TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : A - PRIMARY
VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	EX	ESSEX	1 days
	HC	HAMPSHIRE	1 days
	SC	SURREY	1 days
04	EAST ANGLIA		
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	LE	LEICESTERSHIRE	1 days
	LN	LINCOLNSHIRE	1 days
	NR	NORTHAMPTONSHIRE	2 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YORKSHIRE	1 days
	WY	WEST YORKSHIRE	1 days
08	NORTH WEST		
	MS	MERSEYSIDE	2 days
09	NORTH		
	TW	TYNE & WEAR	1 days
10	WALES		
	MT	MERTHYR TYDFIL	1 days
	WR	WREXHAM	1 days
11	SCOTLAND		
	DU	DUNDEE CITY	1 days
	FA	FALKIRK	2 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter:	Number of pupils
Actual Range:	79 to 657 (units:)
Range Selected by User:	79 to 657 (units:)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/08/06 to 05/11/13

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	3 days
Tuesday	3 days
Wednesday	6 days
Thursday	5 days
Friday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	18 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	2
Suburban Area (PPS6 Out of Centre)	9
Edge of Town	2
Neighbourhood Centre (PPS6 Local Centre)	5

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	1
Residential Zone	11
Village	4
No Sub Category	2

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Filtering Stage 3 selection:

Use Class:

C2	1 days
D1	17 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Filtering Stage 3 selection (Cont.):

Population within 1 mile:

1,000 or Less	2 days
1,001 to 5,000	1 days
5,001 to 10,000	3 days
10,001 to 15,000	3 days
15,001 to 20,000	2 days
20,001 to 25,000	3 days
25,001 to 50,000	4 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

50,001 to 75,000	3 days
75,001 to 100,000	5 days
100,001 to 125,000	1 days
125,001 to 250,000	4 days
250,001 to 500,000	4 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	8 days
1.1 to 1.5	10 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	2 days
No	16 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

1 DU-04-A-01 PRIMARY SCHOOL DUNDEE CITY
FALKLAND CRESCENT
BROUGHTY FERRY
DUNDEE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of pupils: 412
Survey date: MONDAY 21/05/12 Survey Type: MANUAL

2 EX-04-A-01 PRIMARY SCHOOL ESSEX
THE STREET
ROXWELL
NEAR CHELMSFORD
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Number of pupils: 79
Survey date: TUESDAY 05/11/13 Survey Type: MANUAL

3 FA-04-A-02 PRIMARY SCHOOL FALKIRK
NEW HALLGLEN ROAD
HALLGLEN
NEAR FALKIRK
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Number of pupils: 304
Survey date: WEDNESDAY 25/04/07 Survey Type: MANUAL

4 FA-04-A-03 PRIMARY SCHOOL FALKIRK
GLENDEVON DRIVE
MADDISTON
FALKIRK
Edge of Town
Residential Zone
Total Number of pupils: 452
Survey date: MONDAY 03/06/13 Survey Type: MANUAL

5 HC-04-A-04 PRIMARY SCHOOL HAMPSHIRE
AUSTEN AVENUE

WINCHESTER
Edge of Town
Residential Zone
Total Number of pupils: 231
Survey date: TUESDAY 20/11/07 Survey Type: MANUAL

6 LE-04-A-01 PRIMARY SCHOOL LEICESTERSHIRE
SLATER STREET
FROG ISLAND
LEICESTER
Edge of Town Centre
Industrial Zone
Total Number of pupils: 92
Survey date: WEDNESDAY 26/09/12 Survey Type: MANUAL

7 LN-04-A-01 PRIMARY SCHOOL LINCOLNSHIRE
GONERBY HILL FOOT

GRANTHAM
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Number of pupils: 312
Survey date: WEDNESDAY 12/06/13 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

8 MS-04-A-01 RC PRIMARY SCHOOL MERSEYSIDE
DERWENT ROAD

ST HELENS
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of pupils: 193
Survey date: THURSDAY 05/10/06 Survey Type: MANUAL

9 MS-04-A-02 PRIMARY SCHOOL MERSEYSIDE
BOOKER AVENUE
ALVERTON
LIVERPOOL
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of pupils: 264
Survey date: THURSDAY 13/06/13 Survey Type: MANUAL

10 MT-04-A-01 PRIMARY SCHOOL MERTHYR TYDFIL
BRECON ROAD

MERTHYR TYDFIL
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of pupils: 184
Survey date: FRIDAY 18/10/13 Survey Type: MANUAL

11 NR-04-A-01 PRIMARY SCH. NORTHAMPTONSHIRE
GRANGE ROAD
EASTFIELD PARK
NORTHAMPTON
Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of pupils: 376
Survey date: WEDNESDAY 23/05/07 Survey Type: MANUAL

12 NR-04-A-02 PRIMARY SCHOOL NORTHAMPTONSHIRE
DAYRELL ROAD

NORTHAMPTON
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of pupils: 400
Survey date: WEDNESDAY 26/11/08 Survey Type: MANUAL

13 NY-04-A-03 PRIMARY SCHOOL NORTH YORKSHIRE
DAVISON STREET
LINGDALE
NR. SALTBURN-BY-THE-SEA
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Number of pupils: 134
Survey date: TUESDAY 11/09/07 Survey Type: MANUAL

14 SC-04-A-01 PRIMARY SCHOOL SURREY
SCHOOL LANE
PIRBRIGHT
NEAR WOKING
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Number of pupils: 414
Survey date: THURSDAY 22/11/12 Survey Type: MANUAL

15 SF-04-A-02 PRIMARY SCHOOL SUFFOLK
SIDEGATE LANE

IPSWICH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of pupils: 657
Survey date: WEDNESDAY 21/05/08 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

16 TW-04-A-01 PRIMARY SCHOOL TYNE & WEAR
GLYNWOOD GARDENS

GATESHEAD
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of pupils: 260
Survey date: MONDAY 07/10/13 Survey Type: MANUAL

17 WR-04-A-01 PRIMARY SCHOOL WREXHAM
BODHYFRYD

WREXHAM
Edge of Town Centre
No Sub Category
Total Number of pupils: 283
Survey date: THURSDAY 13/10/11 Survey Type: MANUAL

18 WY-04-A-01 PRIMARY SCHOOL WEST YORKSHIRE
SHAKESPEARE AVENUE

LEEDS
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Number of pupils: 370
Survey date: THURSDAY 19/09/13 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY
VEHICLES
Calculation factor: 1 PUPILS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	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	312	0.000	1	312	0.000	1	312	0.000
06:00 - 07:00	1	312	0.013	1	312	0.003	1	312	0.016
07:00 - 08:00	18	301	0.039	18	301	0.013	18	301	0.052
08:00 - 09:00	18	301	0.265	18	301	0.166	18	301	0.431
09:00 - 10:00	18	301	0.042	18	301	0.073	18	301	0.115
10:00 - 11:00	18	301	0.016	18	301	0.014	18	301	0.030
11:00 - 12:00	18	301	0.027	18	301	0.026	18	301	0.053
12:00 - 13:00	18	301	0.030	18	301	0.032	18	301	0.062
13:00 - 14:00	18	301	0.013	18	301	0.020	18	301	0.033
14:00 - 15:00	18	301	0.052	18	301	0.023	18	301	0.075
15:00 - 16:00	18	301	0.159	18	301	0.204	18	301	0.363
16:00 - 17:00	18	301	0.035	18	301	0.077	18	301	0.112
17:00 - 18:00	18	301	0.023	18	301	0.037	18	301	0.060
18:00 - 19:00	15	302	0.017	15	302	0.022	15	302	0.039
19:00 - 20:00	1	312	0.000	1	312	0.000	1	312	0.000
20:00 - 21:00	1	312	0.000	1	312	0.032	1	312	0.032
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.731			0.742			1.473

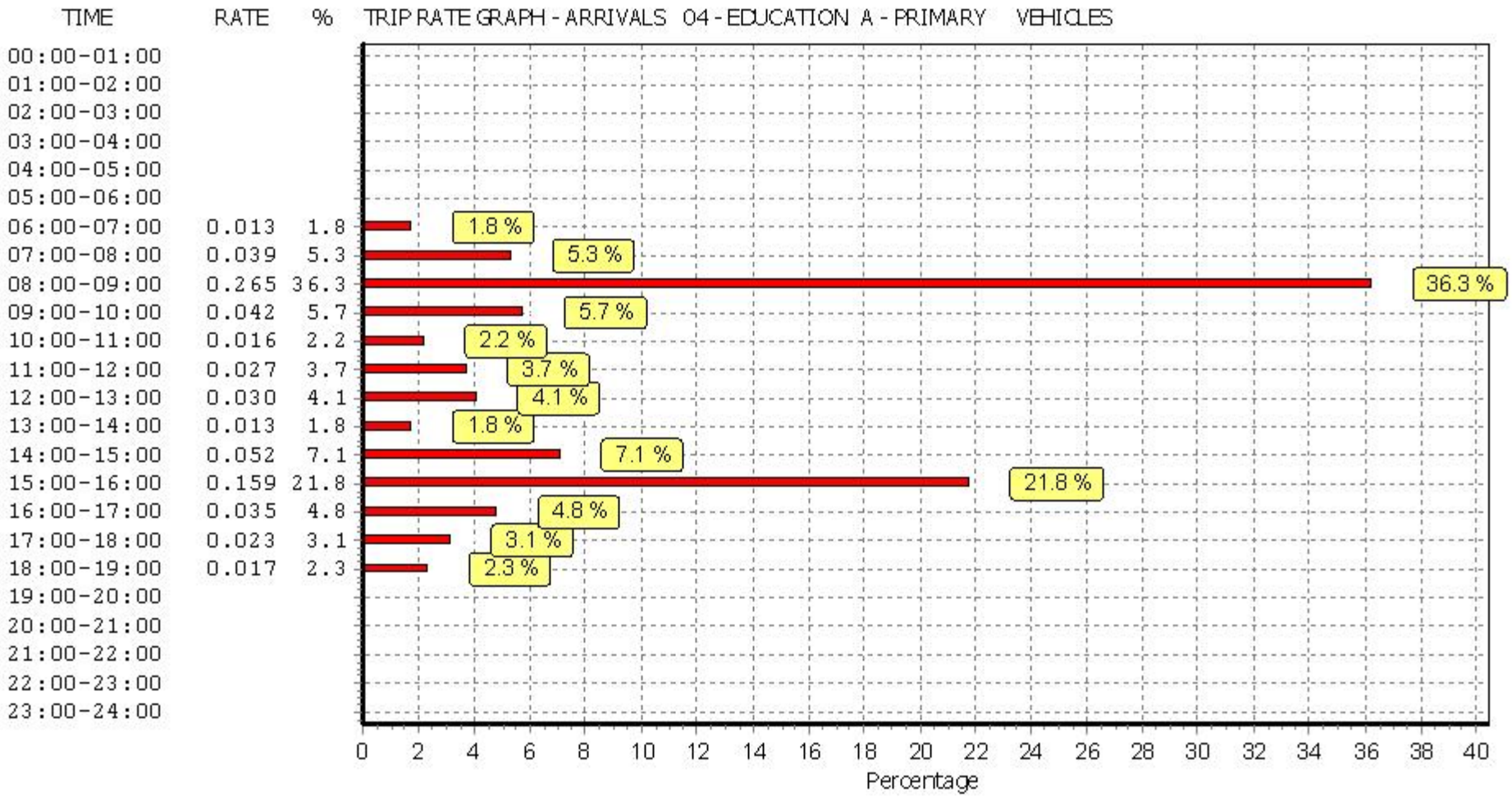
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	79 - 657 (units:)
Survey date date range:	01/08/06 - 05/11/13
Number of weekdays (Monday-Friday):	18
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

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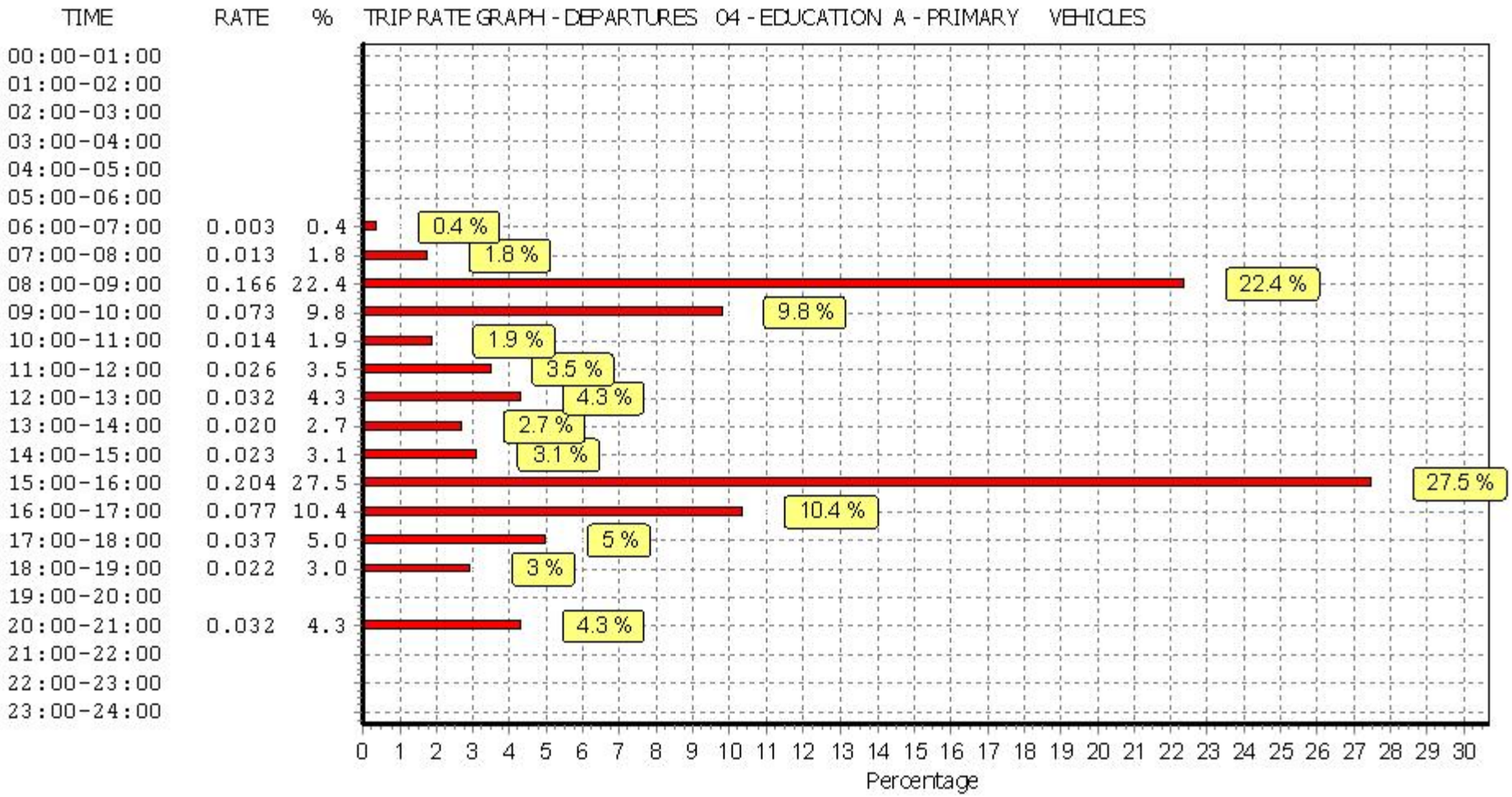

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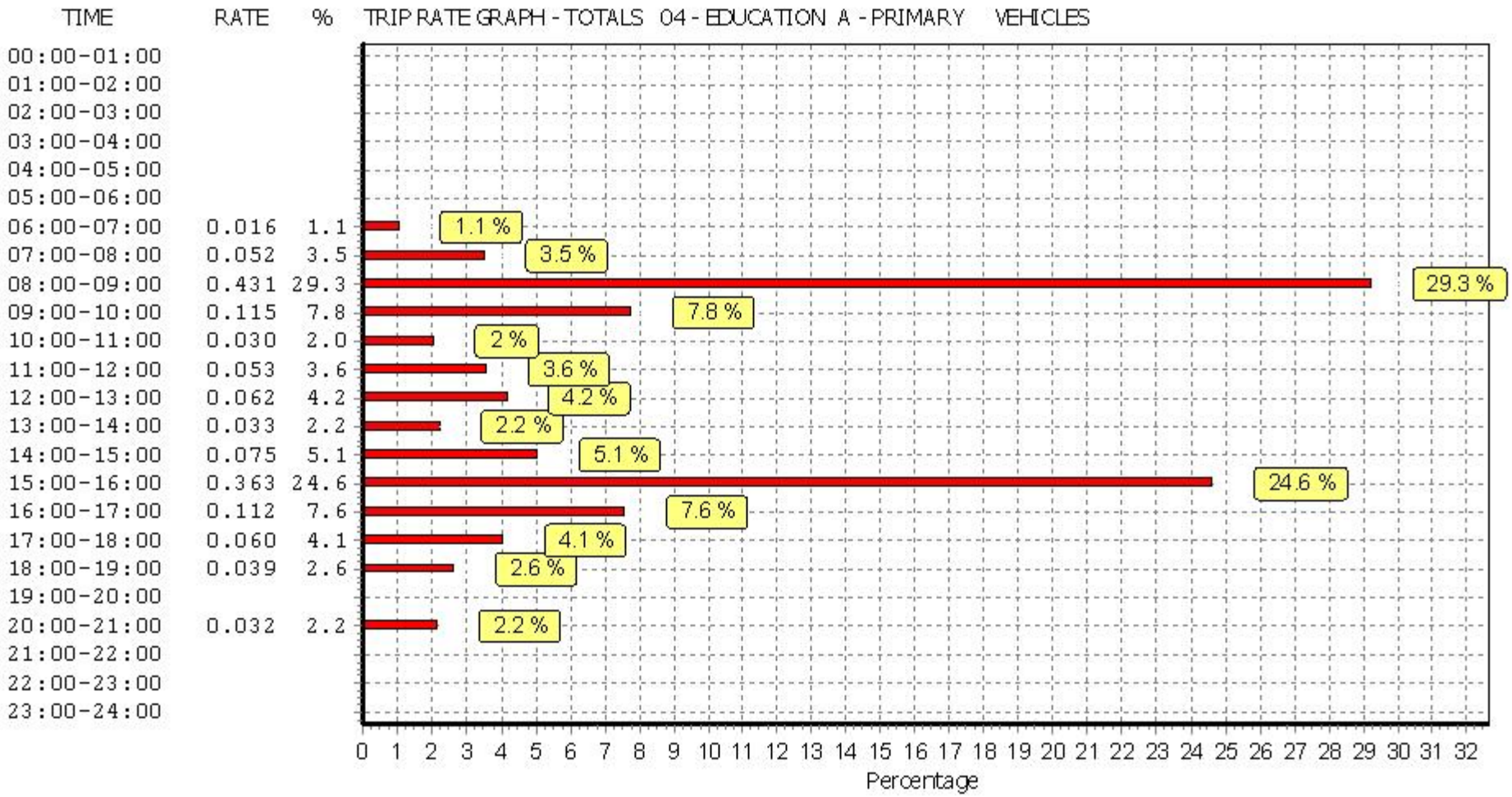

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TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY
OGVS
Calculation factor: 1 PUPILS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	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	312	0.000	1	312	0.000	1	312	0.000
06:00 - 07:00	1	312	0.003	1	312	0.003	1	312	0.006
07:00 - 08:00	18	301	0.000	18	301	0.000	18	301	0.000
08:00 - 09:00	18	301	0.000	18	301	0.000	18	301	0.000
09:00 - 10:00	18	301	0.001	18	301	0.001	18	301	0.002
10:00 - 11:00	18	301	0.001	18	301	0.000	18	301	0.001
11:00 - 12:00	18	301	0.000	18	301	0.001	18	301	0.001
12:00 - 13:00	18	301	0.000	18	301	0.000	18	301	0.000
13:00 - 14:00	18	301	0.000	18	301	0.000	18	301	0.000
14:00 - 15:00	18	301	0.000	18	301	0.000	18	301	0.000
15:00 - 16:00	18	301	0.000	18	301	0.000	18	301	0.000
16:00 - 17:00	18	301	0.000	18	301	0.000	18	301	0.000
17:00 - 18:00	18	301	0.000	18	301	0.000	18	301	0.000
18:00 - 19:00	15	302	0.000	15	302	0.000	15	302	0.000
19:00 - 20:00	1	312	0.000	1	312	0.000	1	312	0.000
20:00 - 21:00	1	312	0.000	1	312	0.000	1	312	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.005			0.005			0.010

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Parameter summary

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Number of weekdays (Monday-Friday):	18
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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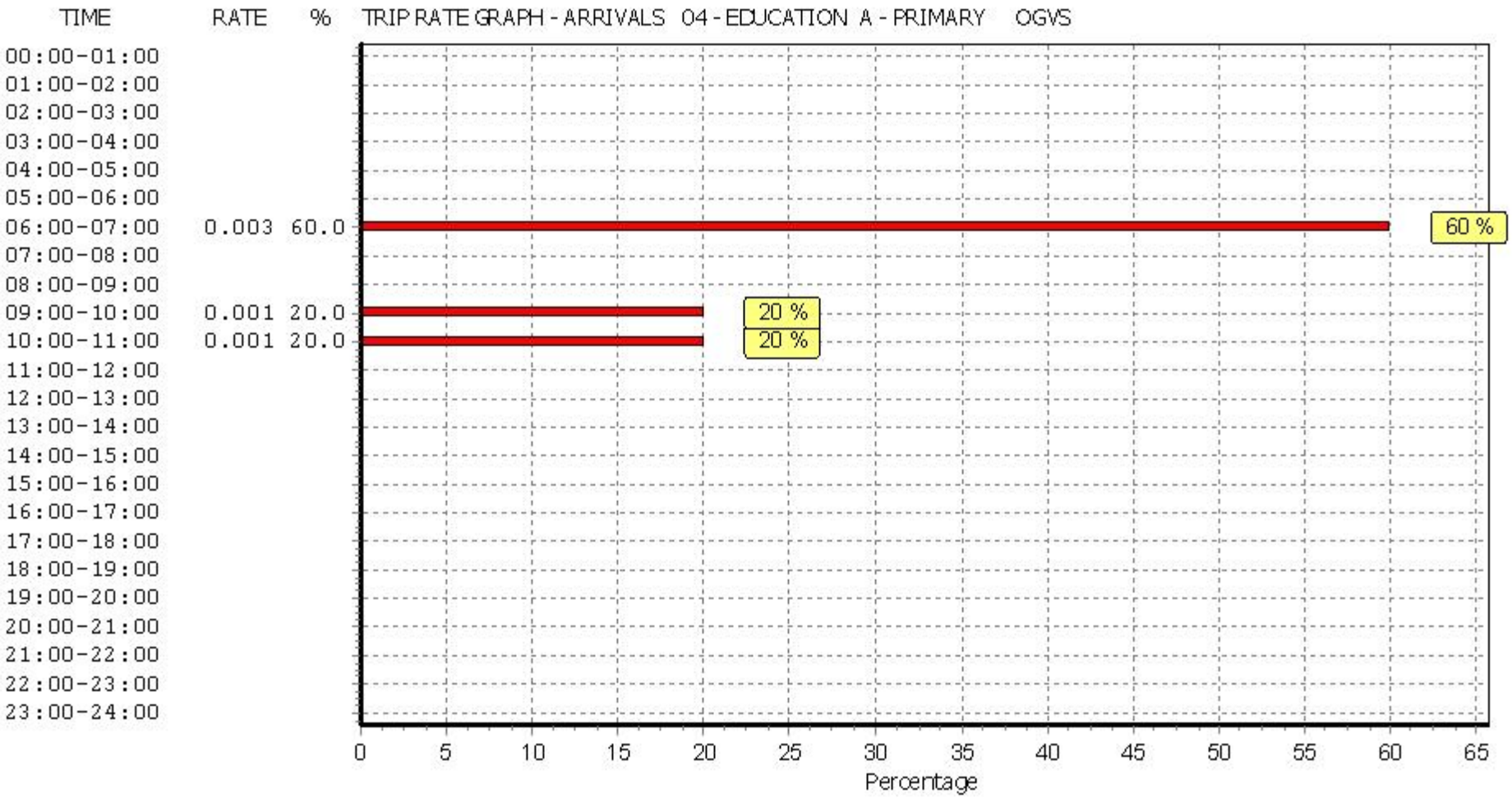

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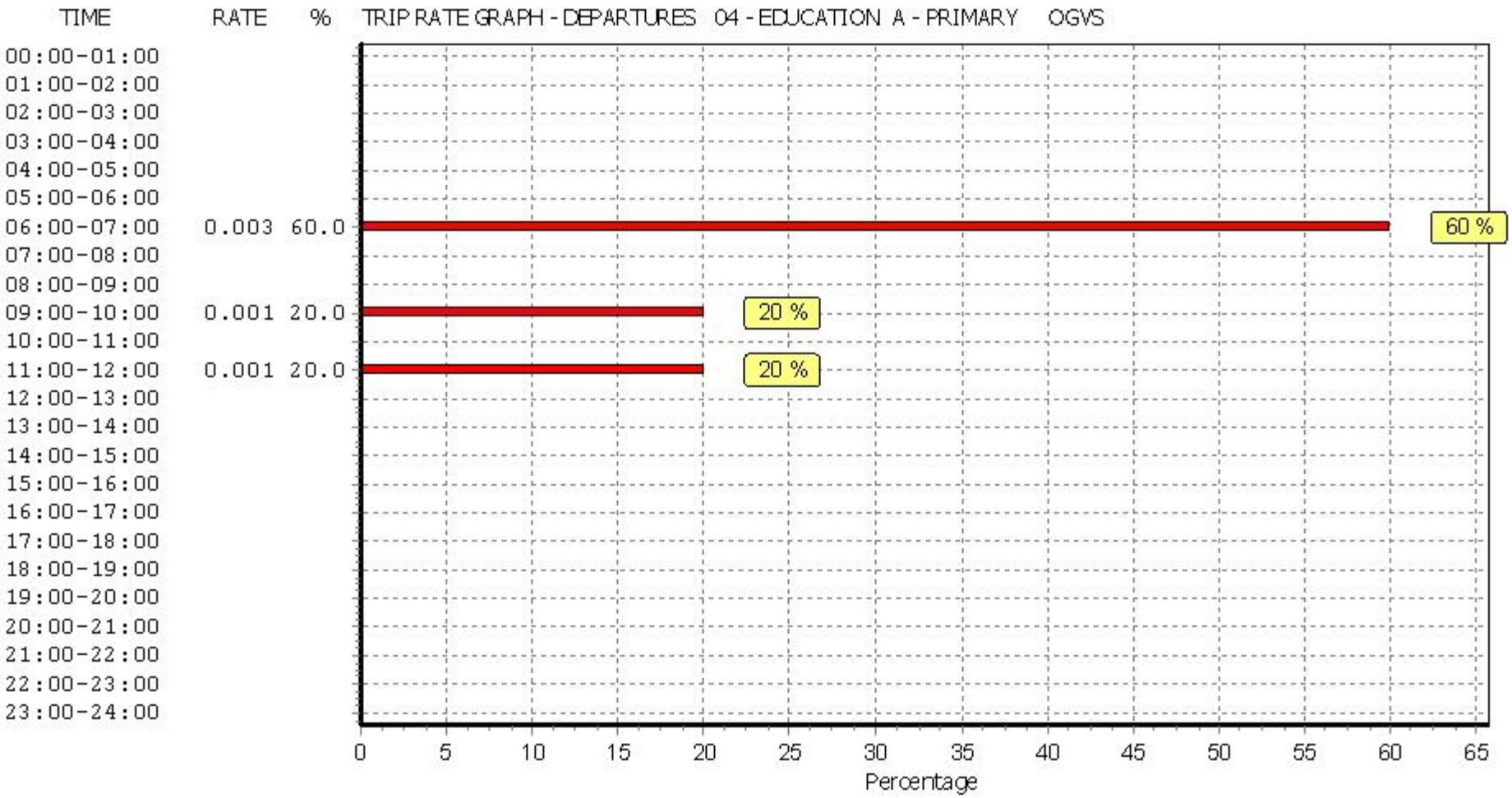

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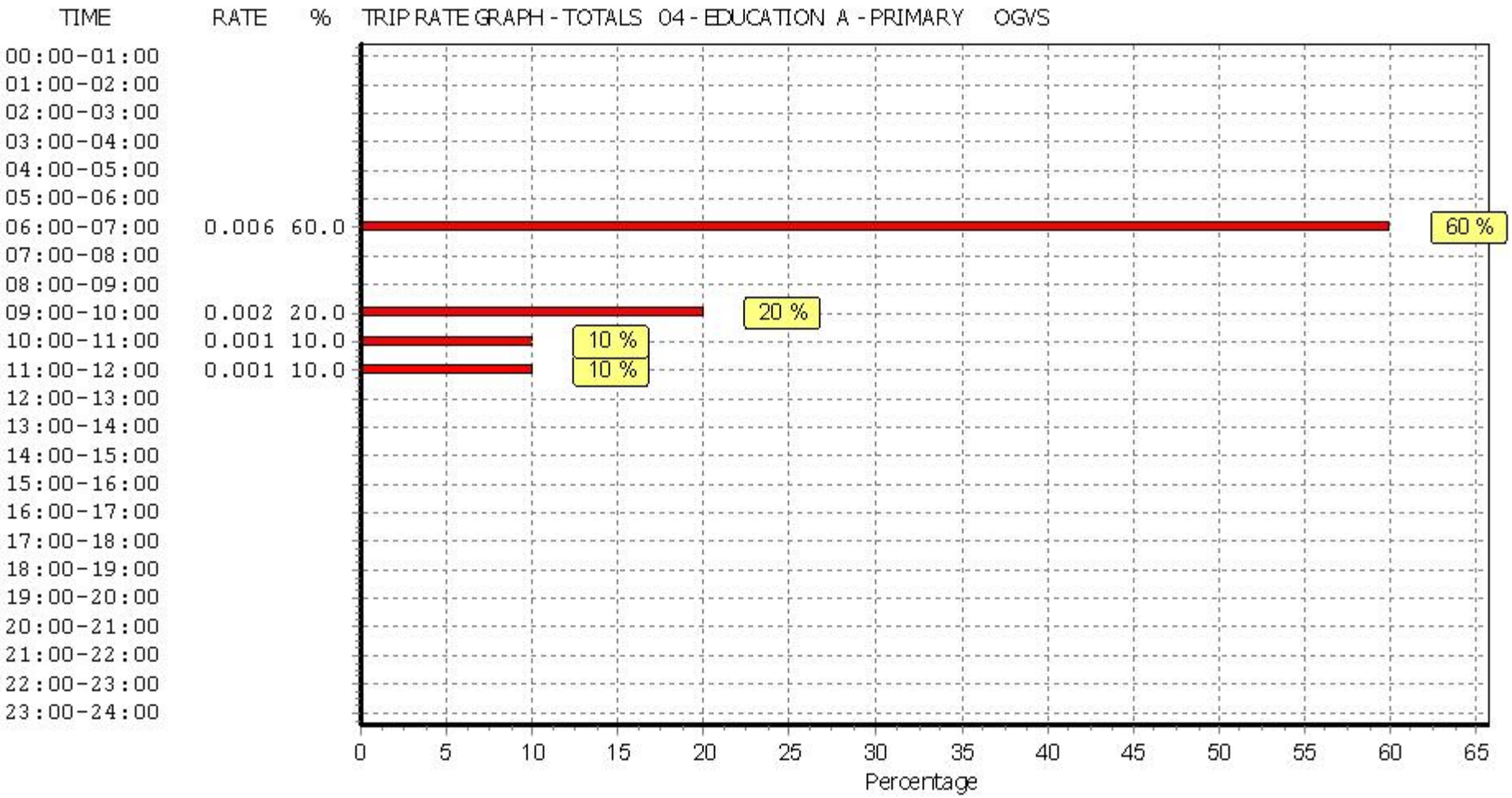

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TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY
PSVS
Calculation factor: 1 PUPILS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate
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01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	312	0.000	1	312	0.000	1	312	0.000
06:00 - 07:00	1	312	0.000	1	312	0.000	1	312	0.000
07:00 - 08:00	18	301	0.000	18	301	0.000	18	301	0.000
08:00 - 09:00	18	301	0.001	18	301	0.001	18	301	0.002
09:00 - 10:00	18	301	0.001	18	301	0.001	18	301	0.002
10:00 - 11:00	18	301	0.000	18	301	0.000	18	301	0.000
11:00 - 12:00	18	301	0.001	18	301	0.001	18	301	0.002
12:00 - 13:00	18	301	0.000	18	301	0.000	18	301	0.000
13:00 - 14:00	18	301	0.001	18	301	0.001	18	301	0.002
14:00 - 15:00	18	301	0.001	18	301	0.000	18	301	0.001
15:00 - 16:00	18	301	0.000	18	301	0.001	18	301	0.001
16:00 - 17:00	18	301	0.000	18	301	0.000	18	301	0.000
17:00 - 18:00	18	301	0.000	18	301	0.000	18	301	0.000
18:00 - 19:00	15	302	0.000	15	302	0.000	15	302	0.000
19:00 - 20:00	1	312	0.000	1	312	0.000	1	312	0.000
20:00 - 21:00	1	312	0.000	1	312	0.000	1	312	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.005			0.005			0.010

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Parameter summary

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Number of weekdays (Monday-Friday):	18
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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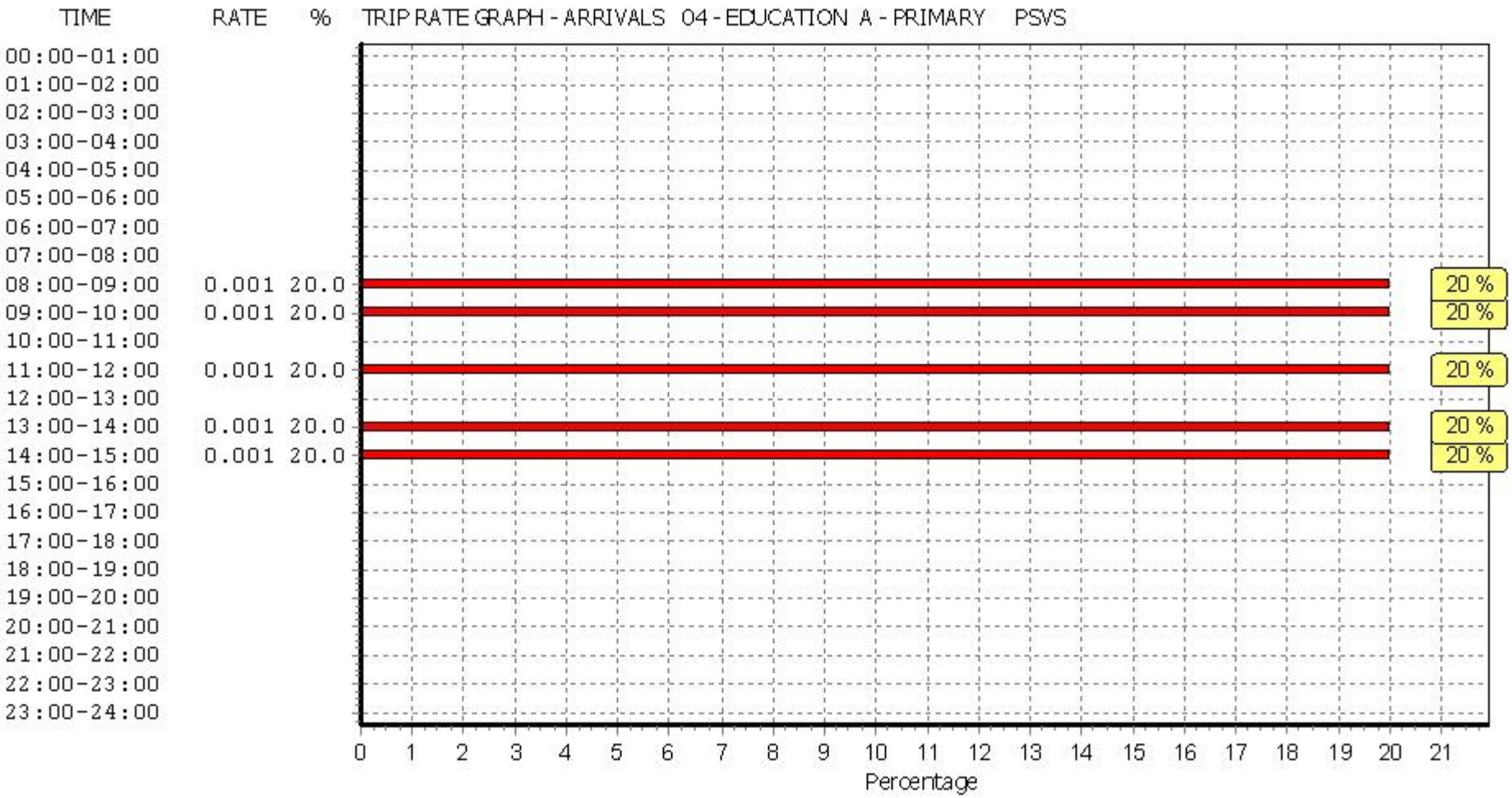

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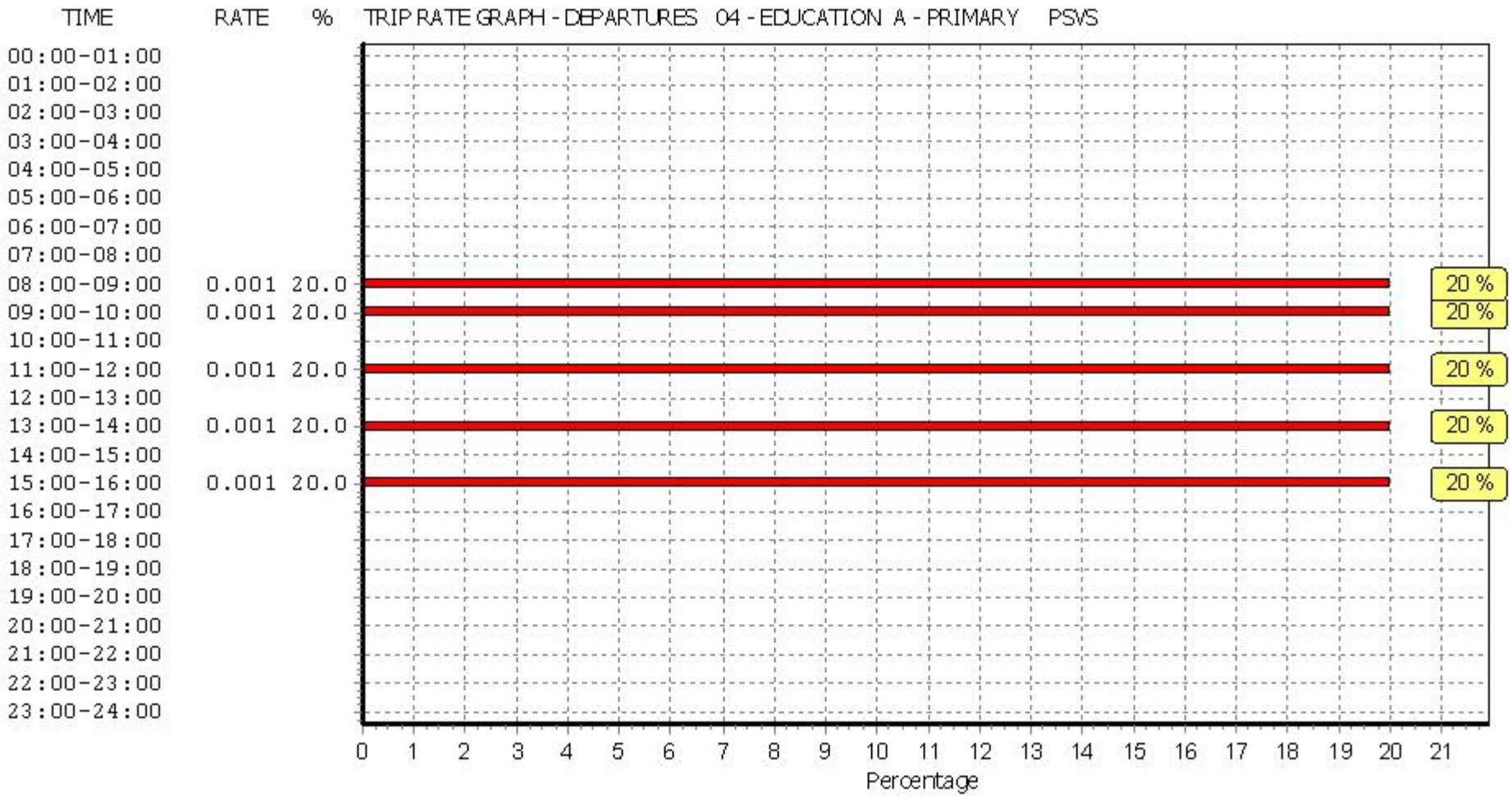

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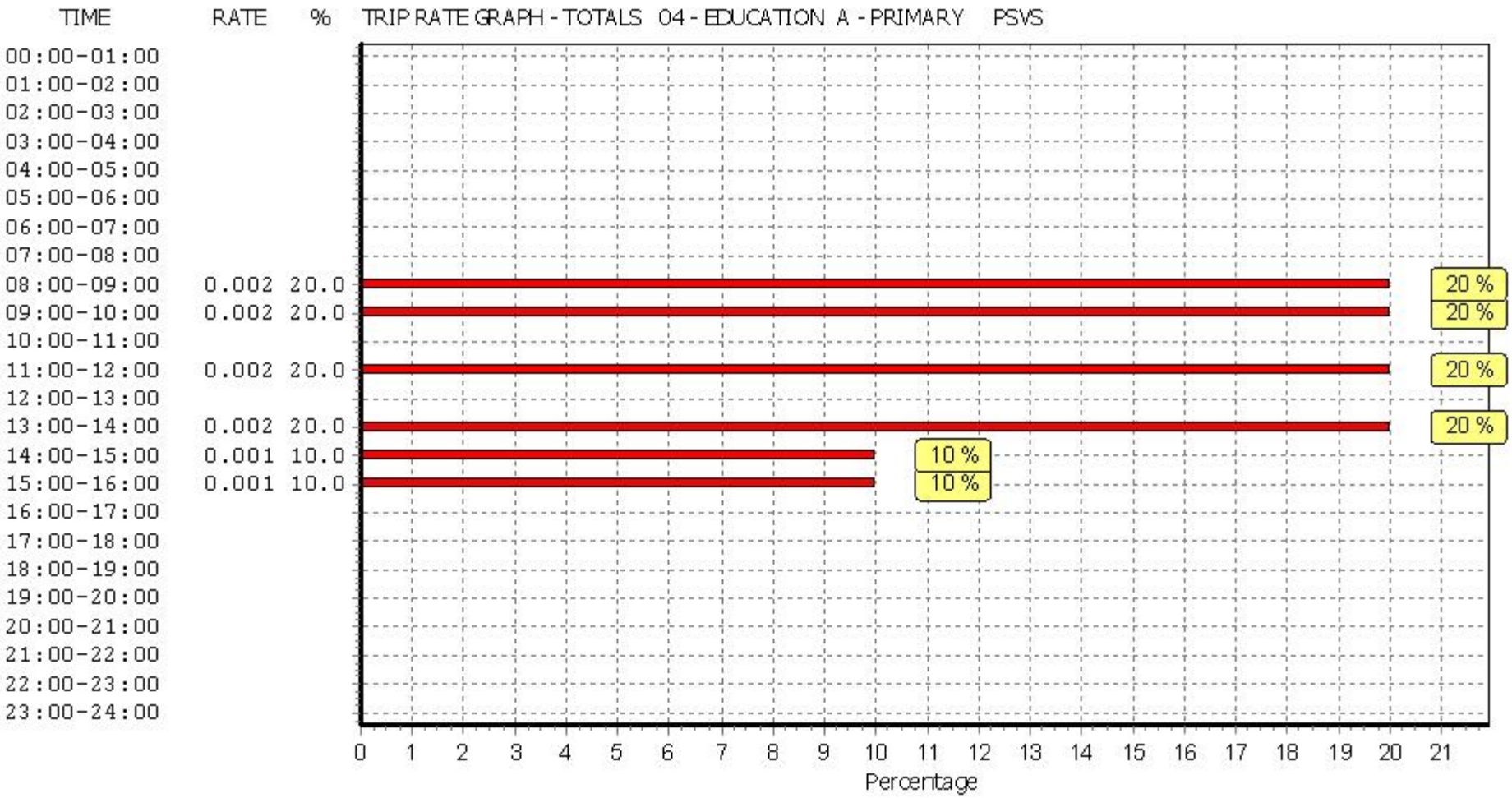

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TRIP RATE for Land Use 04 - EDUCATION/A - PRIMARY
CYCLISTS
Calculation factor: 1 PUPILS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	Trip Rate	No. Days	Ave. PUPILS	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	312	0.000	1	312	0.000	1	312	0.000
06:00 - 07:00	1	312	0.000	1	312	0.000	1	312	0.000
07:00 - 08:00	18	301	0.001	18	301	0.000	18	301	0.001
08:00 - 09:00	18	301	0.009	18	301	0.001	18	301	0.010
09:00 - 10:00	18	301	0.001	18	301	0.001	18	301	0.002
10:00 - 11:00	18	301	0.000	18	301	0.000	18	301	0.000
11:00 - 12:00	18	301	0.000	18	301	0.000	18	301	0.000
12:00 - 13:00	18	301	0.000	18	301	0.000	18	301	0.000
13:00 - 14:00	18	301	0.000	18	301	0.001	18	301	0.001
14:00 - 15:00	18	301	0.001	18	301	0.000	18	301	0.001
15:00 - 16:00	18	301	0.004	18	301	0.006	18	301	0.010
16:00 - 17:00	18	301	0.000	18	301	0.004	18	301	0.004
17:00 - 18:00	18	301	0.000	18	301	0.001	18	301	0.001
18:00 - 19:00	15	302	0.000	15	302	0.000	15	302	0.000
19:00 - 20:00	1	312	0.000	1	312	0.000	1	312	0.000
20:00 - 21:00	1	312	0.000	1	312	0.000	1	312	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.016			0.014			0.030

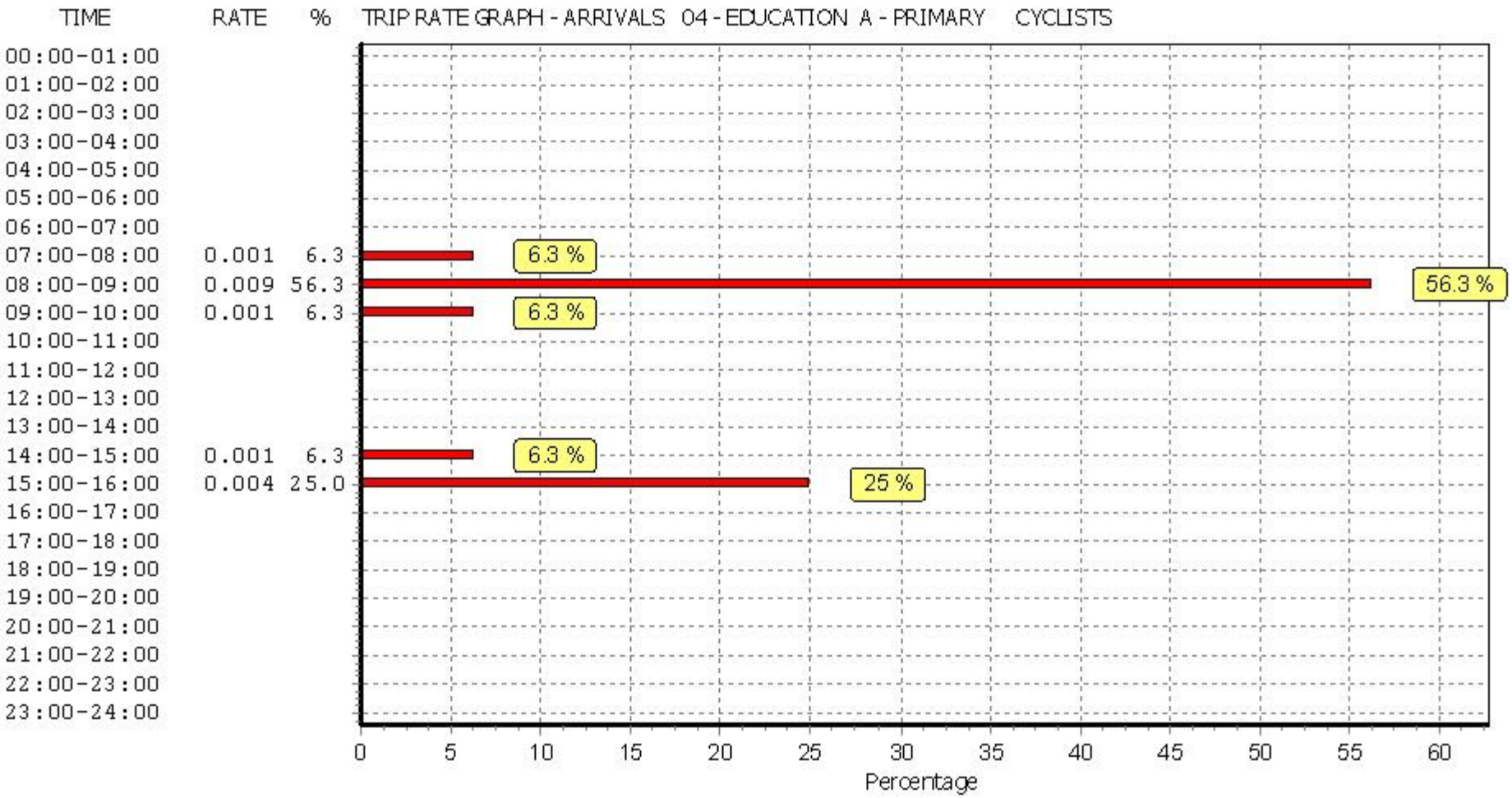
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.

Parameter summary

Trip rate parameter range selected:	79 - 657 (units:)
Survey date date range:	01/08/06 - 05/11/13
Number of weekdays (Monday-Friday):	18
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



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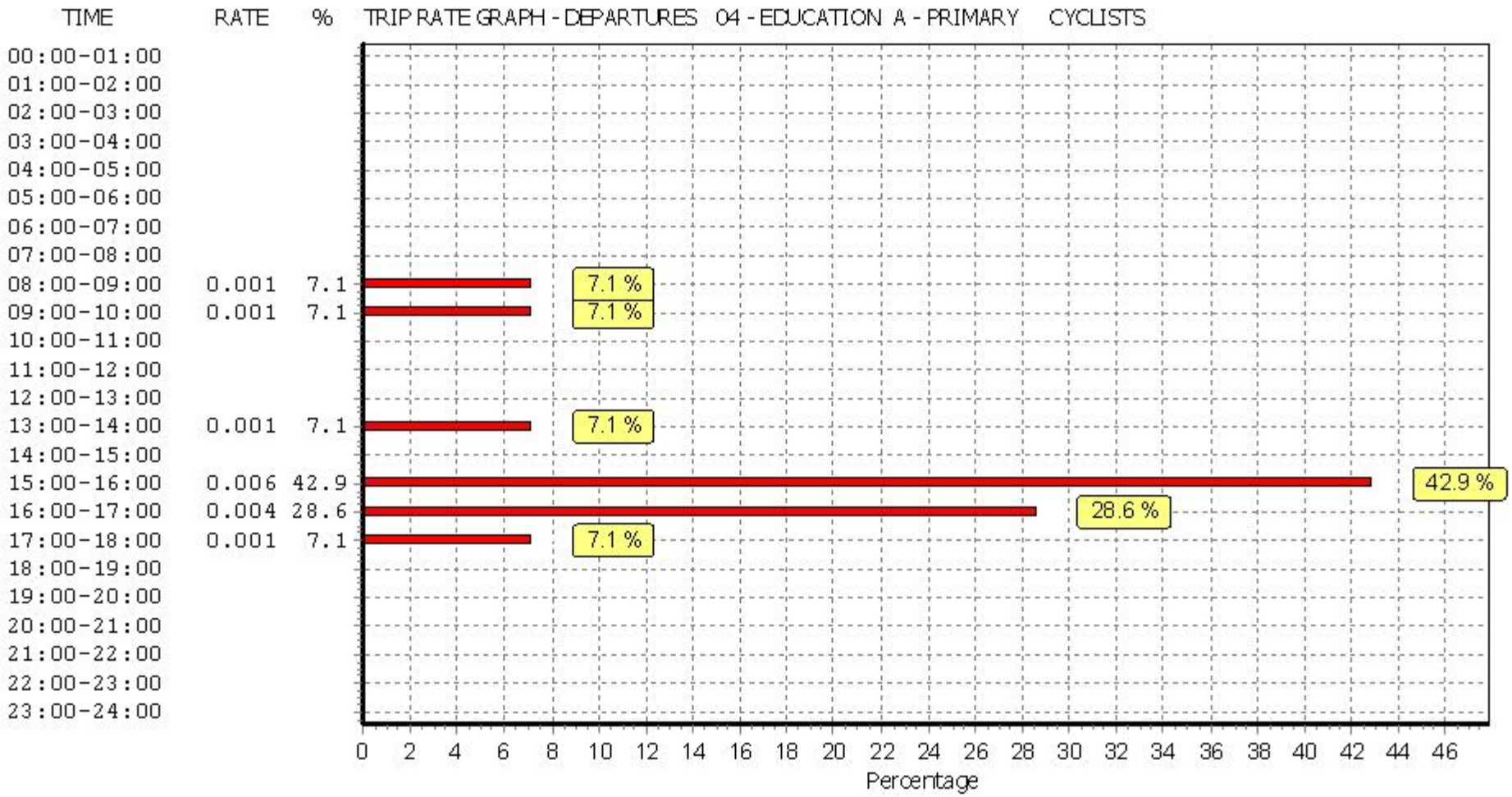

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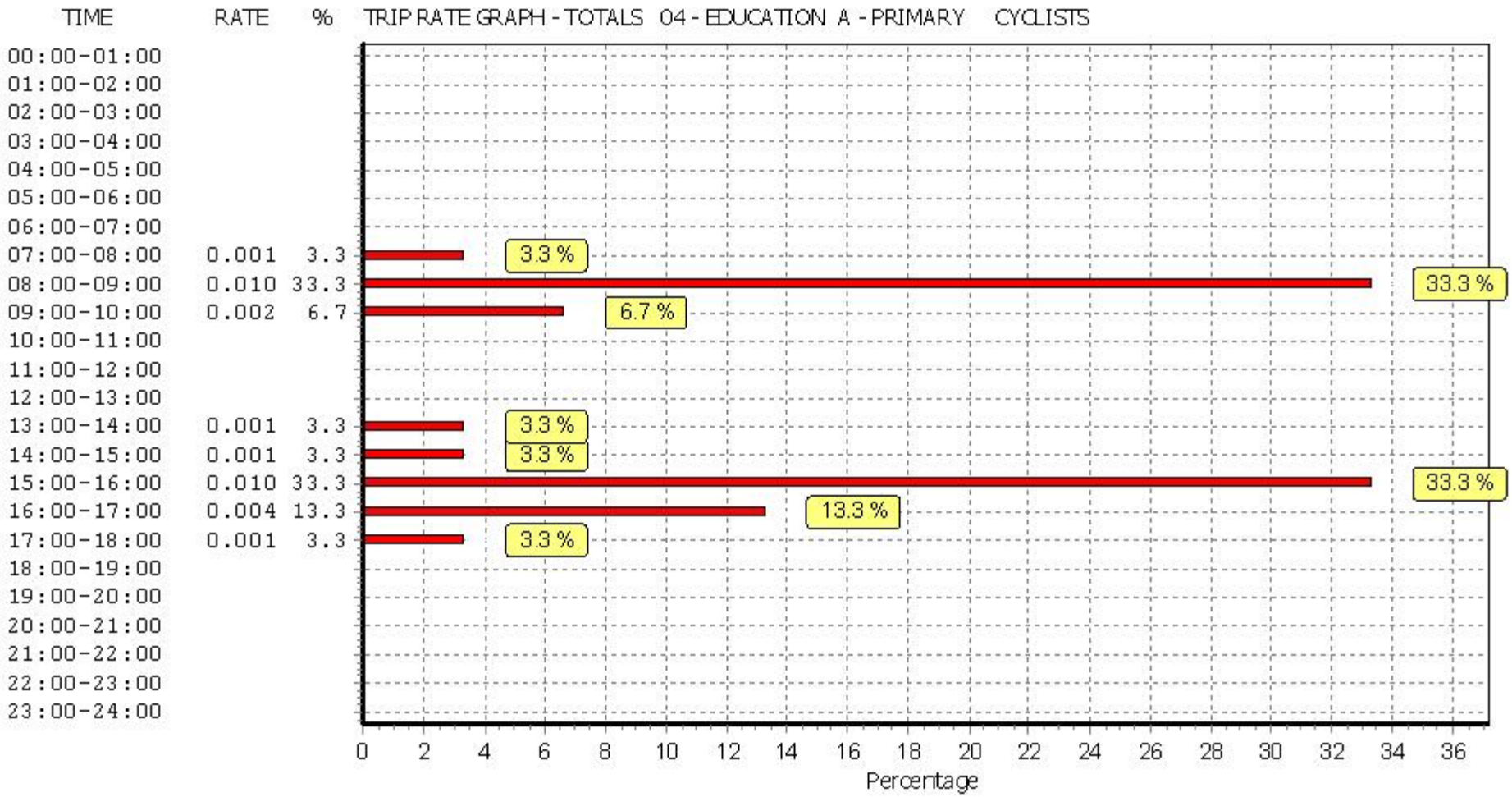

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Appendix B – Transport Modelling Protocol

Brookbanks Transport Modelling Protocol

Introduction

This section identifies the protocol that is to be applied when establishing the traffic impact and how these impacts are then assessed.

Traffic Counts

Should junction traffic counts be required, these will be carried out using the following specification:

- Traffic counts to be carried Tuesday to Thursday
- Carried out between 07:30 to 09:30 and 16:30 to 18:30.
- surveys to avoid school holidays
- Where ATC and MCC surveys are undertaken, they should be carried out in the same week.
- Turning counts to be recorded over 15 minute intervals
- Flows to be classified Car / LGV / OGV1 / OGV / Bus / Cycle / Motorcycle
- The timings and phasing of signal junction to be recorded
- Queue lengths are also to be recorded at signalised junctions at the end of the red phase
- Queue lengths at priority junctions to be recorded at 5 minute intervals and the peak queue recorded in each 5 minute interval

Trip Generation

To ensure a robust assessment trip rates for development will be informed by the nationally accepted trip rate database TRICS. The database will be assessed using the following criteria:

- Sites in England but outside Greater London.
- Mondays to Fridays included
- Site with a Travel Plan excluded
- Repeat surveys excluded
- Trip rate graph reviewed to identify those sites that are materially different and will be excluded
- Only include sites recorded in the last eight years
- Filtering will be carried out by site size

In relation to the mix of housing tenures on site, it is often the case that there is a requirement for the provision of social / affordable housing, which has typically lower trip rates. It is typical that Local Planning Authorities will expect 30 – 40% social / affordable housing provision. Therefore to ensure a robust assessment, on sites over 100 houses a 20% provision of social / affordable housing will be assumed.

On larger schemes, Local / Neighbourhood Centres are often included. These often include a range of facilities to serve the development. As such any trips generated by these land uses will be judged to be internal and not generate any external trips.

Trip Distribution and Assignment

In the absence of any other formal distribution model adopted, the generated trips will be distributed to the road network based on a review of Census travel to work statistics.

The assignment of trips on to routes will be based on a combination of journey distances and journey time. Any know congestion points will be assessed to determine if these will result in route diversion.

Internalisation

The delivery of the mixed uses on site will present the opportunity for internalisation between complimentary land uses. This is most likely between residential, education and employment.

Minor Scheme Internalisation

Should the development deliver education facilities, Census statistics will be reviewed to identify the likely travel demand. This will indicate the number of housing units in the relevant Census Ward together the number of school age children. This will be converted in to an equivalent child per house. This will then be applied to the number of houses proposed to determine the internal education trips.

Should the development deliver industrial land uses, it is reasonable to assume that a proportion of the jobs will be taken by the future residents. To determine the propensity off jobs that will be filled by the future residents Census statistics relating to distance travelled to work will be reviewed. A reduction will be made to the residential trips equivalent to 50% of the proportion of trips travelling a distance of less than 2.0km will be applied. The resultant reduction in trips will be removed from the corresponding employment trips.

Major Scheme Internalisation

On sites relating to substantial developments including urban extensions (i.e. those developments delivering significant housing together with substantial supporting land uses including employment, education, retail and leisure) there will be greater propensity for internalisation. In these cases to determine the likely level of internalisation, it is important to identify the individual journey purpose. Information will be extracted from the TEMPRO database to determine trip purpose, as identified below.

- Work
- Employers Business
- Education
- Shopping
- Personal Business
- Recreation/Social
- Visiting Friends and Relatives
- Holiday/Day Trip

This will provide a percentage split between the journey purposes in order to identify the number of total trips undertaken same.

Each of the journey purposes reported by Tempro is discussed below. However this approach may be modified depending on local characteristics.

In relation to **Work,** to determine the propensity off jobs that will be filled by the future residents Census statistics relating to distance travelled to work will be reviewed. A reduction will be made to the residential trips equivalent to 50% of the proportion of trips travelling a distance of less than 2.0km will be applied.

It is considered that **Employers Business** will be calculated in the same manner as **Work,** as indicated below.

In relation to **Education**, Census statistics will be reviewed to identify the likely travel demand. This will indicate the number of housing units in the relevant Census Ward together the number of school age children. This will be converted in to an equivalent child per house. This will then be applied to the number of houses proposed to determine the internal education trips.

In relation to **Shopping** in the morning peak, it is reasonable to assume that any trips inbound must be from short trips, such as going to the local shop for convenience could be internal. But to ensure a robust assessment, 75% of the inbound trips are to be assumed as internal. For the purposes of a robust assessment, it assumed that the remaining trips are discrete trips that are to an external destination. In relation to the PM peak, it is more difficult to assess how many trips will be internal based on the number of in movements. Therefore the proportion of AM external / internal trips has been applied to both the in movements and the out movements in the PM peak.

In relation to **Personal Business** trips if it is likely that the development will deliver sufficient facilities to cater for this trip type the methodology adopted for Shopping is reasonable and will be applied.

In relation to **recreation / social** the methodology adopted for Shopping is reasonable and will be applied.

In relation to **Visiting Friends and Relatives** the methodology adopted for Shopping is reasonable and will be applied.

For a robust assessment it has been assumed that all **Holiday / day trip** will be treated as external.

Travel plan

The delivery of significant developments are typically expected to reduce the external trip generation from developments by reducing the need to travel in the first instance, then by encouraging sustainable modes of travel over the private motorcar. The strategy to encourage sustainable travel is embodied in a Travel Plan, which is based on a package of measures to achieve modal shift.

On schemes where a Travel Plan is required a 5% reduction will be applied to all external trips.

Assessment years and Growth Rates

In accordance to the Guidance on Transport Assessments (Department for Transport) the development will be undertaken for the following assessment years:

- Year of Planning Application Submission
- Year of Planning Application Submission plus five years

Should the Strategic Road Network be affected then an opening year will be carried, this will be typical three years post submission.

Other years may be necessary and will be identified through Scoping with the Regulatory Authorities.

Unless there is an adopted methodology by the Local Planning Authority growth rates will be determined through the application of NTM / TEMPRO.

If necessary, newly commissioned traffic surveys will be completed using the following specification:

- Carried out on a Tuesday, Wednesday, Thursday unless otherwise agreed
- Typically during the neutral months of April, May, June, September and October
- Counts carried out outside neutral months will be factored by ATC data
- Counts carried out between 07:30 – 09:30 and 16:30 – 19:30 unless otherwise agreed
- Traffic movements to be recorded in 15 minute intervals
- Traffic Movements to be COBA classified
- Queue lengths to be recorded at five minute intervals at priority controlled junctions
- Queue lengths to be recorded at the end of the red signal at signal controlled junctions

- Phasing and timings recorded at signal controlled junctions

Assessment Threshold Screening

To assess if a development will have an impact at any particular location, screening of the results will occur.

When assessing the results of any future traffic model results, the GEH statistics will be used to compare the 'with' and 'without' development results of model data, the formula for the GEH statistic is indicated below:

$$GEH = \sqrt{\frac{2\,(M - C)^2}{M + C}}$$

Where M and C represents the two sets of data

Where this assessment of a link or node shows a GEH of less than 5, this indicates no material impact and therefore no detailed review is required. Should a link or node report a GEH of greater than 5 then this will identify the need for further testing.

When assessing the impact using a traditional method of trip generation, the only those locations predicted to have an increase of 5% or 30 trips on any arm will be assessed in detail.

Detailed Link Assessment Methodology

To assess the potential impact of the increase in flows, an assessment will be carried out of the predicted traffic flows against the theoretical highway capacity as indicated in TA79/99, Capacity of Urban Roads, and TA46/97, Traffic flow ranges for use in the assessment of new rural roads, Design Manual for Road and Bridges.

Detailed Junction Assessment Methodology

Priority controlled T-junctions and roundabouts are assessed using the computer software packages PICADY and ARCADY, respectively, with signal controlled junctions assessed by the LINSIG software package. The junction capacity output of PICADY and ARCADY refers to the maximum ratio of flow to capacity (RFC), which measures the predicted flow of vehicles against the junction capacity based on the junction geometry, similarly within LINSIG the junction output, junction capacity relates to the Degree of Saturation. Within LINSIG, overall junction capacity is measured as PRC (Practical Reserve Capacity). A PRC of 0.0% or greater indicates the junction can be expected to perform satisfactorily

It is normally accepted that an RFC of 1.000, or a degree of saturation of 100%, indicates that the junction is typically operating at maximum capacity. Due to the inherent day-to-day variability of traffic flows a RFC value of 0.85 or a Degree of Saturation of 90% are seen as acceptable in operational terms for development impact assessments.

PICADY, ARCADY and LINSIG also report the expected average queues lengths and average delays that may be expected at a junction. This will be reported in the junction assessment results as this provides an indication of the efficiency of a junction's performance.

When assessing the operation of any junction, if the data is available the base results will be calibrated to recorded queue length data to ensure the junction models are reflective of actual junction operation. The phasing and timings of signalised junctions will be reflected within the junction models.

The traffic profile through the junction will be reviewed to determine the peak period of travel demand together with the arrival profile.

Appendix B – Parameters Plan