

Sutton Coldfield Cordon Report

2000

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Table of Contents

Summary of Main Points	4
Analysis of the 2000 Cordon Survey Has Shown That:	4
Purpose of Report	5
Methodology	5
Background	5
Results	6
Daily and Hourly Variations	9
Patterns of Travel.....	11
Mode of travel.....	11
Occupancy Levels.....	14
Public Transport Data.	15
Appendix 1 Position of Cordon Sites	(1 page)
Appendix 2 Calculations for Estimated Mode	(3 pages)
Appendix 3 Calculations for Estimates of People Inbound	(2 pages)

List of Tables

Table 1	Number of vehicles crossing the cordon in the Morning Peak Period (07.30-09.30)	6
Table 2	Number of vehicles crossing the cordon in the Morning Off-Peak Period (10.00-12.00)	6
Table 3	Total Vehicles by Time Period on an Average Weekday, 1998/2000	6
Table 4	Variations in traffic flow, by time of day 2000	9
Table 5	Net loss / gain and accumulation in vehicles crossing the cordon, by hour	9
Table 6	Net loss / gain in vehicles on an average weekday, by site	11
Table 7	Summary of Inbound mode of transport data from manual surveys	11
Table 8	Estimated Inbound mode of transport figures	12
Table 9	Summary of Outbound mode of transport data from manual surveys	13
Table 10	Estimated Outbound mode of transport figures	13
Table 11	Inbound and Outbound Trips by Public Transport Into Sutton Coldfield Town Centre	15

List of Figures

Figure 1	Inbound Morning Peak Period: Vehicle Volumes by Quarter Hour	7
Figure 2	Outbound Evening Peak Period: Vehicle Volumes by Quarter Hour	7
Figure 3	Inbound levels of vehicles, by hour	8
Figure 4	Outbound levels of vehicles, by hour	8
Figure 5	Net loss / gain in vehicles crossing the cordon, by hour	10
Figure 6	Net accumulation of vehicles, by hour	10
Figure 7	Estimated Inbound mode of transport figures	12
Figure 8	Estimated Outbound mode of transport figures	13
Figure 9	Estimates of numbers of people travelling Inbound Morning Peak Period	14

Summary of Main Points

Analysis of the 2000 Cordon Survey Has Shown That:

1. Around 12,700 vehicles travel into Sutton Coldfield Town Centre during the morning peak period (07.30-09.30). Around 10,100 vehicles travel outbound during the same time period. (Page 6, Table 1)
2. Off Peak, around 8,500 vehicles travel inbound, 8,000 outbound. (Page 6, Table 2)
3. On an average weekday, 17.9% of inbound vehicles travel into the town centre in the morning peak. Around 81% of an average weekday's traffic cross the cordon line in the main 12 hour day (07.00-19.00). (Page 6, Table 3)
4. By 12 p.m., there is a net increase of some 3,733 vehicles within the cordon area over the overnight levels. (Page 9, Table 5 and Figure 5)
5. The hour ending 9 a.m., shows the highest increase in vehicles to the centre, with an excess of 1811 entering the town centre over those leaving the town. The hour ending 6 p.m. shows the greatest loss in vehicles (1237). (Page 9, Table 5) A breakdown of the peak periods by quarter hour is given in Figures 1 and 2 on Page 7.
6. The surveys have provided detailed data on the variations of traffic levels throughout the day, for inbound and outbound directions at individual sites and for the cordon as a whole.
7. Estimated occupancy figures based on the manual counts show some 16,163 people using private transport to travel into the town centre between 07.30 and 09.30. (Page 14, Figure 9)
8. Using the manual surveys to estimate the inbound mode of transport figure, the main 12 hour day shows approximately 221 cycles, 1,534 buses, 54,559 light vehicles and 1,592 heavy vehicles. (Page 12, Table 8)
9. The estimated mode of transport figures for the outbound directions are 198 cycles, 1,527 buses 54,494 light vehicles and 1,422 heavy vehicles. (Page 13, Table 10)
10. Public transport data collected by jdt has shown that there were 3,233 trips made by bus into Sutton Coldfield Town Centre during the hours of 07.30-09.30. (Page 15, Table 11)

Purpose of Report

This report is being undertaken as part of the Package monitoring process. The purpose of the report is to give an indication of the level of vehicular activity in the town centre, to indicate existing and future levels of transport demand and to monitor the effects of transport policy. The automatic traffic surveys and analysis have been undertaken by the West Midlands Joint Data Team.

Methodology

The most effective method of obtaining the necessary data to monitor traffic flows is to measure traffic crossing a cordon around the town centre. Sites are positioned on all the main roads. This network is then supplemented by sites on some of the minor roads so as to obtain a close 'closed' cordon. In this way all vehicles entering the town centre are recorded.

The counters used record the vehicles automatically. This method allows a full weeks' data to be collected, enabling 24 hr average weekday data to be presented.

Four sites were also surveyed manually by Birmingham City Council staff. These, twelve category, passage and occupancy counts are used to estimate the modal split of the automatic data and also to estimate the number of people travelling into the town centre by vehicle.

A complimentary bus cordon survey was undertaken by jdt, which this report feeds into.

Results of the 2000 Sutton Coldfield Cordon Survey are presented on the following pages. Where available, comparisons have been made with 1996 and 1998 data.

Background

Collection of the data took place in the week beginning Monday 25th September. It is important to avoid school holidays and the Christmas shopping season. In 1996 and 1998, the surveys took place during November however this has been changed for operational reasons.

In 1998, site SU12 Wyndley Lane was discontinued as the entrance to Sutton Park was closed at the time the surveys were carried out.

Some of the results in 1998 were found to be inconsistent when compared with 1996 data. Thorough checks were carried out on 1998 data in order to eliminate any errors that may have occurred in the collection of the data. However, we were unable to uncover any one particular reason for this change and no combination of factors was obviously apparent either. The data for 2000 shows the net accumulation figures (Table5, Figure6) follow the same pattern as the 1996 counts, albeit with an earlier and higher increase and a sharper fall in the actual figures.

The exact position of the automatic counts can be seen in Appendix 1. It is hoped to continue to monitor these exact same sites in future years so that direct comparisons can be made.

Results

In Table 1 the figures for the number of vehicles crossing the cordon line in the morning peak period are presented. Traditionally, the morning peak period has been considered as being 07.30-09.30. This time period can be changed but needs to be consistent year on year.

Table 1 Number of vehicles crossing the cordon in the Morning Peak Period (07.30 - 09.30)

	1996	1998	2000
<u>Inbound</u>			
Total	11841	12164	12710
<u>Outbound</u>			
Total	9951	10977	10120

Table 2 shows the number of vehicles crossing the cordon line in the traditional off-peak morning period (10.00-12.00). It shows a closer difference between vehicles crossing inbound to outbound than the figures in the morning peak period.

Table 2 Number of vehicles crossing the cordon in the Morning Off-Peak Period (10.00-12.00)

	1996	1998	2000
<u>Inbound</u>			
Total	8903	8550	8464
<u>Outbound</u>			
Total	8001	8202	7942

The figures in Table 3 show that around 18% of traffic flowing into the town centre on a typical weekday is crossing the cordon line between the hours of 7.30a.m. and 9.30a.m. This corresponds to the figure outbound in the evening peak period (4p.m. to 6p.m.), which is around 17.1%.

The off-peak time period considered (1000-1200) shows around 11.5% of the daily traffic travelling into and out of the town centre.

Around 81% of an average day's traffic is crossing the cordon during the main 12hr day. Whilst the net figure over 24 hours might be expected to be zero, the figures are an average of the flow characteristics over five weekdays and the net figure of -772 is within the expected level of accuracy of automatic counts.

Table 3 Total Vehicles by Time Period on an Average Weekday, 1998/2000

	07.30 - 09.30	10.00 - 12.00	16.00 - 18.00	07.00 - 19.00 (12 hour)	0.00 - 24.00 (24 hour)
2000					
Inbound	12710	8464	10263	57886	70963
% of 24 hr	17.9	11.9	14.5	81.6	100
Outbound	10120	7942	12276	57641	71735
% of 24 hr	14.1	11.1	17.1	80.4	100
NET	2590	522	-2013	245	-772
1998					
Inbound	12164	8550	11231	60227	74792
% of 24 hr	16.2	11.4	15.0	80.5	100
Outbound	10977	8202	12104	59154	73890
% of 24 hr	14.8	11.1	16.4	80.0	100
NET	1187	348	-873	1073	902

Figure 1 Inbound Morning Peak Period: Vehicle Volumes by Quarter Hour

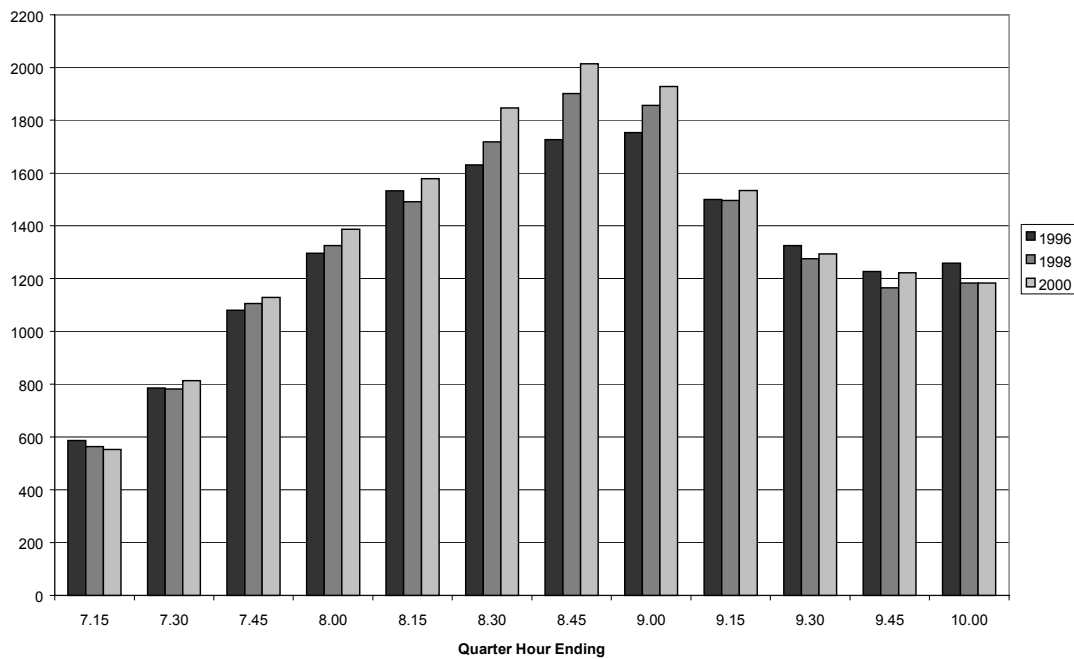


Figure 1 and Figure 2 show the two main peak periods by quarter hour. The morning figures are given from 7a.m. until 10a.m. and the evening from 4p.m. to 7p.m. These time periods are wider than those presented in previous tables in order to assess whether traffic is beginning to increase beyond the traditional peak hours.

Figure 2 Outbound Evening Peak Period: Vehicle Volumes by Quarter Hour

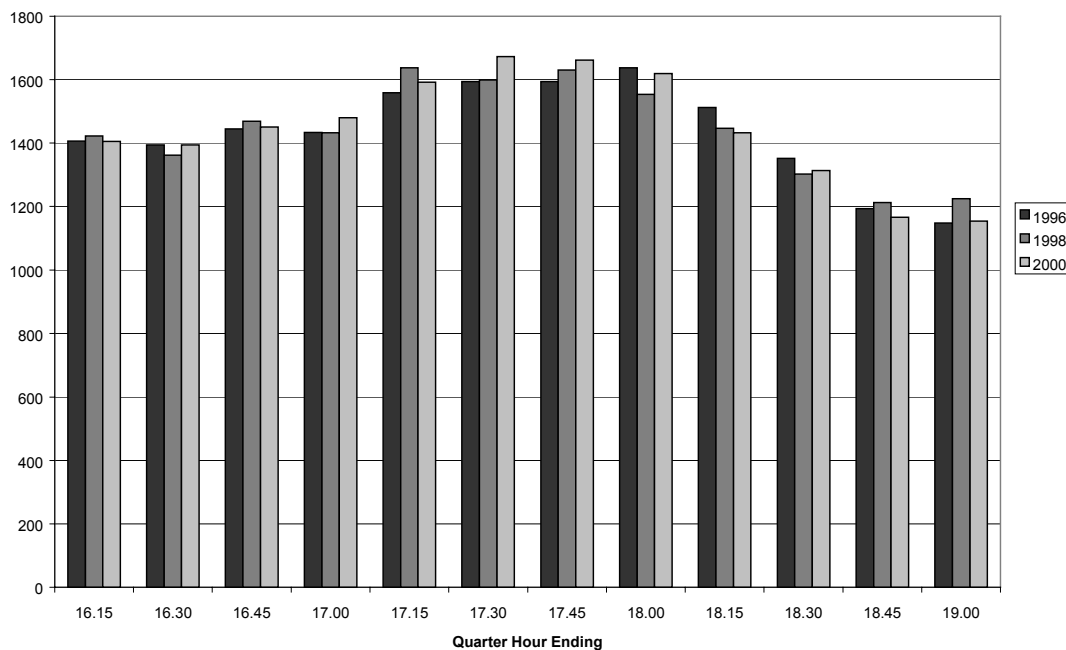


Figure 3 Inbound levels of vehicles, by hour

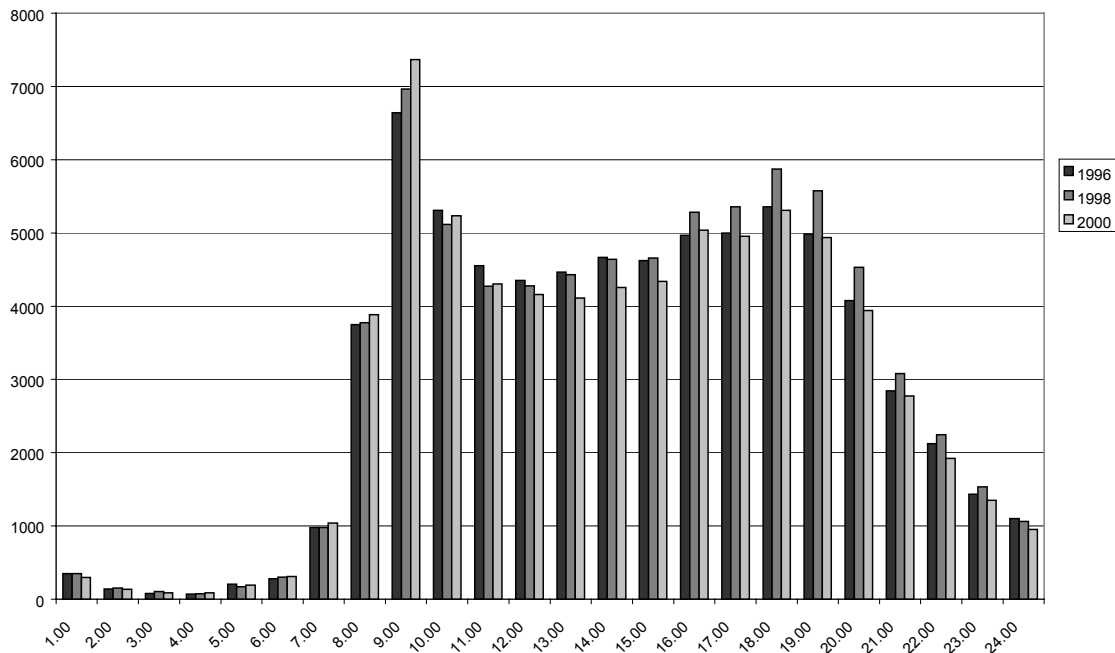
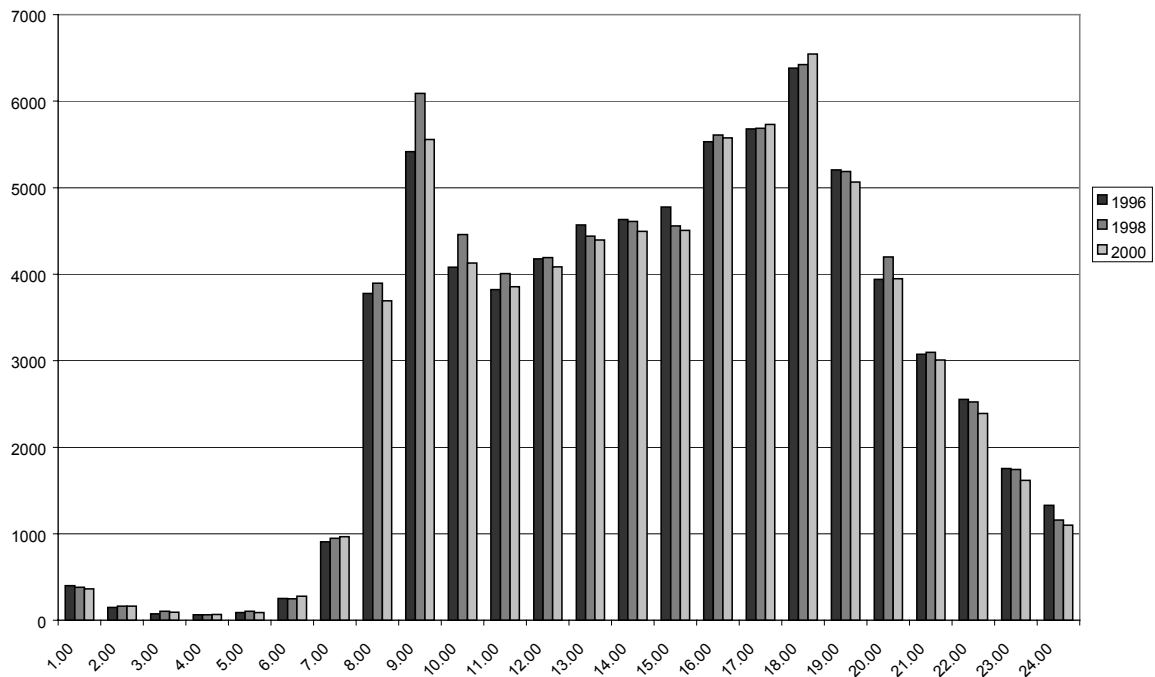


Figure 3 and Figure 4 give the hourly inbound and outbound data.

Figure 4 Outbound levels of vehicles, by hour



Daily and Hourly Variations

The figures in Table 4 give the proportions that each day contributes to an average week day (Mon-Fri) for each of the traditional time periods. These figures can be used to factor a count taken on any particular day to an average week day. The figures also show which days have the heaviest flows during each time period.

Table 4 Variations in traffic flow, by time of day 2000

	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
Inbound							
07.30 - 09.30	0.991	1.002	1.024	1.019	0.964	0.487	0.197
10.00 - 12.00	0.995	0.999	0.981	0.998	1.027	1.296	0.820
16.00 - 18.00	0.984	1.006	0.982	1.015	1.015	0.883	0.622
07.00 - 19.00	0.995	0.994	0.991	1.006	1.014	0.955	0.615
00.00 - 24.00	0.976	0.993	0.986	1.012	1.033	0.967	0.652
Outbound							
07.30 - 09.30	1.004	0.989	1.002	1.015	0.992	0.463	0.210
10.00 - 12.00	1.005	0.987	1.001	0.982	1.025	1.214	0.831
16.00 - 18.00	0.989	0.998	0.985	0.987	1.043	0.900	0.519
07.00 - 19.00	1.000	0.992	0.981	0.993	1.033	0.947	0.608
00.00 - 24.00	0.990	0.989	0.975	1.006	1.040	0.954	0.649

Figure 5 and Figure 6 show the gain in vehicles to the cordon by hour and the total accumulation of vehicles to the cordon. The figures used in these graphs are given in Table 5.

Table 5 Net loss / gain and accumulation in vehicles crossing the cordon, by hour

Hour Ending	No. vehicles inbound	No vehicles outbound	Net loss / gain (inbound minus outbound)	Accumulation
1.00	295	363	-68	-68
2.00	134	164	-30	-98
3.00	86	96	-10	-108
4.00	86	69	17	-91
5.00	190	90	100	9
6.00	308	280	28	37
7.00	1039	967	72	109
8.00	3882	3695	187	296
9.00	7367	5556	1811	2107
10.00	5232	4128	1104	3211
11.00	4302	3856	446	3657
12.00	4162	4086	76	3733
13.00	4109	4397	-288	3445
14.00	4254	4497	-243	3202
15.00	4338	4507	-169	3033
16.00	5037	5576	-539	2494
17.00	4954	5730	-776	1718
18.00	5309	6546	-1237	481
19.00	4940	5067	-127	354
20.00	3943	3950	-7	347
21.00	2776	3006	-230	117
22.00	1920	2391	-471	-354
23.00	1347	1619	-272	-626
24.00	953	1099	-146	-772

Figure 5 Net loss / gain in vehicles crossing the cordon, by hour

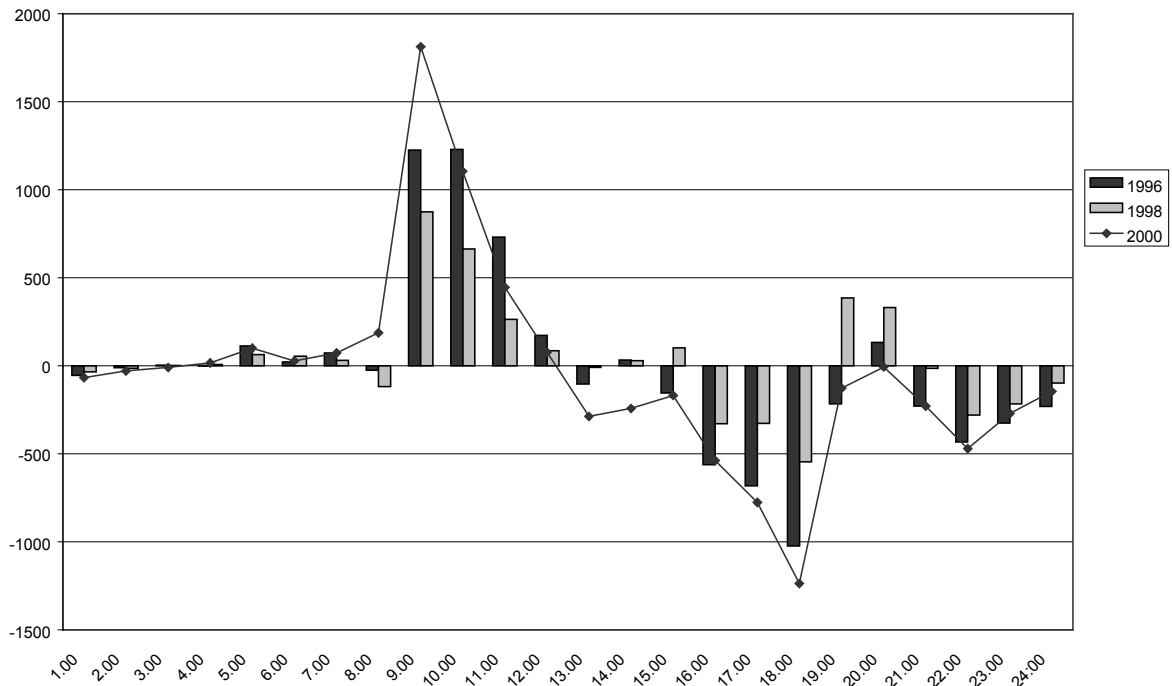
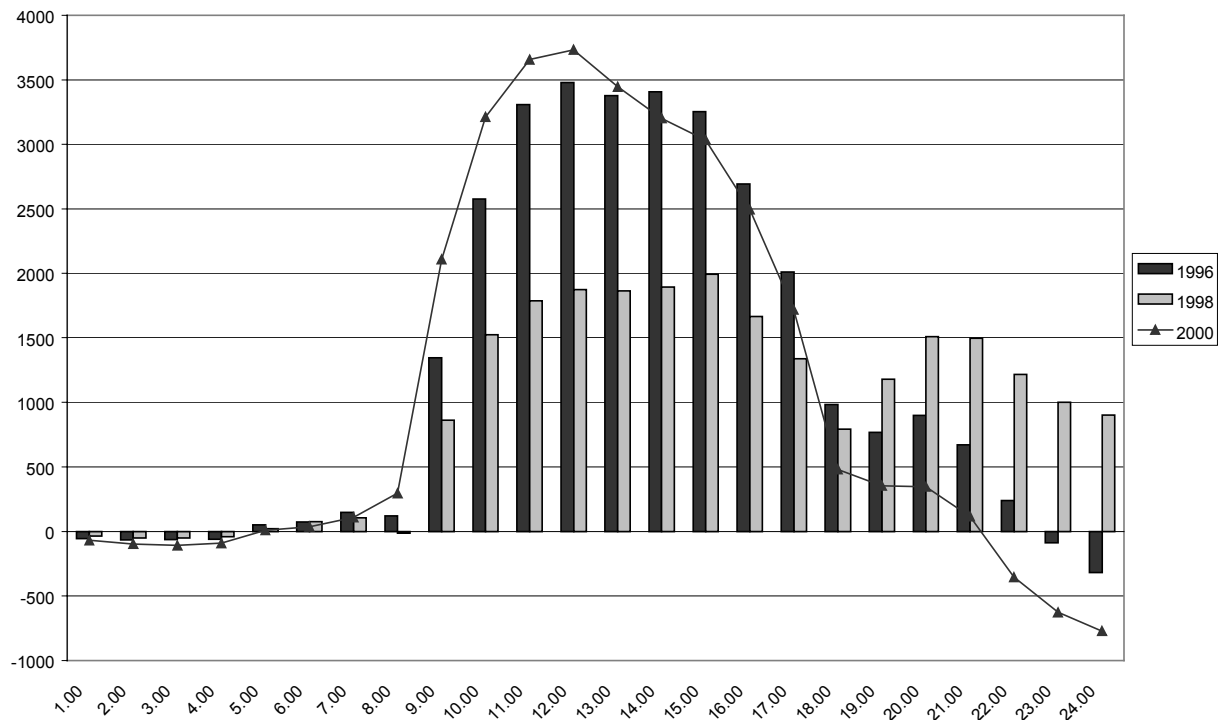


Figure 6 Net accumulation of vehicles, by hour



Patterns of Travel

The figures in Table 6 show the number of vehicles travelling into and out of the town centre by each individual site on an average week day. By examining these figures, some patterns of travel may be evident. For example, people may prefer to use a particular road inbound in the morning, but choose a different route for their outward evening journey.

Table 6 Net loss / gain in vehicles on an average weekday, by site

Site	Location	Inbound	Outbound	Net loss / gain
SU01	Lichfield Road	13529	14822	-1293
SU02	Tamworth Road	6558	6113	445
SU03	Rectory Road	6116	6370	-254
SU04	Coleshill Road	7942	7529	413
SU05	East View Road	2766	2368	398
SU06	Maney Hill Road	1154	1818	-664
SU07	Pilkington Avenue	2187	1715	472
SU08	Birmingham Road	8709	9424	-715
SU09	Jockey Road	9111	8018	1093
SU10	Braemar Road	603	561	42
SU11	Monmouth Drive	9467	10300	-833
SU13	Tudor Hill	1498	1498	0
SU14	Goldieslie Road	1326	1200	126

Mode of travel

The four manual surveys give us an indication of mode of travel data. Table 7 summarises the data recorded at the four manual sites. For the purpose of this table, 'light vehicles' includes motorcycles, cars, taxis, and Goods Vehicles less than 1.5 tonnes. The 'heavy vehicle' category includes all vehicles greater than 1.5 tonnes.

In Table 7 the percentage each vehicle category contributes to the total vehicles in that hour is given in brackets. In Table 8 these percentages are multiplied by the number of vehicles counted by the automatic counters, giving an estimate of the number of vehicles of that type crossing the cordon line in that hour.

Table 7 Summary of Inbound mode of transport data from manual surveys

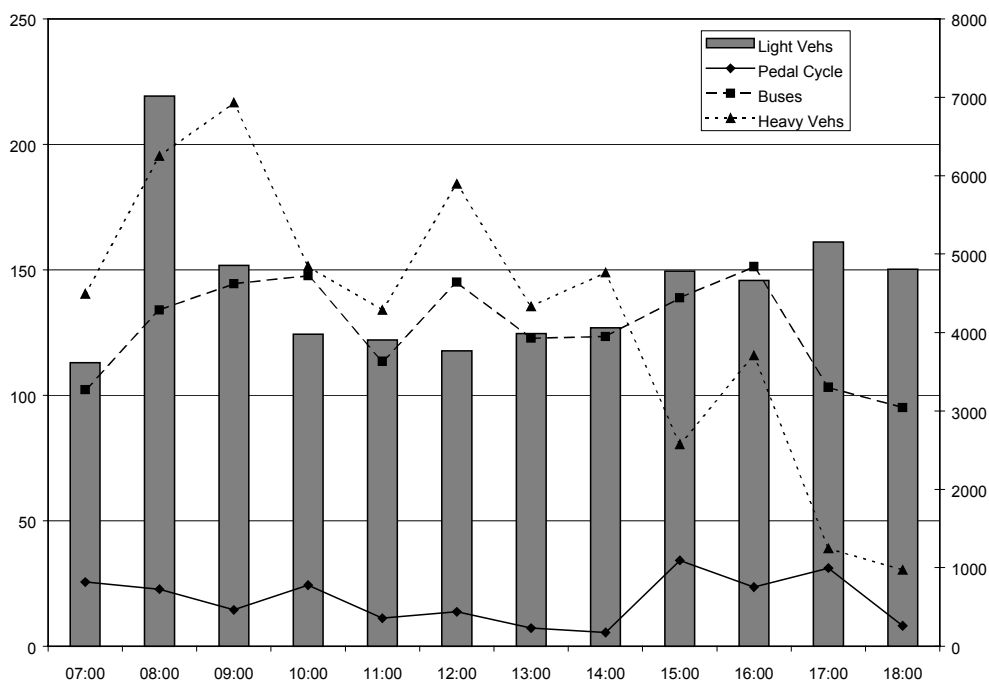
Time Starting	Total Vehicles	Pedal Cycles	Bus & Coach	Total Light Vehicles	Total Heavy Vehicles
07:00	2129	14(0.66%)	56(2.63%)	1982(93.10%)	77(3.62%)
08:00	3245	10(0.31%)	59(1.82%)	3090(95.22%)	86(2.65%)
09:00	2899	8(0.28%)	80(2.76%)	2691(92.83%)	120(4.14%)
10:00	2302	13(0.56%)	79(3.43%)	2129(92.48%)	81(3.52%)
11:00	2237	6(0.27%)	61(2.73%)	2098(93.79%)	72(3.22%)
12:00	2097	7(0.33%)	74(3.53%)	1922(91.65%)	94(4.48%)
13:00	2358	4(0.17%)	68(2.88%)	2211(93.77%)	75(3.18%)
14:00	2390	3(0.13%)	68(2.85%)	2237(93.60%)	82(3.43%)
15:00	2504	17(0.68%)	69(2.76%)	2378(94.97%)	40(1.60%)
16:00	2523	12(0.48%)	77(3.05%)	2375(94.13%)	59(2.34%)
17:00	2728	16(0.59%)	53(1.94%)	2649(97.10%)	20(0.73%)
18:00	2443	4(0.16%)	47(1.92%)	2377(97.30%)	15(0.61%)

Table 8 Estimated Inbound mode of transport figures

Time Starting	No. vehs. Counted automatically	estimated pedal cyc	estimated bus and coach	estimated light vehs.	estimated heavy vehs.
07:00	3882	26	102	3614	140
08:00	7367	23	134	7015	195
09:00	5232	14	144	4857	217
10:00	4302	24	148	3979	151
11:00	4162	11	113	3903	134
12:00	4109	14	145	3766	184
13:00	4254	7	123	3989	135
14:00	4338	5	123	4060	149
15:00	5037	34	139	4784	80
16:00	4954	24	151	4663	116
17:00	5309	31	103	5155	39
18:00	4940	8	95	4807	30
Total	57886	221	1534	54559	1592

The figures in Table 8 are represented in Figure 7. As the numbers for Light Vehicles are so much higher than the other categories, the light vehicles (bars) are read from the right hand axis and all the other categories (lines) from the left hand axis.

Figure 7 Estimated Inbound mode of transport figures



The summary for outbound modes from the manual data can be found in Table 9, with the estimated outbound in Table 10 and the graph representing these figures in Figure 8. The actual manual counts will be included in a separate appendix.

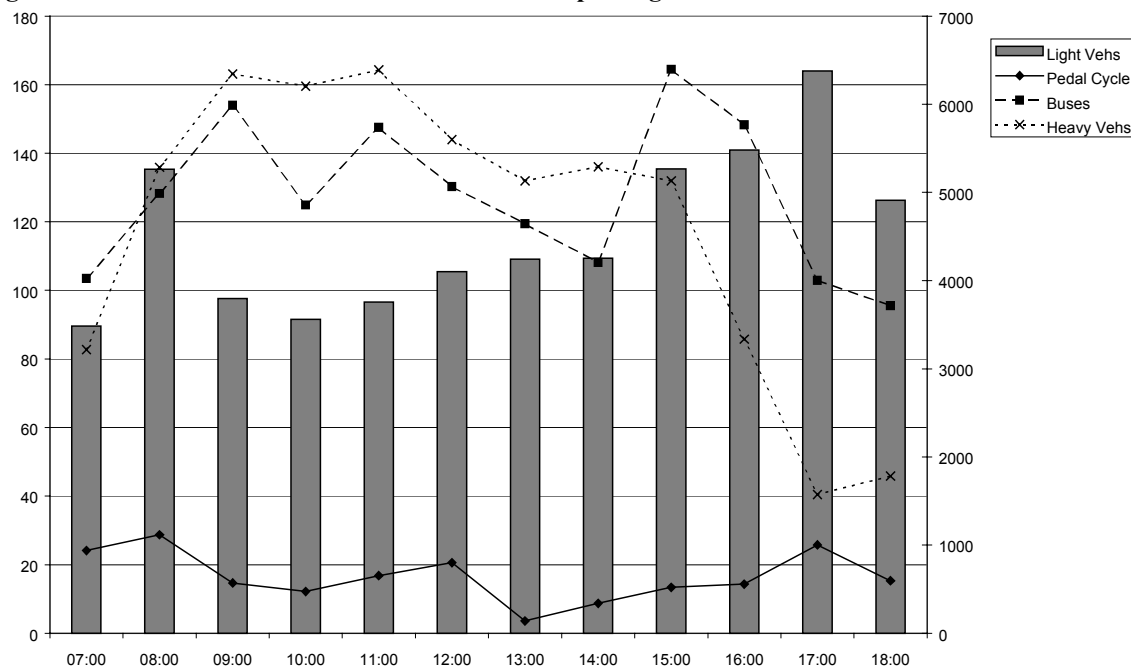
Table 9 Summary of Outbound mode of transport data from manual surveys

Time Starting	Total Vehicles	Pedal Cycles	Bus & Coach	Total Light Vehicles	Total Heavy Vehicles
07:00	2144	14(0.65%)	60(2.80%)	2022(94.31%)	48(2.24%)
08:00	2903	15(0.52%)	67(2.31%)	2750(94.73%)	71(2.45%)
09:00	2252	8(0.36%)	84(3.73%)	2071(91.96%)	89(3.95%)
10:00	2223	7(0.31%)	72(3.24%)	2052(92.31%)	92(4.14%)
11:00	2437	10(0.41%)	88(3.61%)	2241(91.96%)	98(4.02%)
12:00	2565	12(0.47%)	76(2.96%)	2393(93.29%)	84(3.27%)
13:00	2522	2(0.08%)	67(2.66%)	2379(94.33%)	74(2.93%)
14:00	2583	5(0.19%)	62(2.40%)	2438(94.39%)	78(3.02%)
15:00	2916	7(0.24%)	86(2.95%)	2754(94.44%)	69(2.37%)
16:00	3207	8(0.25%)	83(2.59%)	3068(95.67%)	48(1.50%)
17:00	3561	14(0.39%)	56(1.57%)	3469(97.42%)	22(0.62%)
18:00	2651	8(0.30%)	50(1.89%)	2569(96.91%)	24(0.91%)

Table 10 Estimated Outbound mode of transport figures

Time Starting	No. vehs. Counted automatically	estimated pedal cyc	estimated bus	estimated light vehs.	estimated heavy vehs.
07:00	3695	24	103	3485	83
08:00	5556	29	128	5263	136
09:00	4128	15	154	3796	163
10:00	3856	12	125	3559	160
11:00	4086	17	148	3757	164
12:00	4397	21	130	4102	144
13:00	4497	4	119	4242	132
14:00	4507	9	108	4254	136
15:00	5576	13	164	5266	132
16:00	5730	14	148	5482	86
17:00	6546	26	103	6377	40
18:00	5067	15	96	4910	46
Total	57641	198	1527	54494	1422

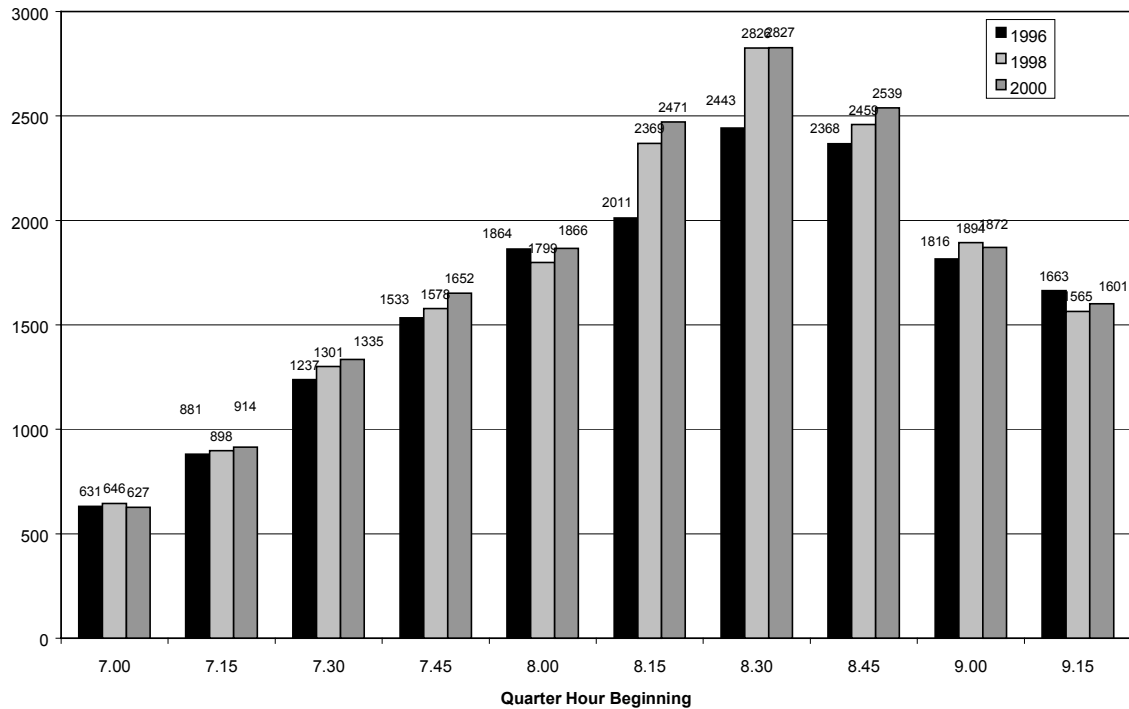
Figure 8 Estimated Outbound mode of transport figures



Occupancy Levels

Figure 9 shows estimates of people travelling by private transport into Sutton town centre during the morning peak period. These numbers have been estimated using the average occupancy figures produced from the four manual surveys and the number of vehicles recorded by automatic machines per time period.

Figure 9 Estimates of numbers of people travelling Inbound Morning Peak Period



As four manuals have been undertaken by quarter hour for the hours 07.30 to 09.30 and 10.00 to 12.00 (inbound) the average occupancy factors from these four counts can be applied to the number of vehicles automatically counted (minus the number of buses given in Appendix 2) to give an estimate of the numbers of people using private transport. Using this method, the estimate of people travelling inbound during the hours 07.30 to 09.30 is 17,238.

Public Transport Data.

Public Transport data was collected by Centro for the time period 07.00 to 12.30. A summary of the analysis is shown below.

Table 11. Inbound and Outbound Trips by Public Transport Into Sutton Coldfield Town Centre.

		Weekday		Weekday		Weekday	
		0730-0930		1000-1200		0700-1230	
		Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Total by Bus	1996	3,285	2,011	2,845	1,861	7,521	4,973
	1998	3,306	1,601	2,496	1,933	7,269	4,784
	2000	3,233	1,087	2,445	1,695	7,031	3,765
Total by Rail	1996	374	369	201	152	682	654
	1998	410	439	166	161	679	706
	2000						
Total by Public Transport	1996	3,659	2,380	3,046	2,013	8,203	5,627
	1998	3,716	2,040	2,662	2,094	7,948	5,490
	2000						

Source: jdt / CENTRO