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CHRISTCHURCH TRAFFIC SCREENLINE SURVEY 1988

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CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. SUMMARY

The Traffic Screenline Survey has been conducted in March annually since 1986. Morning peak hour traffic at 46 railway crossings throughout Christchurch is recorded by vehicle type ("mode"). The following summarises the conclusions of the 1988 survey:

(i) The composition of morning peak hour traffic in Christchurch has not changed much over the last two years. The survey recorded over 40,000 vehicles and pedestrians as follows:

Cars	67%
Cycles	13%
Light Trade Vehicles	10%
Other	10%

(ii) The road hierarchy is generally performing as planned. Average peak hour motor vehicle volumes for the roads sampled were:

Major Arterials	1700
Minor Arterials	950
Local Distributors	450
Locals	100

(iii) Cycle flows of about 160 per road in the morning peak hour are found on major and minor arterial roads and local distributor roads. Lower flows on arterial roads would be desirable.

(iv) Existing policies and proposals in the Canterbury Urban Transport Operational Plan to improve the efficiency of the road and cycle route networks are supported by the survey.

(v) Encouraging cycling, bus use and ride sharing, which can also increase the efficiency of the arterial road network, are included in the Operational Plan too and are supported by the survey.

(vi) The Traffic Screenline Survey is now well established. The survey should be done every five years to coincide with the National Census.

2. INTRODUCTION

The Traffic Screenline Survey records morning peak hour traffic at 46 railway crossings throughout Christchurch . Each vehicle type ("mode") is recorded separately. The railway tracks form a screenline in the shape of a large tee (see Figure 1), giving a wide sample of Christchurch suburbs.

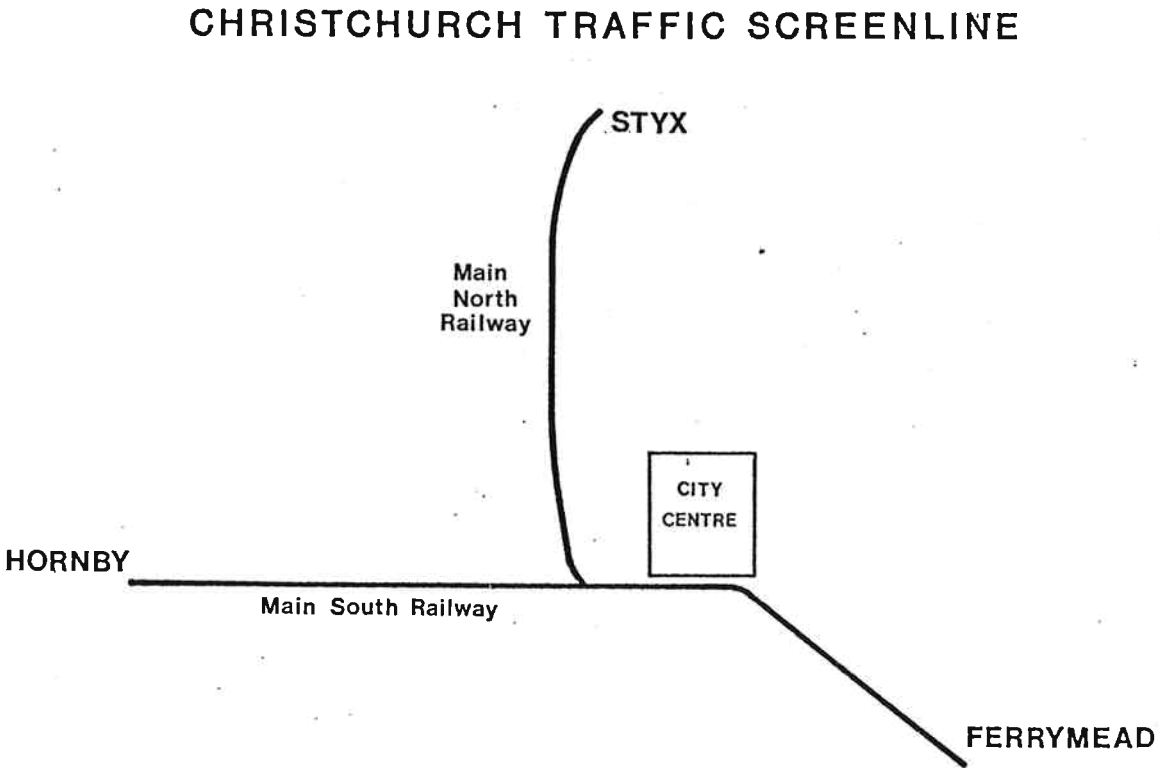


FIGURE 1 - CHRISTCHURCH TRAFFIC SCREENLINE

The Traffic Screenline Survey has been done annually in March since 1986. A similar survey (as part of the National Urban Transportation Survey) was conducted in 1978, although it concentrated on arterial roads. Comparisons can now be made of arterial road traffic changes over the last decade. The 1978 survey was done in August. Since 1986, surveys have been done in March when traffic patterns are less likely to be affected by holidays or bad weather. To permit valid comparisons between the 1978 and the later surveys, a survey was also done in August 1985. Analysis in this report concentrates on the March surveys (1986-1988).

The previous surveys are documented in Canterbury United Council reports as follows:

August 1985	Report 343
March 1986	Report 367
March 1987	Report 398

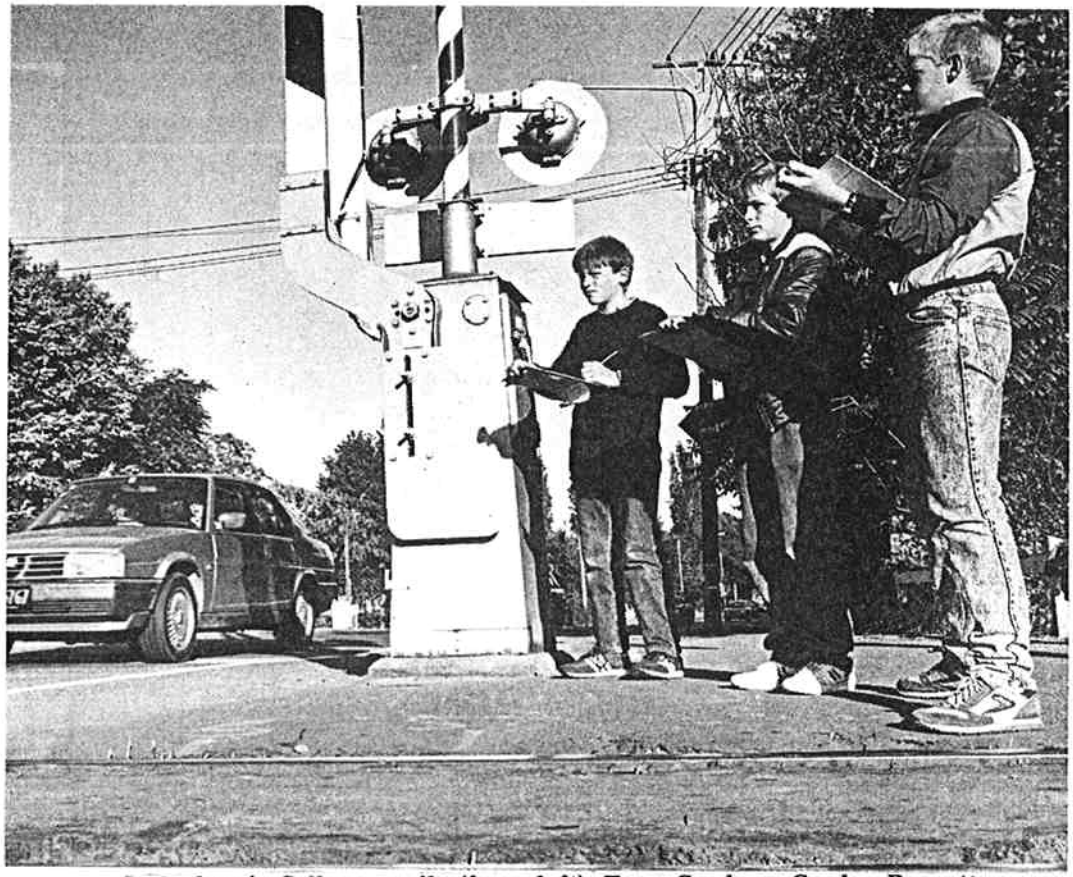
Each survey has allowed refinements in techniques over previous surveys, although the fundamental method and purpose have remained unchanged. Morning peak hour traffic across a representative sample of Christchurch roads (and pedestrian/cycle paths) was counted on a typical weekday. The survey method, mode definitions and count locations are defined in the Instructions to Surveyors (see Appendix 1).

All modes of travel (including pedestrians and cyclists) were counted. The survey began at 7.30 a.m. and traffic flows were recorded for each 15 minute period until 8.45 a.m. This year's survey was held on Tuesday, 22 March. The weather was fine and calm.

The survey was planned, coordinated and analysed by Canterbury United Council staff. About 100 students, working generally in pairs, carried out the survey by standing on the roadside at railway crossings. Figure 2 shows three students surveying traffic at Fendalton Road. The students involved in the survey attend the following schools:

Linwood High School
Riccarton High School
St. Andrews College

The cooperation of the schools and teachers and the diligence and enthusiasm of their students in carrying out the survey are gratefully acknowledged.



St Andrew's College pupils (from left), Tony Gardner, Gordon Barnett and Reon Hulme, all aged 14, survey traffic at the railway level-crossing on Fendalton Road this week. About 100 pupils from the college, Linwood High School and Riccarton High School, helped collect information on vehicles and pedestrians at central-city level-crossings during the morning peak traffic period. The survey results will go to the Canterbury United Council to help with transport planning. During last year's survey, about 40,000 vehicles and pedestrians were recorded.

FIGURE 2 - SURVEYORS AT FENDALTON ROAD

(Photo and caption courtesy of "The Press", 24 March 1988)

This report aims to:

(i) Record traffic flows for each mode at each survey location.

(ii) Record other traffic counts which complement the screenline survey.

(iii) Analyse the data in terms of traffic composition ("modal split"), road type, vehicle occupancy and traffic growth.

(iv) Consider the implications for regional and district transport planning.

The Traffic Screenline Survey is part of the United Council's ongoing transport monitoring work prescribed in the Canterbury Regional Planning Scheme. This report will be a source document for public bodies and will also be of interest to a wider audience.

3. TRAFFIC COMPOSITION AND ROAD TYPE

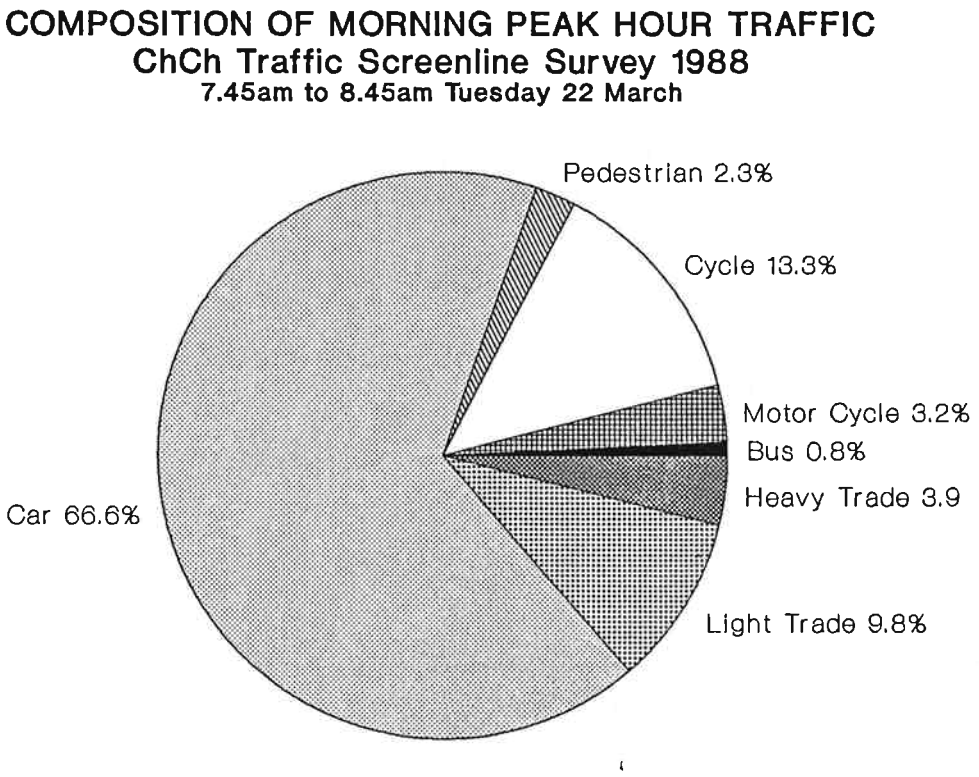


FIGURE 3 - COMPOSITION OF MORNING PEAK HOUR TRAFFIC

Figure 3 shows the composition of morning peak hour traffic recorded during the survey. Cars and light trade vehicles comprised 76% of traffic, while cycles made up 13% of the total flow. Heavy trade vehicles, buses, motorcycles, and pedestrians accounted for about 10% of traffic in total.

Longer trips are more likely to cross the survey screenline than shorter ones, so that pedestrian and cycle trips are likely to be under-reported by a survey of this type. Put another way, the survey represents vehicle distance rather than vehicle trips. Cycle and pedestrian trips, which are on average shorter than motor vehicle trips, would comprise more than 2.3% and 13.3% respectively of morning peak trips.

Data for this figure are found in Table 2. (Light trade vehicles are distinguished from heavy trade vehicles by having only four wheels. More complete definitions for these and other modes are given in the Instructions to Surveyors, in Appendix 1.)

As in previous years, the morning peak hour was found to occur from 7.45 a.m. to 8.45 a.m. Detailed analysis of temporal traffic variation is provided in Section 5.

AVERAGE TRAFFIC FLOWS BY ROAD TYPE
Cycles and Motor Vehicles
ChCh Traffic Screenline Survey 1988

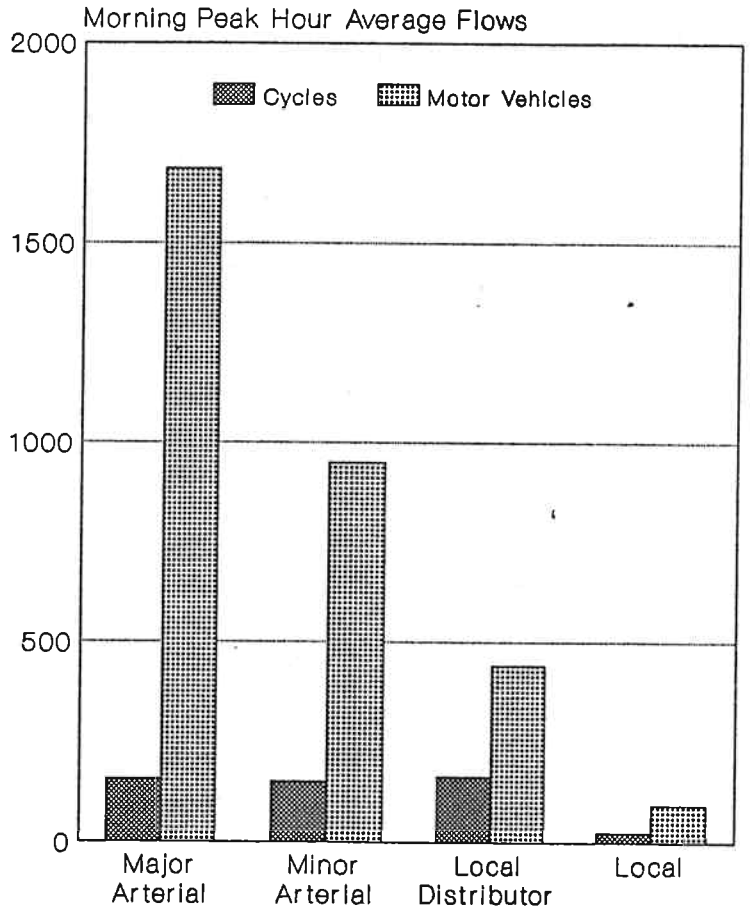


FIGURE 4 - AVERAGE TRAFFIC FLOWS BY ROAD TYPE

In Figure 4 the morning peak hour characteristics of the four road types are compared. Major arterial roads (with peak hour motor vehicle flows averaging nearly 1,700) carry almost twice as much traffic as minor arterial roads. Local distributor roads and local roads carry motor vehicle volumes which reflect their role in the road network hierarchy.

The volumes of cycle traffic, however, are similar for the three busiest road types, with flows averaging about 160. The data for this figure are recorded in Table 1.

MORNING PEAK HOUR TRAFFIC FLOWS - SUMMARY
(By road type for motor vehicles and cycles)

Road Type	Number of Roads	Total Flow		Average Flow	
		Motor Vehicle	Cycle	Motor Vehicle	Cycle
Major Arterial	11	18553	1727	1687	157
Minor Arterial	12	11458	1806	955	151
Local Distributor	11	4869	1812	443	165
Local	7	663	176	95	25
Ped/Cycle Crossing	5		107		21
Total	46	35543	5628		

TABLE 1 - MORNING PEAK HOUR TRAFFIC FLOWS - SUMMARY

Table 1 shows motor vehicle and cycle flows recorded in the peak hour of the Traffic Screenline Survey. Both total flows and average flows for each road type are shown. Motor vehicle flows include all modes except pedestrians and cyclists. The number of crossings of each road type is also shown in the table.

Thus the road hierarchy is functioning as intended with the heaviest volumes of motorised traffic occurring on roads designed for this purpose. By contrast, cycle traffic volumes on arterial roads remain at unacceptably high levels, reflecting a lack of attractive, alternative cycle routes.

Table 2 shows the numbers of vehicles (of each mode) and pedestrians recorded in the peak hour of the survey for each road type. Total numbers and percentages for each mode are also shown. Over 40,000 vehicles were recorded during the peak hour of the survey, an average of over 400 per surveyor.

MORNING PEAK HOUR TRAFFIC FLOWS - DATA
(By road type for each mode)

Road Type	Car	Light Trade	Heavy Trade	Bus	Motor Cycle	Cycle	Ped	Total
Major Arterial	14758	2039	1005	136	615	1727	171	20451
Minor Arterial	9050	1358	379	151	520	1806	343	13607
Local Distributor	3757	646	224	42	200	1812	367	7048
Local	482	89	57	14	21	176	43	882
Ped/Cycle Crossing						107	66	173
Total	28047	4132	1665	343	1356	5628	990	42161
Percentages	66.5%	9.8%	3.9%	.8%	3.2%	13.3%	2.3%	100.0%

TABLE 2 - MORNING PEAK HOUR TRAFFIC FLOWS - DATA

Table 3 shows the average flow by road type for each mode. The percentage figures are the proportion of a particular road type's traffic which is that mode. For example, heavy trade vehicles comprise 4.9% of major arterial road traffic while they comprise 6.5% of local road traffic. This apparently high figure for trucks on local roads is explained by Chapmans Road, in an industrial area, where two thirds of all trucks on local roads were recorded. Trucks comprise only 2.4% of traffic on the other local roads.

AVERAGE MORNING PEAK HOUR TRAFFIC FLOWS
(By road type for each mode)

Road Type	Car	Light Trade	Heavy Trade	Bus	Motor Cycle	Cycle	Ped	Motor Vehicle
Major Art'l	1342	185	91	12	56	157	16	1687
	72%	10.0%	4.9%	.7%	3.0%	8.4%	.8%	91%
Minor Art'l	754	113	32	13	43	151	29	955
	67%	10.0%	2.8%	1.1%	3.8%	13.3%	2.5%	84%
Local Dist.	342	59	20	4	18	165	33	443
	53%	9.2%	3.2%	.6%	2.8%	25.7%	5.2%	69%
Local	69	13	8	2	3	25	6	95
	55%	10.1%	6.5%	1.6%	2.4%	20.0%	4.9%	75%
Ped/Cycle						21	13	
						62%	38%	

TABLE 3 - AVERAGE MORNING PEAK HOUR TRAFFIC FLOWS

4. NETWORK PLANNING IMPLICATIONS

In Table 4 the 46 survey locations are grouped according to road type and arranged in decreasing order of motor vehicle traffic. This allows a review of individual roads in terms of their role within the road and cycle route networks.

Amongst major arterial roads, the matters of most concern are some large cycle flows. Fendalton Road carried 416 cycles in the morning peak hour and three other roads carried more than two hundred. Alternative cycle routes are needed to entice cyclists away from these roads.

Tunnel Road (with only 338 motor vehicles in the peak hour) seems out of place as a major arterial but this status is warranted to preserve its capacity as the strategic link between Christchurch and Lyttelton.

Five minor arterial roads carried more than 200 cycles in the peak hour, while motor vehicle volumes on these same roads exceeded 1000. Relief for cyclists by parallel cycle routes is required for these roads too.

Curries Road, with only 93 motor vehicles should be considered for reclassification as a local road now that plans to bridge the Heathcote River and Christchurch-Lyttelton railway line have been abandoned.

Of the local distributor roads, Kilmarnock Street stands out as by far the busiest with 1,144 motor vehicles and 456 cycles. Only three minor arterial roads of the 12 surveyed carried more total traffic. It should not be reclassified as a minor arterial road and motorised traffic needs to be discouraged from using it so that it more properly functions as a local distributor road. Improvements planned for Fendalton Road and the construction of the Matai Street cycle underpass will reduce both motor vehicle and cycle volumes on Kilmarnock Street.

MOTOR VEHICLE AND CYCLE FLOWS
(By road type, in order of motor vehicle traffic volume)

Road Type	Road Number#	Road Name	Motor Vehicle	Cycle
Major Arterial	3	Main South	2618	140
"	4	Curletts	2613	26
"	16	Waltham	2374	229
"	27	Blenheim	2062	64
"	26	Ferrymead Bridge	1878	88
"	19	Ensors	1768	149
"	31	Fendalton	1713	416
"	43	Main North	1291	80
"	2	Carmen	1001	242
"	40	Northcote	897	291
"	25	Tunnel	338	2
Minor Arterial	14	Colombo	1515	261
"	28	Riccarton	1482	231
"	34	Wairakei	1419	325
"	8	Lincoln	1352	138
"	33	Glandovey	1116	302
"	7	Clarence	1004	208
"	13	Durham	967	23
"	37	Harewood	922	143
"	35	Blighs	657	111
"	12	Montreal	513	31
"	23	Garlands	418	25
"		Curries *	93	8
Local Distributor	29	Kilmarnock	1144	456
"	11	Antigua	712	228
"	10	Selwyn	545	98
"	18	Wilsons	525	71
"	6	Matipo	518	71
"	5	Annex	460	217
"	38	Langdons	278	216
"	1	Parker	224	159
"	39	Sawyers Arms	197	117
"	42	Sturrocks	138	75
"	41	Tuckers	128	104
Local	9	Grove	216	35
"	32	Wroxton	107	67
"	24	Chapmans	105	3
"	22	Clarendon	94	29
"		Halswell Jnctn *	84	23
"	21	Richardson	48	15
"		Barnes *	9	4
Ped/Cycle Crossing	15	Mádras	0	16
"	17	Falsgrave	0	15
"	20	Judge	0	39
"	30	Matai	0	8
"	36	Bellvue	0	29

See maps in Appendix 1. * Estimated from previous surveys.

TABLE 4 - MOTOR VEHICLE AND CYCLE FLOWS

Amongst local roads, Chapmans Road seems to be acting as a local distributor and could be considered for reclassification.

Kilmarnock Street, and to a lesser extent, Antigua Street, are officially designated as cycle routes, but high current motor vehicle volumes undermine their potential for providing safe alternative routes to the arterial road network.

The only other formal cycle route surveyed was Annex Road. With 217 cycles and 460 motor vehicles it is providing a well-used cycling facility without too much interference from motor vehicles. Langdons Road, Parker Street, Sawyers Arms Road and Tuckers Road could be considered for cycle route status, as each has significant cycle traffic and modest motor vehicle flows.

The Traffic Screenline Survey provides useful information on the roads it includes, and samples enough roads to allow generalisations about road types. Decisions on the status of individual roads must be based on consideration of land use and traffic level of service as well as traffic volumes.