

CBD PASSENGER SURVEY

AUGUST 1977

MELBOURNE AND METROPOLITAN TRAMWAYS BOARD

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## CBD PASSENGER SURVEY - AUGUST 1977

### 1. INTRODUCTION :

As part of the Planning Branch data collection programme it was proposed that a survey be conducted to provide origin/destination information on passengers entering the Central Business District (CBD) during the morning peak period.

The survey was conducted during the two week period from Friday, 12th August, 1977. As this was the university holiday period, students were employed to carry out the survey and collate the data collected. Approximately thirty students were needed to cover the initial morning peak survey from 7.00 to 10.00 a.m. During the off-peak they were engaged in load checks within the city and in vetting and coding the survey data as the replies came in.

The survey was conducted in two parts : the first consisting of the distribution of pre-paid postal reply cards (Figure 1) to all passengers on trams and buses travelling within the first section outside the CBD (Section 2; the 1st section being the CBD); the second part involved cordon counts at the points of entry to the CBD to relate survey replies to actual passenger loads on each route.

Approximately one-third of the trams on all routes entering the CBD were surveyed between 7.00 and 10.00 a.m. 13,883 cards were handed out over a ten day period. Each day specific routes were covered. Appendix I and II show which routes were covered each day and how routes were amalgamated for coding purposes. 6,015 replies were received giving a better than expected return of 43.3%. The cordon counts were done in conjunction with the routes surveyed. From the cordon counts, an estimated 32,062 passengers enter the CBD during the morning peak. The replies represent a sample rate of 19%.

As the replies were received, they were vetted for unintelligible information and coded so that the information collected could be sorted and grouped by computer to highlight meaningful relationships. Using the cordon count results, the survey replies were "factored-up" (by routes, by time period) to give totals for all passengers entering the CBD during the morning peak (see Appendix III).

**Melbourne and Metropolitan Tramways Board  
PASSENGER SURVEY**

PLEASE COMPLETE THIS CARD DURING THE DAY AND RETURN THE TEAR-OFF PORTION BY POST (NO STAMP IS NECESSARY). THE QUESTIONS RELATE TO YOUR JOURNEY THIS MORNING.  
THANK YOU.

At which stop or cross street did you board this tram/bus?

How did you arrive at your boarding stop? (If "Other", please specify.)

Approximately how many minutes did it take for you to get from your home to your boarding stop?

Why did you make this trip? (If "Other", please specify.)

How did you complete your journey after leaving this tram/bus? Tick more than one box if necessary. (If "Other", please specify.)

If, after leaving this tram/bus, you caught ANOTHER tram/bus, in which street did you catch it?

ON THE MAP PLEASE MARK THE ROUTE YOU TOOK THROUGH THE CITY THIS MORNING TO REACH YOUR FINAL DESTINATION.

INDICATE YOUR FINAL DESTINATION WITH A CROSS (X)—E.G., IF "WORK" TRIP, MARK WORK PLACE; IF "SHOPPING" TRIP, MARK FIRST SHOP VISITED.

IF YOUR DESTINATION IS NOT ON THE MAP, TRACE YOUR ROUTE TO THE EDGE OF THE MAP AND WRITE THE SUBURB WHERE YOUR TRIP FINISHED IN THE SPACE PROVIDED.

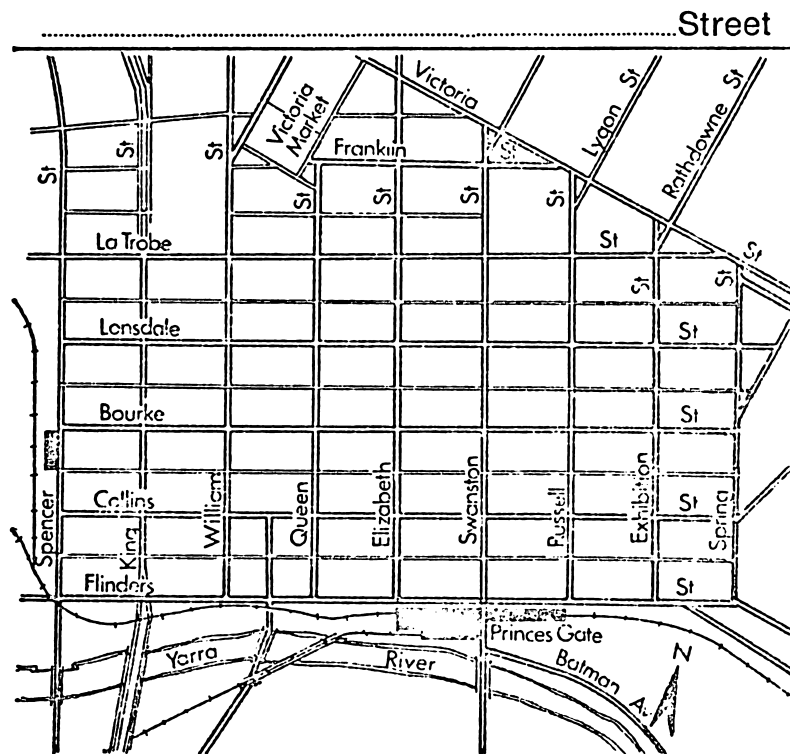
SERIAL NUMBER No 02210

Walk  Tram  Bus   
Car passenger  Car driver   
Other.....

.....minutes

Work  School  Shopping   
Recreation  Other.....

Walk  Tram  Bus   
Train  Car   
Other.....



Suburb.....

Figure 1.

Survey cards were designed to obtain certain basic travel information about MMTB passengers on a normal weekday :

- how MMTB patrons arrive at their tram/bus boarding stop
- how long it takes to reach their boarding stop
- why they make the journey
- how they complete their journey
- where they go in the CBD or beyond it.

The serial numbers of the survey cards allowed the information to be related to time and route.

Many passengers wrote comments on the survey cards related to service, fares, operation of the system etc., which have been set out in Appendix XII at the back.

The following report contains a summary of the results of the survey and an analysis of the information collected.



2. SUMMARY OF RESULTS :

The Melbourne and Metropolitan Tramways Board system collects most of its CBD-destination passengers from within 8 kilometres of the city centre (68%). Trams bring in 87% of all morning peak passengers while 13% arrive by bus.

75% of all passengers surveyed walk to their boarding stop while 6% use another form of public transport, and 19% arrive at their stop by car. 70% of all passengers live within 800 metres of a tram route.

Work trips comprise 89% of all CBD -bound journeys between 7-10 a.m. 84% of all trips end within the CBD. Of the 16% with destinations beyond the CBD the majority have final destinations within four areas : North Melbourne/Carlton, South Melbourne, St.Kilda Road and Fitzroy/ Collingwood.

Flinders Street trams carry 8% of all morning peak patronage. Collins and Bourke Streets carry 10% each and Elizabeth Street and Swanston Street carry 16% and 28% respectively. Russell Street buses bring in 9% of the system's CBD commuters.

82% of passengers walk from their tram or bus to their final destination. Another 14% transfer to another route within the CBD.

Passengers exercise a degree of choice of travel route as shown by the distribution of passenger destinations within the CBD. Most work trips end within 1 block either side of the chosen tram/bus route or of a perpendicular route. 42% of CBD work trips end within the six blocks bound by King Street, Lt. Bourke Street, Swanston Street and Flinders Lane (this area contains 41% of all CBD employment (1972 figures)). Average walking time within the CBD is 2.8 minutes, or  $1\frac{1}{4}$  city blocks.



### 3. ANALYSIS OF DATA.

#### 3.1 Boarding Section -

The first question on the survey card requested passengers to indicate where he/she boarded the tram or bus that morning. The replies were coded according to the standard fare sections of each route. (A fare section is approximately 1.6 - 1.8 km).

The MMTB system draws nearly 68 percent of its CBD-bound passengers from within the first 5 sections of the city - or approximately 8 kilometres radius of the city centre. 90 percent come from within 7 sections or 11 kilometres (Table 1). Bus routes are, on the average, longer than tram routes and incorporate more sections. The variation in the sectional distribution of passengers (Table 1, Figure 2) is accounted for by this difference in length of route as buses draw a certain percentage of their patronage from these outer sections. Bus passengers account for 13 percent of the MMTB's peak morning patronage.

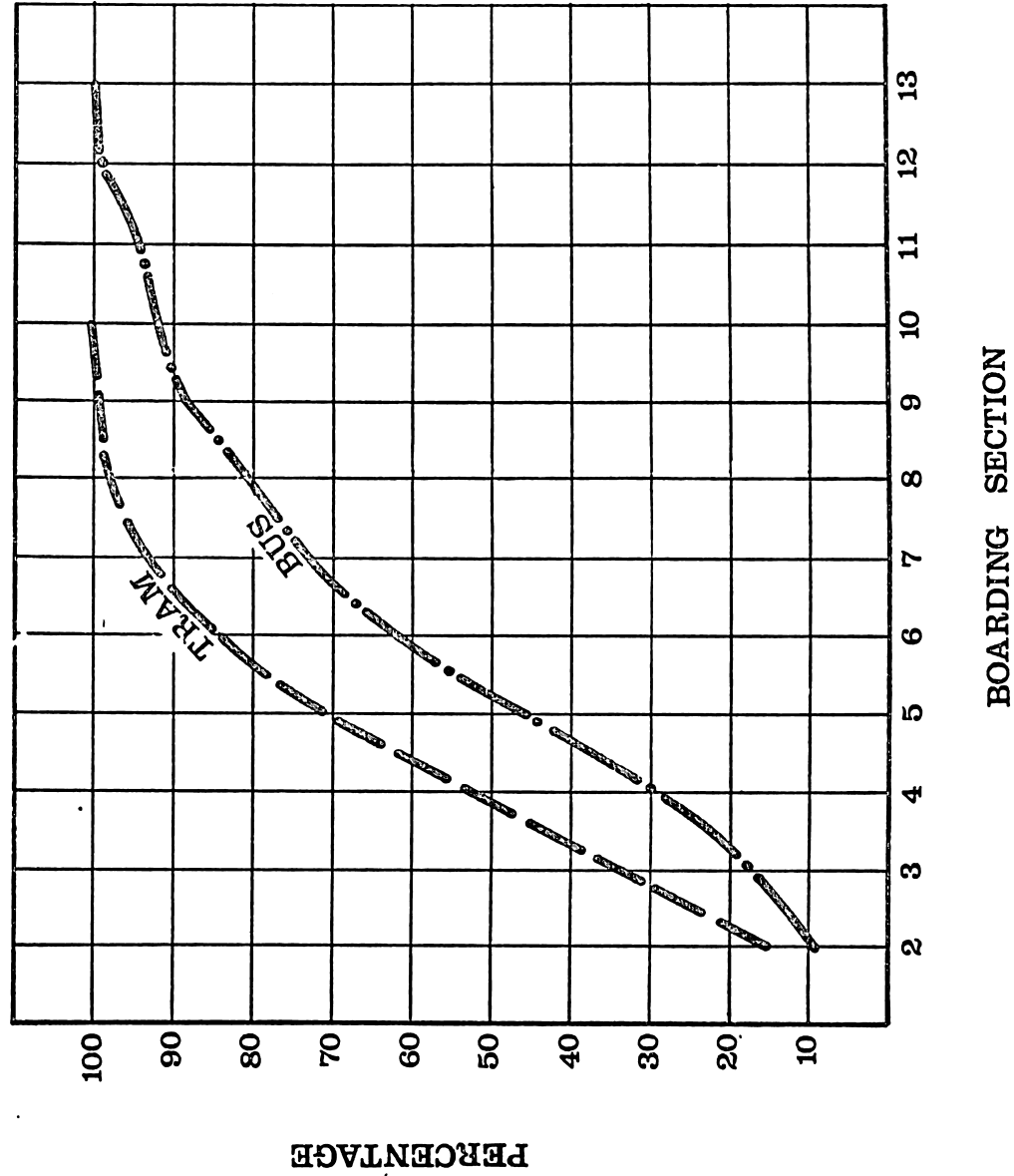
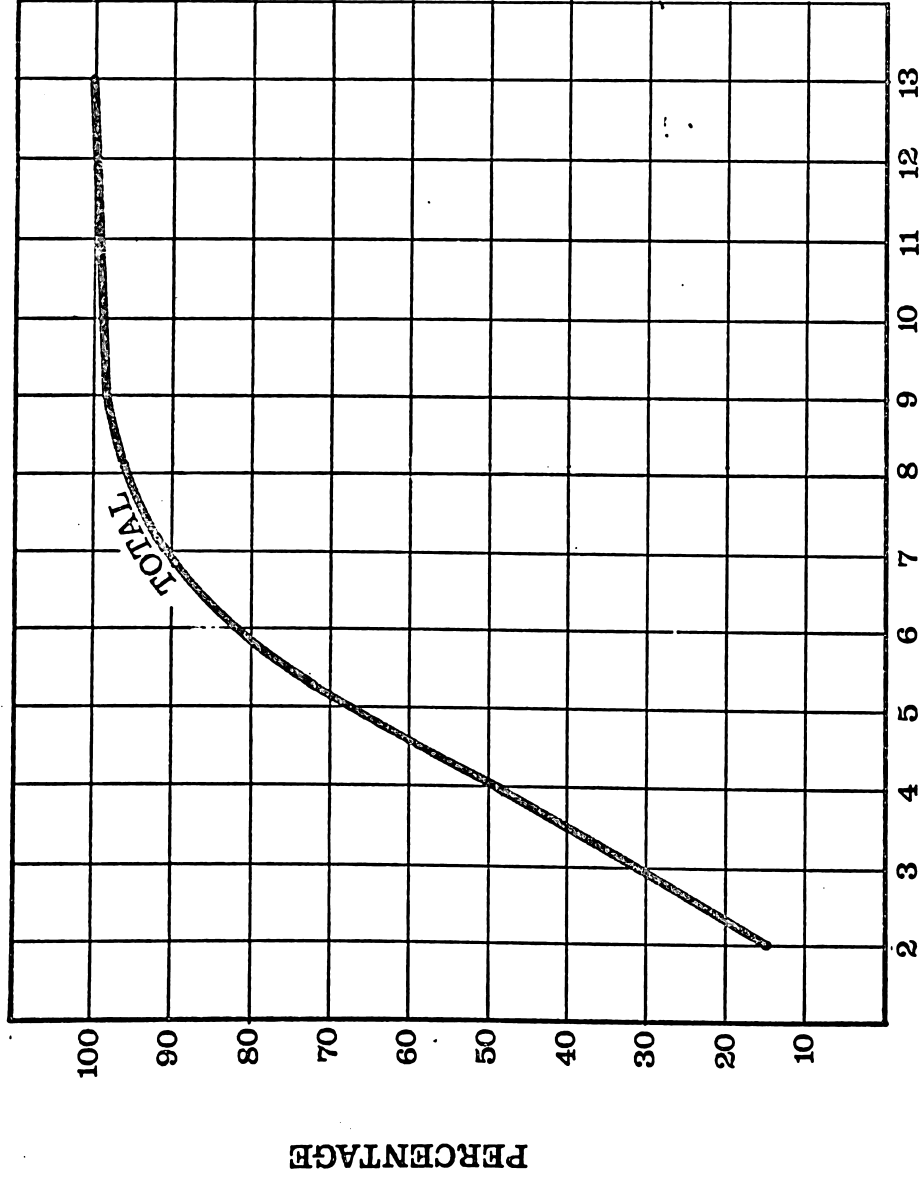
Figure 3 shows the approximate area covered by each section of the MMTB network.

MODE :							
		TRAM PASS.		BUS PASS.		TOTAL PASS.	
SECTION :	(from the CBD)	%	*	%	*	%	*
2		15.5		9.1		14.7	
3		17.7	33.2	7.9	17.0	16.4	31.1
4		18.8	52.0	12.8	29.8	18.0	49.1
5		19.1	71.1	15.5	45.3	18.6	67.7
6		13.2	84.3	16.0	61.3	13.6	81.3
7		9.1	93.4	10.9	72.2	9.3	90.6
8		5.0	98.4	8.9	81.1	5.5	96.1
9		1.5	99.9	7.7	88.8	2.3	98.4
10		.1	100.0	3.0	91.8	.5	98.9
11		-		2.9	94.7	.4	99.3
12		-		4.4	99.1	.6	99.9
13		-		.9	100.0	.1	100.0
		100%		100%		100%	
		( of total Pass.)	(	( of total Pass.)	)		

\* Cumulative %

TABLE 1. CBD PASSENGER SURVEY AUGUST 1977  
DISTRIBUTION OF PASSENGER BOARDING SECTIONS



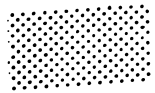


CUMULATIVE DISTRIBUTION OF BOARDING SECTIONS  
 C.B.D. Passenger Survey August 1977



5)

M.M.T.B. SECTION



68%

CUMULATIVE PERCENTAGE  
OF PASSENGERS AT BOARDING SECTIONS

Figure 3.

### 3.2 Access Mode/Time and Boarding Stop -

The passengers were next asked how they arrived at their boarding stop. The options are listed below with the passenger response, and the average travel time to the boarding stop for each mode :

Access Mode	Tram Pass. (%)	Bus Pass. (%)	Total (%)
Walk	75	75	75
Tram	2	2	2
Bus	3	7	4
Car Passenger	9	10	9
Car Driver	11	6	10

TABLE 2. ACCESS MODE TO TRAM AND BUS.

Access Mode	Average Access Time
Walk	5 mins.
Tram	15 mins.
Bus	15 mins.
Car Passengers	15 mins.
Car Driver	20 mins.
Ave. Total Modes	8 mins.

TABLE 3. AVERAGE ACCESS TIME.

Walkers predominate in every boarding section except section 2 (Table 4). Car passengers represent a larger proportion in the sections furthest from the CBD. These sections correspond to the termini of the various routes.

Table 5 shows that 94% of these passengers walk less than 10 minutes to reach their stop with 74% taking 5 minutes or less. Considering that walkers represent the largest portion of morning patronage, the MMTB system draws 70% of their CBD bound travellers from a radius of .8 kilometres around routes. This finding is supported by evidence from other arrival time studies conducted along the Coburg tram route and Bulleen bus route.



Mode	SECTION												Total	
	2	3	4	5	6	7	8	9	10	11	12	13	%	#
Walk	43	76	81	82	82	79	86	85	84	71	66	57	75	23,845
Tram	2	2	2	2	3	4	3	1					2	666
Bus	1	4	3	7	5	7	3	6	5		2		4	1,206
Car Passenger	17	9	8	6	7	10	9	5		29	27	43	9	2,969
Car Driver	36	13	6	3	3	4	2	4	1		4		10	3,126

TABLE 4. MODE OF ARRIVAL - AS % OF PASSENGER AT EACH SECTION.

Access Mode	Time in Mins.	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 0	Mean (mins.)	Total # of Passengers
	%	%	%	%	%	%	%	%	%	%	%	%	%			
Walk	73.6	20.3	3.7	.7	.6	.5	.3	.2	.1				.1		5	23,845
Tram	33.2	16.8	14.7	9.9	4.8	6.9	3.6	1.4	6.2	.7			1.9		15	666
Bus	16.4	23.6	23.8	12.0	7.0	6.7	3.6	2.3	3.0	.3			1.2		15	1,206
Car Passenger	25	18.7	14.7	13.8	5.9	9.7	4.6	2.8	2.7	.8		.1	.6	.4	15	2,969
Car Driver	9.2	11.6	17.1	22.8	10.2	13.0	4.2	3.7	3.5	1.1		.5	2.1	1.1	20	3,216
TOTAL	59.5	19.1	7.0	4.8	2.4	3.0	1.3	.9	1.0	.2		.1	.4	.2	8	(166) 32,067

TABLE 5. TIME TO BOARDING STOP -

Car drivers and car passengers account for 53% of all passengers boarding in section 2 (see Table 4). While overall journey times for those arriving at their boarding stop by car is longer than for any other mode, the average times (15 mins. car passengers, 20 mins. car drivers) still indicate that most (74%) of these car-linked trips originate from within the MMTB system - e.g. within a radius of 9-11 kilometres of the city centre.

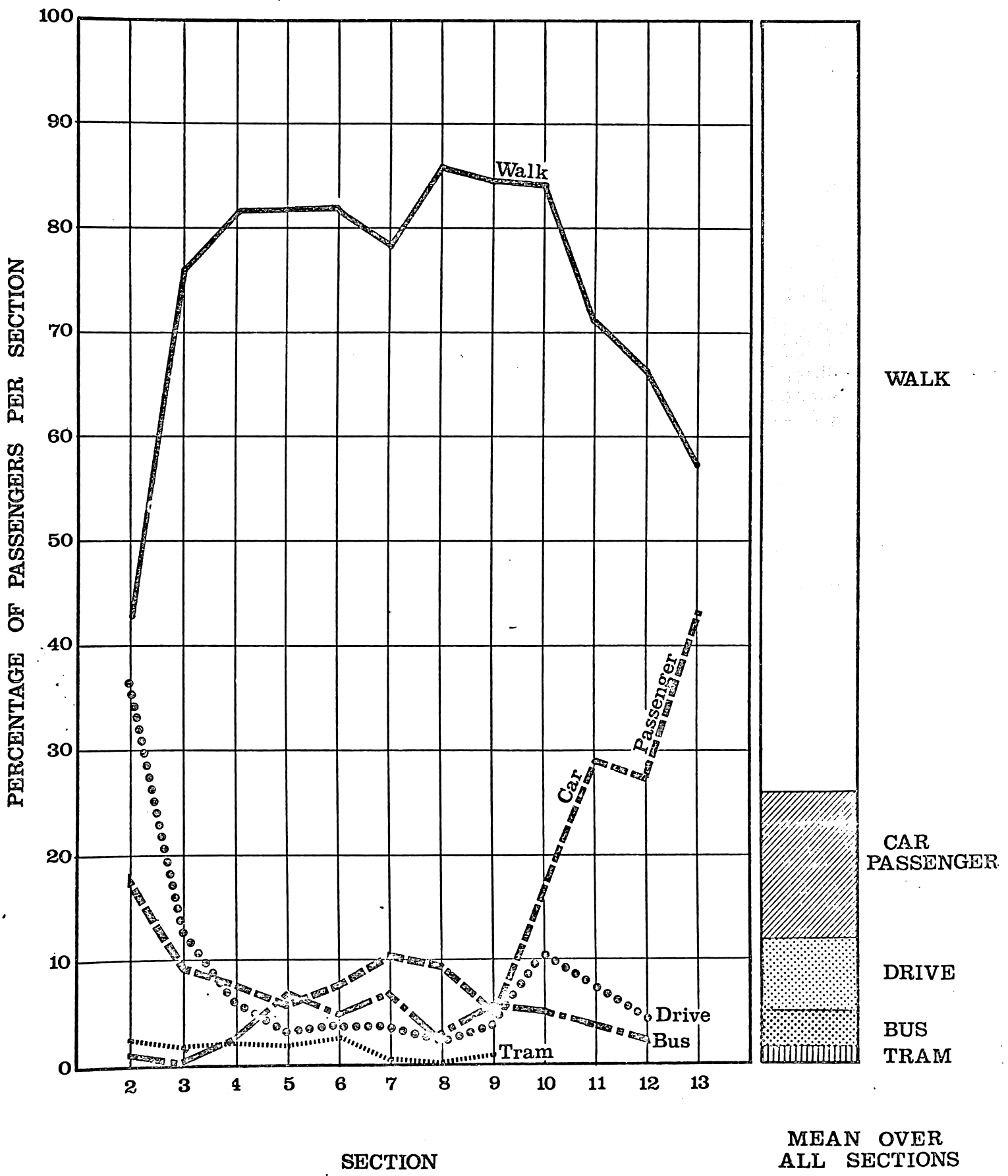
Figure 4 shows this comparison of arrival modes by boarding section.

There is considerable variation in the arrival methods used by passengers in different geographical areas of the city. (See Appendices III - VIII).

While cross-town and outer-urban private bus routes comprehensively cover a major portion of the Melbourne and metropolitan district only the northern and western tram routes collect a major percentage (7% to 8.2%) of their passengers from intersecting bus and tram routes. The East Preston routes collect bus passengers at Tyler Street terminus, Bell Street, Clarendon and Separation Streets. The Essendon line draws passengers from the private bus termini at Napier and Puckle Streets.

The northern and western suburbs also generate more car-tram trips (26.5% and 25% respectively), especially in the furthest (sections 7 and 8) and nearest (section 2) boarding sections. The residential subdivisions developing out in Sunbury and Melton and beyond Bundoora and the four main highways feeding into the western side of the city would feed more cars into this area than into the eastern and southern suburbs which are already densely settled within the more comprehensive tram, rail and bus system.





MODE OF ARRIVAL AT TRAM AND BUS STOPS  
 7:00 AM - 10:00 AM  
 C.B.D Passenger Survey August 1977

Figure 5 shows this comparative percentage of modes in the different geographic areas of this city.

The southern and eastern tram routes seem to carry a higher percentage of residents (82% and 80% walkers to routes) than the other areas. In fact, the southern routes have far fewer modal transfers than any of the others (see Appendix VII). One reason for this is that the comprehensive layout of the tram lines in the southern suburbs ensures that most residents are within walking distance of a route.

Lack of a sufficient sample prevented the geographic breakdown of the bus system, but the histogram, figure 5, and the sectional variation graph, Appendix VIII, show no significant difference in arrival mode compared to the tram system.