres: Weekday Trip Rates per 1 Hectare (Site Area)

Location Categories	Full Survey Duration (Total 2-Way Trip Rates)					Total Peak Hour (2-Way Trip Rates)		Mode Splits		
	Survey Days (Mon-Fri)	Veh. Occ. Trip Rate	Tot. Veh. Trip Rate	Tot. People Trip Rate	Veh. Occ. Div. by Tot. Veh.*	2-Way Veh. Occ. Peak Hour	Veh. Occ. Trip Rate	Single Vehicle Occ.	Multi Vehicle Occ.	Total Vehicle Occ.
Town Centre	4									
Edge of Town Centre	15	598.807	422.755	1092.207	1.416	1700-1800	75.663	25.3%	29.1%	54.4%
Suburban Area	12									
Neighbourhood Centre	4									
Edge of Town	10	772.693	533.078	1217.891	1.449	1700-1800	101.901	26.9%	36.0%	62.9%

*Total Vehicles includes vehicles picking up/dropping off passengers, whilst Vehicle Occupants excludes drivers of such vehicles.

Table 9: Vehicle Occupants analysis results for 07/C (Leisure Centres)

4.9. **Table 10** compares Vehicle Occupants/Total Vehicles, 2-way Peak Hours, and Mode Split Percentages, for each of the land use sub-categories used in this analysis.

Land Uses & Location Groupings	Summary Data			Mode Splits		
	Survey Days (Mon-Fri)	Veh. Occ. Div. by Tot. Veh. *	2-Way Peak Hour	Single Vehicle Occ.	Multi Vehicle Occ.	Total Vehicle Occ.
01/A (Food Superstores)						
Central Location Grouping	19	1.335	1500-1600	20.7%	18.6%	39.3%
Outer Location Grouping	27	1.399	1200-1300	39.8%	47.2%	87.0%
01/C (Discount Food Stores)						
Central Location Grouping	20	1.415	1600-1700	35.7%	44.8%	80.5%
Outer Location Grouping	29	1.388	1500-1600	33.6%	44.2%	77.8%
02/A (Offices)						
Central Location Grouping	66	1.102	0800-0900	24.5%	7.4%	31.9%
Outer Location Grouping	42	1.109	0800-0900	49.5%	13.5%	63.0%
03/A (Houses Privately Owned)						
Central Location Grouping	18	1.280	0800-0900	39.2%	28.6%	67.8%
Outer Location Grouping	155	1.372	0800-0900	41.8%	40.3%	82.1%
03/C (Flats Privately Owned)						
Central Location Grouping	51	1.305	1800-1900	23.9%	21.3%	45.2%
Outer Location Grouping	65	1.335	0800-0900	27.9%	21.8%	49.7%
05/G (GP Surgeries)						
Central Location Grouping	15	1.314	1500-1600	35.8%	29.2%	65.0%
Outer Location Grouping	25	1.270	1000-1100	41.1%	29.5%	70.6%
06/A (Hotels)						
Central Location Grouping	27	1.389	0900-1000	17.3%	23.6%	40.9%
Outer Location Grouping	22	1.307	0800-0900	43.6%	34.9%	78.5%
07/C (Leisure Centres)						
Central Location Grouping	19	1.416	1700-1800	25.3%	29.1%	54.4%
Outer Location Grouping	26	1.449	1700-1800	26.9%	36.0%	62.9%

Table 10: Comparison of TRICS land use sub-categories.

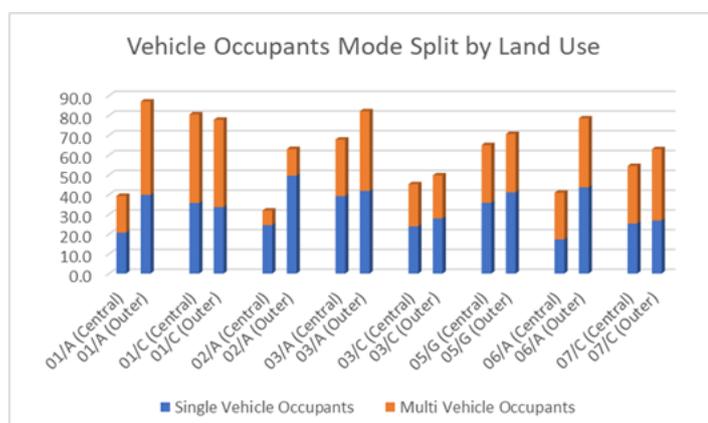
5. Observations

- 5.1. TRICS does not intend to provide any explanations, suggestions or reasoning behind the results that have been obtained through this technical analysis. Therefore, any speculative conclusions to be drawn from the results presented in this report 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 the 01/A (Food Superstore) land use sub-category, the Vehicle Occupants trip rate per 100m² of GFA was 16.3% lower for the Central location type grouping than for the Outer location type grouping (the figures being 109.605 and 127.475 trips per 100m² GFA). The Vehicle Occupants divided by Total Vehicles figures were 1.335 (Central) and 1.399 (Outer), so the Central grouping was lower by 4.8%. For the Central grouping the Vehicle Occupants mode split was 39.3%, and this increased to 87.0% for the Outer grouping. When looking at the Total People mode split breakdown, for the Central grouping the Single Occupants share was 20.7% of all people trips, whilst the Multi Occupants share was 18.6% of all people trips. For the Outer grouping, the Single Occupants share was 39.8% of all people trips, whilst the Multi Occupants share was 47.2% of all people trips.
- 5.3. For the 01/C (Discount Food Store) land use sub-category, the Vehicle Occupants trip rate per 100m² of GFA was 0.7% lower for the Central location type grouping than for the Outer location type grouping (the figures being 141.268 and 142.245 trips per 100m² GFA). The Vehicle Occupants divided by Total Vehicles figures were 1.415 (Central) and 1.388 (Outer), so the Central grouping was higher by 1.9%. For the Central grouping the Vehicle Occupants mode split was 80.5%, and this decreased to 77.8% for the Outer grouping. When looking at the Total People mode split breakdown, for the Central grouping the Single Occupants share was 35.7% of all people trips, whilst the Multi Occupants share was 44.8% of all people trips. For the Outer grouping, the Single Occupants share was 33.6% of all people trips, whilst the Multi Occupants share was 44.2% of all people trips.
- 5.4. For the 02/A (Office) land use sub-category, the Vehicle Occupants trip rate per 100m² of GFA was 57.0% lower for the Central location type grouping than for the Outer location type grouping (the figures being 7.158 and 11.236 trips per 100m² GFA). The Vehicle Occupants divided by Total Vehicles figures were 1.102 (Central) and 1.109 (Outer), so the Central grouping was lower by 0.6%. For the Central grouping the Vehicle Occupants mode split was 31.9%, and this increased to 63.0% for the Outer grouping. When looking at the Total People mode split breakdown, for the Central grouping the Single Occupants share was 24.5% of all people trips, whilst the Multi Occupants share was 7.4% of all people trips. For the Outer grouping, the Single Occupants share was 49.5% of all people trips, whilst the Multi Occupants share was 13.5% of all people trips.
- 5.5. For the 03/A (Houses Privately Owned) land use sub-category, the Vehicle Occupants trip rate per 1 Dwelling was 5.5% lower for the Central location type grouping than for the Outer location type grouping (the figures being 6.742 and 7.116 trips per 1 Dwelling). The Vehicle Occupants divided by Total Vehicles figures were 1.280 (Central) and 1.372 (Outer), so the Central grouping was lower by 7.2%. For the Central grouping the Vehicle Occupants mode split was 67.8%, and this increased to 82.1% for the Outer grouping. When looking at the Total People mode split breakdown, for the Central grouping the Single Occupants share was 39.2% of all people trips, whilst the Multi Occupants share was 28.6% of all people trips. For

the Outer grouping, the Single Occupants share was 41.8% of all people trips, whilst the Multi Occupants share was 40.3% of all people trips.

- 5.6. For the 03/C (Flats Privately Owned) land use sub-category, the Vehicle Occupants trip rate per 1 Dwelling was 17.0% lower for the Central location type grouping than for the Outer location type grouping (the figures being 2.525 and 2.953 trips per 1 Dwelling). The Vehicle Occupants divided by Total Vehicles figures were 1.305 (Central) and 1.335 (Outer), so the Central grouping was lower by 2.3%. For the Central grouping the Vehicle Occupants mode split was 45.2%, and this increased to 49.7% for the Outer grouping. When looking at the Total People mode split breakdown, for the Central grouping the Single Occupants share was 23.9% of all people trips, whilst the Multi Occupants share was 21.3% of all people trips. For the Outer grouping, the Single Occupants share was 27.9% of all people trips, whilst the Multi Occupants share was 21.8% of all people trips.
- 5.7. For the 05/G (GP Surgery) land use sub-category, the Vehicle Occupants trip rate per 100m² of GFA was 29.0% lower for the Central location type grouping than for the Outer location type grouping (the figures being 53.071 and 68.486 trips per 100m² GFA). The Vehicle Occupants divided by Total Vehicles figures were 1.314 (Central) and 1.270 (Outer), so the Central grouping was higher by 3.5%. For the Central grouping the Vehicle Occupants mode split was 65.0%, and this increased to 70.6% for the Outer grouping. When looking at the Total People mode split breakdown, for the Central grouping the Single Occupants share was 35.8% of all people trips, whilst the Multi Occupants share was 29.2% of all people trips. For the Outer grouping, the Single Occupants share was 41.1% of all people trips, whilst the Multi Occupants share was 29.5% of all people trips.
- 5.8. For the 06/A (Hotel) land use sub-category, the Vehicle Occupants trip rate per 100m² of GFA was 63.8% lower for the Central location type grouping than for the Outer location type grouping (the figures being 7.380 and 12.088 trips per 100m² GFA). The Vehicle Occupants divided by Total Vehicles figures were 1.389 (Central) and 1.307 (Outer), so the Central grouping was higher by 6.3%. For the Central grouping the Vehicle Occupants mode split was 40.9%, and this increased to 78.5% for the Outer grouping. When looking at the Total People mode split breakdown, for the Central grouping the Single Occupants share was 17.3% of all people trips, whilst the Multi Occupants share was 23.6% of all people trips. For the Outer grouping, the Single Occupants share was 43.6% of all people trips, whilst the Multi Occupants share was 34.9% of all people trips.
- 5.9. For the 07/C (Leisure Centre) land use sub-category, the Vehicle Occupants trip rate per 1 Hectare of Site Area was 29.0% lower for the Central location type grouping than for the Outer location type grouping (the figures being 598.807 and 772.693 trips per 1 Hectare of Site Area). The Vehicle Occupants divided by Total Vehicles figures were 1.416 (Central) and 1.449 (Outer), so the Central grouping was lower by 2.3%. For the Central grouping the Vehicle Occupants mode split was 54.4%, and this increased to 62.9% for the Outer grouping. When looking at the Total People mode split breakdown, for the Central grouping the Single Occupants share was 25.3% of all people trips, whilst the Multi Occupants share was 29.1% of all people trips. For the Outer grouping, the Single Occupants share was 26.9% of all people trips, whilst the Multi Occupants share was 36.0% of all people trips.

5.10. We can also see a graphical representation of the Vehicle Occupants mode split breakdown by land use sub-category in *Figure 3*, split by the Central and Outer location groupings, with the Single Occupants and Multi Occupants splits colour coded. This provides us with some further observations.



*Key: 01/A=Food Superstores, 01/C=Discount Food Stores, 02/A=Offices, 03/A=Houses Privately Owned, 03/C=Flats Privately Owned, 05/G=GP Surgeries, 06/A=Hotels, 07/C=Leisure Centres.

Figure 3 - Vehicle Occupants mode splits by land use sub-category.

5.11. The data set with the highest overall Vehicle Occupants mode split was the Outer location type grouping for 01/A (Food Superstores) at 87.0% of all people trips, consisting of 39.8% Single Occupants and 47.2% Multi Occupants. The data set with the lowest overall Vehicle Occupants mode split was the Central location type grouping for 02/A (Offices) at 31.9% of all people trips, consisting of 24.5% Single Occupants and 7.4% Multi Occupants.

5.12. *Table 11* shows the Vehicle Occupants total mode splits by each data set in descending order, whilst also displaying the mode split breakdowns of Single Occupants and Multi Occupants.

TRICS Land Use Sub-Category	Location Type Grouping	Vehicle Occupants Mode Splits		
		Total Veh. Occ.	Single Occupants	Multi Occupants
01/A (Food Superstore)	Outer	87.0%	39.8%	47.2%
03/A (Houses Privately Owned)	Outer	82.1%	41.8%	40.3%
01/C (Discount Food Store)	Central	80.5%	35.7%	44.8%
06/A (Hotel)	Outer	78.5%	43.6%	34.9%
01/C (Discount Food Store)	Outer	77.8%	33.6%	44.2%
05/G (GP Surgery)	Outer	70.6%	41.1%	29.5%
03/A (Houses Privately Owned)	Central	67.8%	39.2%	28.6%
05/G (GP Surgery)	Central	65.0%	35.8%	29.2%
02/A (Office)	Outer	63.0%	49.5%	13.5%
07/C (Leisure Centre)	Outer	62.9%	26.9%	36.0%
07/C (Leisure Centre)	Central	54.4%	25.3%	29.1%
03/C (Flats Privately Owned)	Outer	49.7%	27.9%	21.8%
03/C (Flats Privately Owned)	Central	45.2%	23.9%	21.3%
06/A (Hotel)	Central	40.9%	17.3%	23.6%
01/A (Food Superstore)	Central	39.3%	20.7%	18.6%
02/A (Office)	Central	31.9%	24.5%	7.4%

Table 11: Vehicle Occupants mode splits by land use sub-category (in descending order)

APPENDIX A

Vehicle Occupants Trip Rates by Land Use & Location Type Grouping

Trip rates calculated per 100m2 of GFA

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1600	0.000	1	1600	0.000	1	1600	0.000
06:00-07:00	4	4255	0.329	4	4255	0.118	4	4255	0.447
07:00-08:00	18	3984	1.380	18	3984	0.944	18	3984	2.324
08:00-09:00	19	3970	2.393	19	3970	1.771	19	3970	4.164
09:00-10:00	19	3970	3.032	19	3970	2.373	19	3970	5.405
10:00-11:00	19	3970	3.528	19	3970	2.904	19	3970	6.432
11:00-12:00	19	3970	4.293	19	3970	3.799	19	3970	8.092
12:00-13:00	19	3970	4.786	19	3970	4.528	19	3970	9.314
13:00-14:00	19	3970	4.565	19	3970	4.341	19	3970	8.906
14:00-15:00	19	3970	4.297	19	3970	4.364	19	3970	8.661
15:00-16:00	19	3970	4.672	19	3970	5.266	19	3970	9.938
16:00-17:00	19	3970	4.720	19	3970	4.666	19	3970	9.386
17:00-18:00	19	3970	4.630	19	3970	5.115	19	3970	9.745
18:00-19:00	19	3970	4.395	19	3970	4.772	19	3970	9.167
19:00-20:00	19	3970	3.260	19	3970	3.959	19	3970	7.219
20:00-21:00	17	4088	2.576	17	4088	3.045	17	4088	5.621
21:00-22:00	15	4019	1.635	15	4019	2.203	15	4019	3.838
22:00-23:00	5	3729	0.070	5	3729	0.252	5	3729	0.322
23:00-24:00	1	1600	0.063	1	1600	0.563	1	1600	0.624
Total Trip Rates:			54.623			54.982			109.605

Central Location Type Grouping

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	5600	0.214	1	5600	0.143	1	5600	0.357
06:00-07:00	9	7682	0.421	9	7682	0.149	9	7682	0.570
07:00-08:00	27	7218	1.377	27	7218	0.819	27	7218	2.196
08:00-09:00	27	7218	2.623	27	7218	1.871	27	7218	4.494
09:00-10:00	27	7218	4.120	27	7218	3.011	27	7218	7.131
10:00-11:00	27	7218	4.958	27	7218	4.228	27	7218	9.186
11:00-12:00	27	7218	5.400	27	7218	5.073	27	7218	10.473
12:00-13:00	27	7218	5.567	27	7218	5.564	27	7218	11.131
13:00-14:00	27	7218	5.233	27	7218	5.415	27	7218	10.648
14:00-15:00	27	7218	4.933	27	7218	5.106	27	7218	10.039
15:00-16:00	27	7218	5.265	27	7218	5.261	27	7218	10.526
16:00-17:00	27	7218	5.264	27	7218	5.291	27	7218	10.555
17:00-18:00	27	7218	5.348	27	7218	5.420	27	7218	10.768
18:00-19:00	27	7218	5.063	27	7218	5.510	27	7218	10.573
19:00-20:00	27	7218	3.803	27	7218	4.503	27	7218	8.306
20:00-21:00	27	7218	2.353	27	7218	3.072	27	7218	5.425
21:00-22:00	25	7572	1.255	25	7572	1.956	25	7572	3.211
22:00-23:00	10	7819	0.278	10	7819	0.532	10	7819	0.810
23:00-24:00	3	5727	0.407	3	5727	0.669	3	5727	1.076
Total Trip Rates:			63.882			63.593			127.475

Outer Location Type Grouping

Table A1: Vehicle Occupants trip rates for 01/A (Food Superstore)

Trip rates calculated per 100m2 of GFA

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	2	2511	0.159	2	2511	0.040	2	2511	0.199
07:00-08:00	16	1736	0.587	16	1736	0.176	16	1736	0.763
08:00-09:00	20	1657	2.969	20	1657	1.847	20	1657	4.816
09:00-10:00	20	1657	4.897	20	1657	3.977	20	1657	8.874
10:00-11:00	20	1657	5.724	20	1657	4.909	20	1657	10.633
11:00-12:00	20	1657	6.361	20	1657	6.089	20	1657	12.450
12:00-13:00	20	1657	6.059	20	1657	6.430	20	1657	12.489
13:00-14:00	20	1657	5.866	20	1657	6.107	20	1657	11.973
14:00-15:00	20	1657	6.657	20	1657	6.467	20	1657	13.124
15:00-16:00	20	1657	6.786	20	1657	6.759	20	1657	13.545
16:00-17:00	20	1657	6.693	20	1657	7.073	20	1657	13.766
17:00-18:00	20	1657	6.255	20	1657	6.964	20	1657	13.219
18:00-19:00	20	1657	4.671	20	1657	5.278	20	1657	9.949
19:00-20:00	20	1657	3.543	20	1657	3.953	20	1657	7.496
20:00-21:00	18	1705	2.138	18	1705	2.959	18	1705	5.097
21:00-22:00	15	1777	0.915	15	1777	1.332	15	1777	2.247
22:00-23:00	8	2031	0.062	8	2031	0.566	8	2031	0.628
23:00-24:00									
Total Trip Rates:			70.342			70.926			141.268

Central Location Type Grouping

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	2	1871	0.588	2	1871	0.000	2	1871	0.588
07:00-08:00	26	1869	0.632	26	1869	0.177	26	1869	0.809
08:00-09:00	29	1829	3.260	29	1829	2.133	29	1829	5.393
09:00-10:00	29	1829	4.556	29	1829	3.824	29	1829	8.380
10:00-11:00	29	1829	5.702	29	1829	5.029	29	1829	10.731
11:00-12:00	29	1829	6.102	29	1829	5.912	29	1829	12.014
12:00-13:00	29	1829	6.283	29	1829	6.357	29	1829	12.640
13:00-14:00	29	1829	6.310	29	1829	6.498	29	1829	12.808
14:00-15:00	29	1829	5.987	29	1829	6.245	29	1829	12.232
15:00-16:00	29	1829	6.604	29	1829	6.524	29	1829	13.128
16:00-17:00	29	1829	6.225	29	1829	6.600	29	1829	12.825
17:00-18:00	29	1829	6.066	29	1829	6.487	29	1829	12.553
18:00-19:00	29	1829	5.504	29	1829	5.800	29	1829	11.304
19:00-20:00	29	1829	3.847	29	1829	4.318	29	1829	8.165
20:00-21:00	26	1893	2.475	26	1893	3.186	26	1893	5.661
21:00-22:00	26	1893	1.081	26	1893	1.575	26	1893	2.656
22:00-23:00	21	1933	0.062	21	1933	0.296	21	1933	0.358
23:00-24:00									
Total Trip Rates:			71.284			70.961			142.245

Outer Location Type Grouping

Table A2: Vehicle Occupants trip rates for 01/C (Discount Food Store)



Trip rates calculated per 100m2 of GFA

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	65	6144	0.413	65	6144	0.035	65	6144	0.448
08:00-09:00	66	6054	0.920	66	6054	0.092	66	6054	1.012
09:00-10:00	66	6054	0.636	66	6054	0.168	66	6054	0.804
10:00-11:00	66	6054	0.321	66	6054	0.193	66	6054	0.514
11:00-12:00	66	6054	0.239	66	6054	0.214	66	6054	0.453
12:00-13:00	66	6054	0.216	66	6054	0.243	66	6054	0.459
13:00-14:00	66	6054	0.247	66	6054	0.220	66	6054	0.467
14:00-15:00	66	6054	0.223	66	6054	0.250	66	6054	0.473
15:00-16:00	66	6054	0.174	66	6054	0.331	66	6054	0.505
16:00-17:00	66	6054	0.127	66	6054	0.657	66	6054	0.784
17:00-18:00	66	6054	0.087	66	6054	0.795	66	6054	0.882
18:00-19:00	65	6144	0.039	65	6144	0.303	65	6144	0.342
19:00-20:00	1	20129	0.000	1	20129	0.010	1	20129	0.010
20:00-21:00	1	20129	0.000	1	20129	0.005	1	20129	0.005
21:00-22:00									
22:00-23:00									
23:00-24:00									
Total Trip Rates:			3.642			3.516			7.158

Central Location Type Grouping

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	19974	0.035	1	19974	0.015	1	19974	0.050
06:00-07:00	3	68088	0.557	3	68088	0.122	3	68088	0.679
07:00-08:00	42	10214	0.691	42	10214	0.138	42	10214	0.829
08:00-09:00	42	10214	1.232	42	10214	0.185	42	10214	1.417
09:00-10:00	42	10214	0.821	42	10214	0.197	42	10214	1.018
10:00-11:00	42	10214	0.336	42	10214	0.158	42	10214	0.494
11:00-12:00	42	10214	0.267	42	10214	0.210	42	10214	0.477
12:00-13:00	42	10214	0.277	42	10214	0.335	42	10214	0.612
13:00-14:00	42	10214	0.327	42	10214	0.269	42	10214	0.596
14:00-15:00	42	10214	0.279	42	10214	0.292	42	10214	0.571
15:00-16:00	42	10214	0.236	42	10214	0.516	42	10214	0.752
16:00-17:00	42	10214	0.204	42	10214	0.917	42	10214	1.121
17:00-18:00	42	10214	0.148	42	10214	1.142	42	10214	1.290
18:00-19:00	41	10433	0.089	41	10433	0.492	41	10433	0.581
19:00-20:00	2	92146	0.091	2	92146	0.239	2	92146	0.330
20:00-21:00	2	92146	0.088	2	92146	0.142	2	92146	0.230
21:00-22:00	2	92146	0.059	2	92146	0.130	2	92146	0.189
22:00-23:00									
23:00-24:00									
Total Trip Rates:			5.737			5.499			11.236

Outer Location Type Grouping

Table A3: Vehicle Occupants trip rates for 02/A (Office)

Trip rates calculated per 1 Dwelling

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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	18	44	0.073	18	44	0.256	18	44	0.329
08:00-09:00	18	44	0.206	18	44	0.597	18	44	0.803
09:00-10:00	18	44	0.201	18	44	0.193	18	44	0.394
10:00-11:00	18	44	0.151	18	44	0.186	18	44	0.337
11:00-12:00	18	44	0.172	18	44	0.170	18	44	0.342
12:00-13:00	18	44	0.195	18	44	0.227	18	44	0.422
13:00-14:00	18	44	0.219	18	44	0.215	18	44	0.434
14:00-15:00	18	44	0.220	18	44	0.235	18	44	0.455
15:00-16:00	18	44	0.323	18	44	0.215	18	44	0.538
16:00-17:00	18	44	0.371	18	44	0.221	18	44	0.592
17:00-18:00	18	44	0.379	18	44	0.230	18	44	0.609
18:00-19:00	18	44	0.249	18	44	0.222	18	44	0.471
19:00-20:00	2	30	0.271	2	30	0.186	2	30	0.457
20:00-21:00	2	30	0.339	2	30	0.220	2	30	0.559
21:00-22:00									
22:00-23:00									
23:00-24:00									
Total Trip Rates:			3.369			3.373			6.742

Central Location Type Grouping

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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	155	115	0.086	155	115	0.372	155	115	0.458
08:00-09:00	155	115	0.188	155	115	0.620	155	115	0.808
09:00-10:00	155	115	0.176	155	115	0.243	155	115	0.419
10:00-11:00	155	115	0.159	155	115	0.197	155	115	0.356
11:00-12:00	155	115	0.175	155	115	0.193	155	115	0.368
12:00-13:00	155	115	0.211	155	115	0.204	155	115	0.415
13:00-14:00	155	115	0.217	155	115	0.206	155	115	0.423
14:00-15:00	155	115	0.227	155	115	0.238	155	115	0.465
15:00-16:00	155	115	0.420	155	115	0.246	155	115	0.666
16:00-17:00	155	115	0.420	155	115	0.239	155	115	0.659
17:00-18:00	155	115	0.494	155	115	0.255	155	115	0.749
18:00-19:00	155	115	0.395	155	115	0.242	155	115	0.637
19:00-20:00	4	73	0.158	4	73	0.203	4	73	0.361
20:00-21:00	3	94	0.205	3	94	0.127	3	94	0.332
21:00-22:00									
22:00-23:00									
23:00-24:00									
Total Trip Rates:			3.531			3.585			7.116

Outer Location Type Grouping

Table A4: Vehicle Occupants trip rates for 03/A (Houses Privately Owned)



Trip rates calculated per 1 Dwelling

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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	42	0.000	1	42	0.000	1	42	0.000
07:00-08:00	51	70	0.031	51	70	0.137	51	70	0.168
08:00-09:00	51	70	0.055	51	70	0.199	51	70	0.254
09:00-10:00	51	70	0.064	51	70	0.082	51	70	0.146
10:00-11:00	51	70	0.069	51	70	0.083	51	70	0.152
11:00-12:00	51	70	0.071	51	70	0.082	51	70	0.153
12:00-13:00	51	70	0.087	51	70	0.090	51	70	0.177
13:00-14:00	51	70	0.081	51	70	0.083	51	70	0.164
14:00-15:00	51	70	0.060	51	70	0.080	51	70	0.140
15:00-16:00	51	70	0.117	51	70	0.072	51	70	0.189
16:00-17:00	51	70	0.123	51	70	0.080	51	70	0.203
17:00-18:00	51	70	0.174	51	70	0.095	51	70	0.269
18:00-19:00	51	70	0.178	51	70	0.094	51	70	0.272
19:00-20:00	14	94	0.079	14	94	0.073	14	94	0.152
20:00-21:00	14	94	0.049	14	94	0.037	14	94	0.086
21:00-22:00									
22:00-23:00									
23:00-24:00									
Total Trip Rates:			1.238			1.287			2.525

Central Location Type Grouping

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	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	22	0.000	1	22	0.000	1	22	0.000
07:00-08:00	65	90	0.040	65	90	0.164	65	90	0.204
08:00-09:00	65	90	0.056	65	90	0.224	65	90	0.280
09:00-10:00	65	90	0.071	65	90	0.102	65	90	0.173
10:00-11:00	65	90	0.057	65	90	0.080	65	90	0.137
11:00-12:00	65	90	0.066	65	90	0.074	65	90	0.140
12:00-13:00	65	90	0.076	65	90	0.079	65	90	0.155
13:00-14:00	65	90	0.074	65	90	0.080	65	90	0.154
14:00-15:00	65	90	0.075	65	90	0.076	65	90	0.151
15:00-16:00	65	90	0.118	65	90	0.079	65	90	0.197
16:00-17:00	65	90	0.132	65	90	0.075	65	90	0.207
17:00-18:00	65	90	0.183	65	90	0.080	65	90	0.263
18:00-19:00	65	90	0.160	65	90	0.089	65	90	0.249
19:00-20:00	13	144	0.088	13	144	0.060	13	144	0.148
20:00-21:00	13	144	0.079	13	144	0.049	13	144	0.128
21:00-22:00	2	15	0.267	2	15	0.100	2	15	0.367
22:00-23:00									
23:00-24:00									
Total Trip Rates:			1.542			1.411			2.953

Outer Location Type Grouping

Table A5: Vehicle Occupants trip rates for 03/C (Flats Privately Owned)

Trip rates calculated per 100m2 of GFA

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	12	1099	0.979	12	1099	0.190	12	1099	1.169
08:00-09:00	15	986	2.325	15	986	0.791	15	986	3.116
09:00-10:00	15	986	3.448	15	986	2.488	15	986	5.936
10:00-11:00	15	986	2.657	15	986	2.846	15	986	5.503
11:00-12:00	15	986	2.454	15	986	2.731	15	986	5.185
12:00-13:00	15	986	2.265	15	986	2.481	15	986	4.746
13:00-14:00	15	986	1.474	15	986	1.555	15	986	3.029
14:00-15:00	15	986	2.670	15	986	2.332	15	986	5.002
15:00-16:00	15	986	2.988	15	986	3.022	15	986	6.010
16:00-17:00	15	986	2.359	15	986	3.008	15	986	5.367
17:00-18:00	15	986	1.284	15	986	2.332	15	986	3.616
18:00-19:00	13	1074	0.258	13	1074	1.003	13	1074	1.261
19:00-20:00	2	1088	0.276	2	1088	0.920	2	1088	1.196
20:00-21:00	1	775	0.258	1	775	1.677	1	775	1.935
21:00-22:00									
22:00-23:00									
23:00-24:00									
Total Trip Rates:			25.695			27.376			53.071

Central Location Type Grouping

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	1400	0.071	1	1400	0.000	1	1400	0.071
07:00-08:00	24	749	0.906	24	749	0.206	24	749	1.112
08:00-09:00	25	738	3.318	25	738	1.534	25	738	4.852
09:00-10:00	25	738	4.044	25	738	3.540	25	738	7.584
10:00-11:00	25	738	4.098	25	738	3.930	25	738	8.028
11:00-12:00	25	738	3.833	25	738	4.012	25	738	7.845
12:00-13:00	25	738	2.911	25	738	3.518	25	738	6.429
13:00-14:00	25	738	2.402	25	738	2.271	25	738	4.673
14:00-15:00	25	738	4.006	25	738	3.724	25	738	7.730
15:00-16:00	25	738	3.518	25	738	3.714	25	738	7.232
16:00-17:00	25	738	3.014	25	738	3.621	25	738	6.635
17:00-18:00	25	738	1.681	25	738	2.759	25	738	4.440
18:00-19:00	24	742	0.399	24	742	1.085	24	742	1.484
19:00-20:00	3	899	0.074	3	899	0.297	3	899	0.371
20:00-21:00	1	1400	0.000	1	1400	0.000	1	1400	0.000
21:00-22:00									
22:00-23:00									
23:00-24:00									
Total Trip Rates:			34.275			34.211			68.486

Outer Location Type Grouping

Table A6: Vehicle Occupants trip rates for 05/G (GP Surgery)



Trip rates calculated per 100m2 of GFA

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	2	11050	0.005	2	11050	0.045	2	11050	0.050
07:00-08:00	27	4706	0.135	27	4706	0.230	27	4706	0.365
08:00-09:00	27	4706	0.237	27	4706	0.344	27	4706	0.581
09:00-10:00	27	4706	0.266	27	4706	0.332	27	4706	0.598
10:00-11:00	27	4706	0.225	27	4706	0.273	27	4706	0.498
11:00-12:00	27	4706	0.150	27	4706	0.253	27	4706	0.403
12:00-13:00	27	4706	0.202	27	4706	0.194	27	4706	0.396
13:00-14:00	27	4706	0.198	27	4706	0.166	27	4706	0.364
14:00-15:00	27	4706	0.200	27	4706	0.150	27	4706	0.350
15:00-16:00	27	4706	0.227	27	4706	0.212	27	4706	0.439
16:00-17:00	27	4706	0.292	27	4706	0.203	27	4706	0.495
17:00-18:00	27	4706	0.303	27	4706	0.206	27	4706	0.509
18:00-19:00	27	4706	0.297	27	4706	0.222	27	4706	0.519
19:00-20:00	27	4706	0.260	27	4706	0.187	27	4706	0.447
20:00-21:00	27	4706	0.178	27	4706	0.118	27	4706	0.296
21:00-22:00	27	4706	0.150	27	4706	0.108	27	4706	0.258
22:00-23:00	1	3570	0.364	1	3570	0.448	1	3570	0.812
23:00-24:00									
Total Trip Rates:			3.689			3.691			7.380

Central Location Type Grouping

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	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	2014	0.000	1	2014	0.000	1	2014	0.000
06:00-07:00	2	3311	0.121	2	3311	0.378	2	3311	0.499
07:00-08:00	22	4335	0.186	22	4335	0.451	22	4335	0.637
08:00-09:00	22	4335	0.316	22	4335	0.600	22	4335	0.916
09:00-10:00	22	4335	0.439	22	4335	0.426	22	4335	0.865
10:00-11:00	22	4335	0.340	22	4335	0.358	22	4335	0.698
11:00-12:00	22	4335	0.266	22	4335	0.361	22	4335	0.627
12:00-13:00	22	4335	0.376	22	4335	0.265	22	4335	0.641
13:00-14:00	22	4335	0.372	22	4335	0.342	22	4335	0.714
14:00-15:00	22	4335	0.366	22	4335	0.369	22	4335	0.735
15:00-16:00	22	4335	0.417	22	4335	0.396	22	4335	0.813
16:00-17:00	22	4335	0.464	22	4335	0.393	22	4335	0.857
17:00-18:00	22	4335	0.546	22	4335	0.352	22	4335	0.898
18:00-19:00	22	4335	0.513	22	4335	0.386	22	4335	0.899
19:00-20:00	21	4445	0.422	21	4445	0.286	21	4445	0.708
20:00-21:00	21	4445	0.299	21	4445	0.174	21	4445	0.473
21:00-22:00	21	4445	0.291	21	4445	0.190	21	4445	0.481
22:00-23:00	1	2550	0.392	1	2550	0.196	1	2550	0.588
23:00-24:00	1	2550	0.039	1	2550	0.000	1	2550	0.039
Total Trip Rates:			6.165			5.923			12.088

Outer Location Type Grouping

Table A7: Vehicle Occupants trip rates for 06/A (Hotel)

Trip rates calculated per 1 Hectare of Site Area

Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	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	14	1.63	11.904	14	1.63	1.575	14	1.63	13.479
07:00-08:00	19	2.16	9.491	19	2.16	6.620	19	2.16	16.111
08:00-09:00	19	2.16	12.558	19	2.16	8.980	19	2.16	21.538
09:00-10:00	19	2.16	17.985	19	2.16	8.055	19	2.16	26.040
10:00-11:00	19	2.16	19.104	19	2.16	14.115	19	2.16	33.219
11:00-12:00	19	2.16	14.553	19	2.16	13.337	19	2.16	27.890
12:00-13:00	19	2.16	14.456	19	2.16	15.332	19	2.16	29.788
13:00-14:00	19	2.16	11.049	19	2.16	12.801	19	2.16	23.850
14:00-15:00	19	2.16	12.339	19	2.16	11.682	19	2.16	24.021
15:00-16:00	19	2.16	25.189	19	2.16	13.215	19	2.16	38.404
16:00-17:00	19	2.16	36.189	19	2.16	25.651	19	2.16	61.840
17:00-18:00	19	2.16	37.381	19	2.16	38.282	19	2.16	75.663
18:00-19:00	19	2.16	37.649	19	2.16	37.406	19	2.16	75.055
19:00-20:00	19	2.16	23.801	19	2.16	34.729	19	2.16	58.530
20:00-21:00	19	2.16	11.852	19	2.16	29.715	19	2.16	41.567
21:00-22:00	19	2.16	2.263	19	2.16	20.978	19	2.16	23.241
22:00-23:00	6	0.53	0.000	6	0.53	8.571	6	0.53	8.571
23:00-24:00									
Total Trip Rates:			297.763			301.044			598.807

Central Location Type Grouping

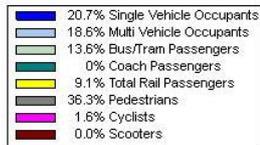
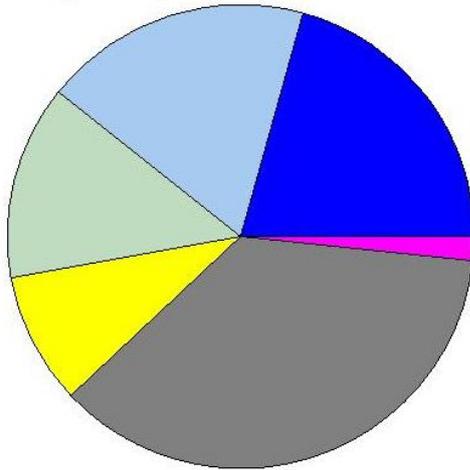
Time Range	ARR.			DEP.			TOT.		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00	2	2.6	5.385	2	2.6	1.538	2	2.6	6.923
06:00-07:00	20	1.54	10.693	20	1.54	1.361	20	1.54	12.054
07:00-08:00	25	1.51	14.471	25	1.51	8.704	25	1.51	23.175
08:00-09:00	26	1.48	15.443	26	1.48	11.953	26	1.48	27.396
09:00-10:00	26	1.48	23.125	26	1.48	12.318	26	1.48	35.443
10:00-11:00	26	1.48	17.734	26	1.48	15.911	26	1.48	33.645
11:00-12:00	26	1.48	18.698	26	1.48	21.641	26	1.48	40.339
12:00-13:00	26	1.48	19.010	26	1.48	18.437	26	1.48	37.447
13:00-14:00	26	1.48	16.589	26	1.48	19.375	26	1.48	35.964
14:00-15:00	26	1.48	15.260	26	1.48	14.583	26	1.48	29.843
15:00-16:00	26	1.48	36.016	26	1.48	17.708	26	1.48	53.724
16:00-17:00	26	1.48	47.604	26	1.48	35.651	26	1.48	83.255
17:00-18:00	26	1.48	49.401	26	1.48	52.500	26	1.48	101.901
18:00-19:00	26	1.48	44.740	26	1.48	51.875	26	1.48	96.615
19:00-20:00	26	1.48	33.021	26	1.48	39.948	26	1.48	72.969
20:00-21:00	26	1.48	13.802	26	1.48	34.792	26	1.48	48.594
21:00-22:00	23	1.46	4.375	23	1.46	23.185	23	1.46	27.560
22:00-23:00	6	2.14	0.546	6	2.14	5.300	6	2.14	5.846
23:00-24:00	1	0.92	0.000	1	0.92	0.000	1	0.92	0.000
Total Trip Rates:			385.913			386.780			772.693

Outer Location Type Grouping

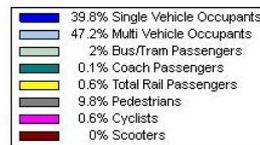
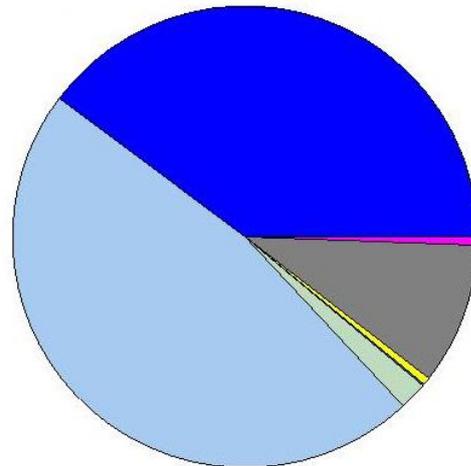
Table A8: Vehicle Occupants trip rates for 06/A (Hotel)

APPENDIX B

Mode Split Pie Charts by Land Use & Location Grouping

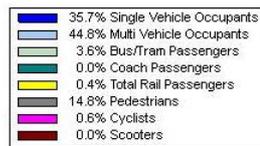
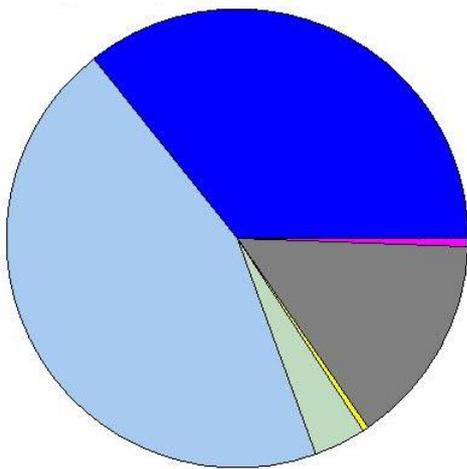


Central Location Type Grouping

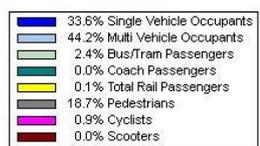
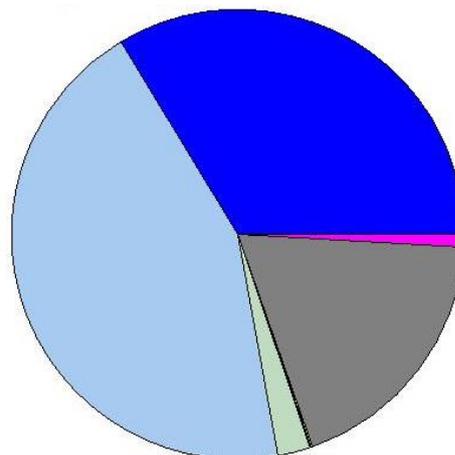


Outer Location Type Grouping

Table B1: Mode splits for 01/A (Food Superstore)

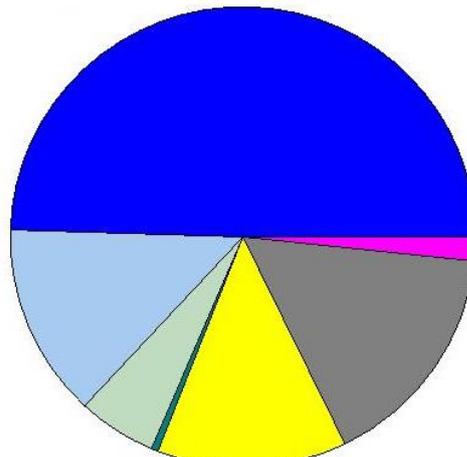
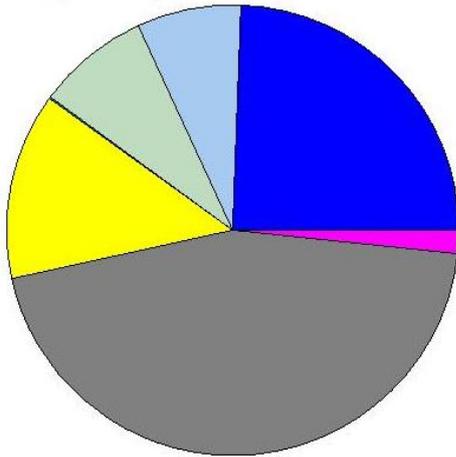


Central Location Type Grouping



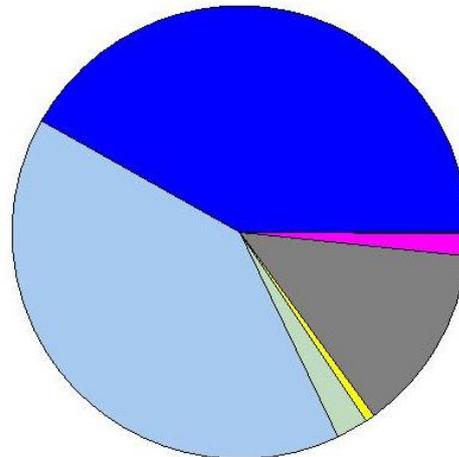
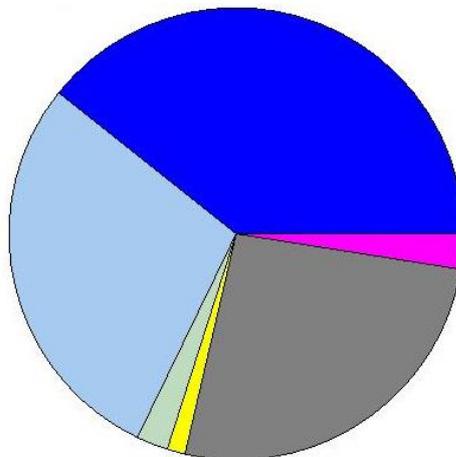
Outer Location Type Grouping

Table B2: Mode splits for 01/C (Discount Food Store)



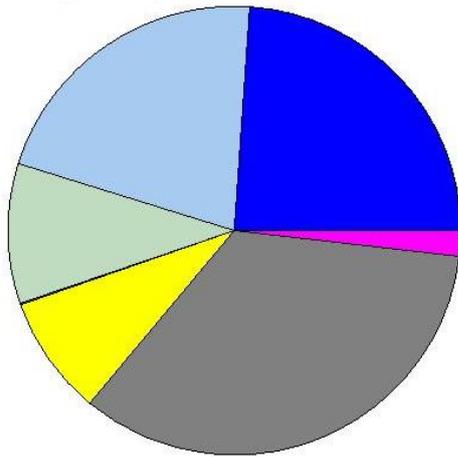
Central Location Type Grouping
Table B3: Mode splits for 02/A (Office)

Outer Location Type Grouping

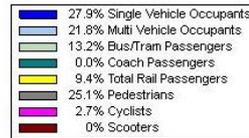
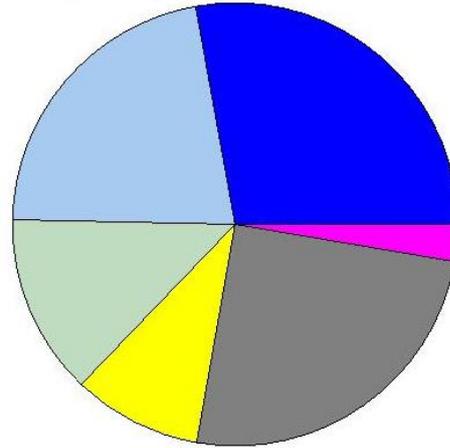


Central Location Type Grouping
Table B4: Mode splits for 03/A (Houses Privately Owned)

Outer Location Type Grouping

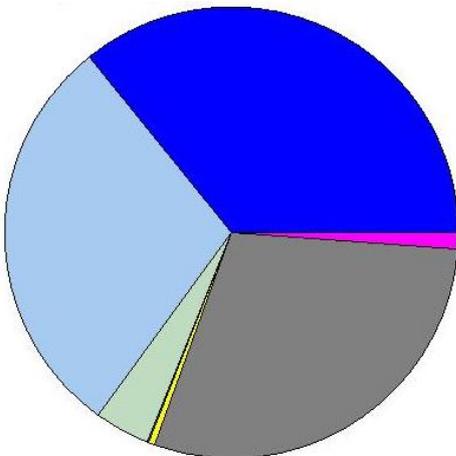


Central Location Type Grouping

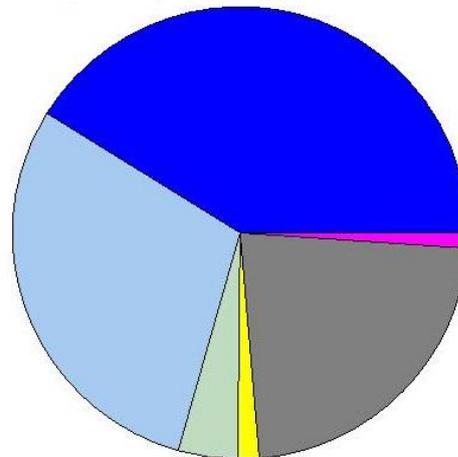


Outer Location Type Grouping

Table B5: Mode splits for 03/C (Flats Privately Owned)

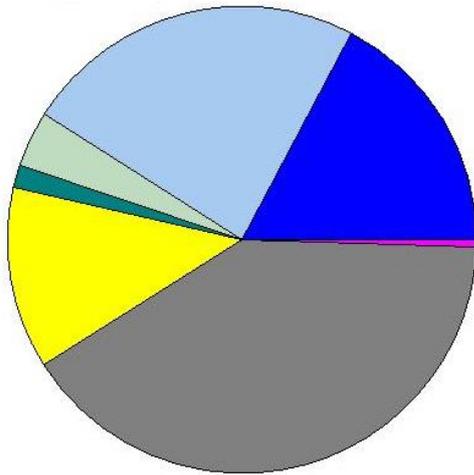


Central Location Type Grouping

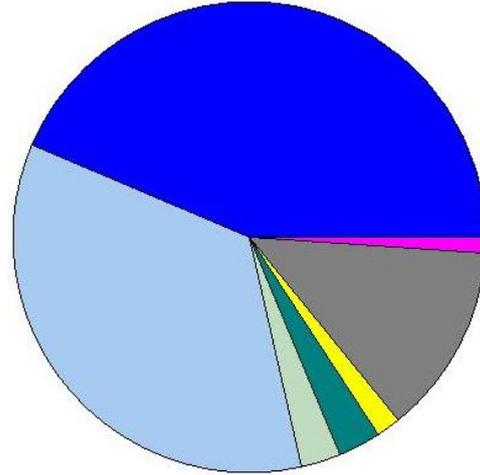


Outer Location Type Grouping

Table B6: Mode splits for 05/G (GP Surgery)

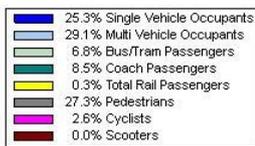
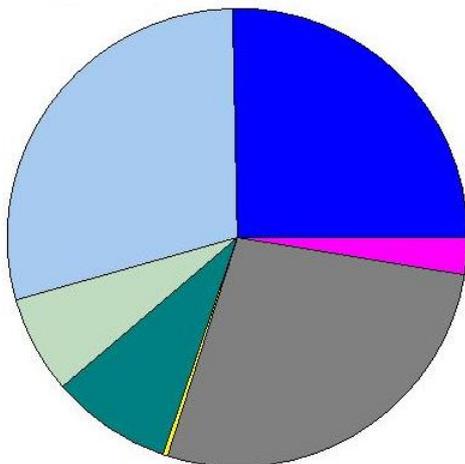


Central Location Type Grouping

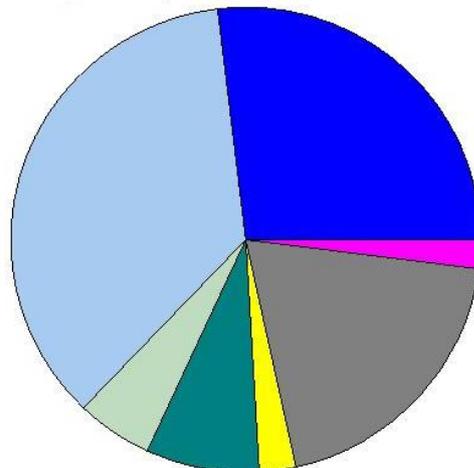


Outer Location Type Grouping

Table B7: Mode splits for 06/A (Hotel)



Central Location Type Grouping



Outer Location Type Grouping

Table B8: Mode splits for 07/C (Leisure Centre)