Railway passenger surveys in Sydney

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Abstract:

As the Sydney rail system progresses to meet the demands of the 21st Century, the importance of a timely, accurate and topical measure of customer needs becomes more critical. In 1986 State Rail undertook the first comprehensive study of all passengers. This included counting all passengers boarding and alighting all trains in the Metropolitan area and distributing self-completion questionnaires to all customers, aimed at providing a range of customer profile information. It is this database, together with annual updates which provides indicators used to develop a rail service which meets the needs of the customer whilst being efficient.

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Introduction

The exact, specific stimulus for the creation of the annual passenger survey is difficult to identify. A useful starting point is the Metropolitan Operations Strategy Study which commenced in April 1986. The objectives of that study were to forecast the future task of the Sydney Metropolitan railway to the year 2011 and how this could be most efficiently accomplished, making the best use of resources and operating practices. However, before the future task could start it was necessary to establish a reasonably accurate description of State Rail's performance at that particular time - that is, create a database of the existing passenger demand and system's supply. It was at this point that it was found that no usable, useful source of data on passenger flows existed.

Base Information Needs

The base information requirements were:
a) The number of passengers on the system
b) Where they boarded trains
c) When they boarded
d) Where they alighted
e) When they alighted
f) The number of trains
g) When they ran
h) Their capacity
i) How many passengers did individual services carry between stopping points?
j) What were the main passenger flows

Main Obstacles To Obtaining The Data

Our first problem was that the existing ticketing system only provided details of number of tickets sold at each station on a four-weekly basis. Because of the charging structure it was not possible to determine the destination to which the tickets were used, in fact on many ticket types one could not even determine the direction of travel. However, ticket issues by station did at least give us an indication of the relative size of traffic originating from that point. It did not, of course, tell us when people travelled.

The only option we considered which was available to us was to physically count our passengers. This then presented us with our next significant problem which was the size of the system. The limitations of the study in 1986 were set at Wyong (North), Lithgow (West), Macarthur (South-West) and Helensburgh (South). This gave us approximately 200 stations and 2000 trains each weekday.

There was also the mandatory financial constraint; though this was unspecified. Experience of train counts on other urban rail systems (London, Glasgow, Belfast for example) had normally been backed up by either detailed ticketing data or previously established databases.

Another major problem was the predominant type of rolling stock used on the Sydney Metropolitan rail system. This was double-deck electric multiple units usually running in 4-car, 6-car or 8-car sets. There were also the volumes of passengers travelling during the peak periods. Lightly used, connected, single deck sets can be relatively easily counted by fieldworkers walking through the train verifying loads while counting passengers alighting and boarding at each station from the train itself. Heavily loaded 8-car double-deck trains did not allow free movement through the carriages nor did the volumes permit the counting of platform passengers from the train.

The most difficult aspect was identifying point-to-point passenger flows. The on/off counts only related to the usage of particular services without giving precise journey requirements of passengers. As the ticketing system was also too imprecise, the only alternative was to ask the passengers. This was done by way of a questionnaire distributed to all passengers at the time of the counts. The opportunity was also taken to obtain other journey and demographic details which could be used in determining operational and commercial policies. Further details are given of count and questionnaire methodology in subsequent sections of this paper.

Survey Methodology

The first major decision in conducting the survey was to decide the dates. That is, at what time in the year would we be likely to obtain the most unbiased estimate of passenger travel patterns, representing the majority of our customers. School holidays, Christmas and Easter automatically preclude five months of the year, with the Queen's birthday holiday and Labour day holiday eliminating two more months, leaving only five possible months in which to hold our survey. Further analysis of our passenger journey data generated from ticket sales indicated that the October-November Accountancy Period represented a reasonably average time frame (being approximately 1/13th (7.7%) of the total passenger journeys in a year) and hence was the most suitable time in which to conduct our survey.

Financial constraints prevented the surveys being carried out over each day of the period or even a week although the survey team considered that this was desirable in order to determine the amount of variation on a daily basis. As a compromise it was decided to pick a representative day of the week which would not include any specific variations related to that particular day. For this reason Monday, Friday and Thursday (late night shopping) were eliminated; for

consistency Wednesday was selected with Tuesday as reserve. Because of their very different travel patterns it was decided to survey on Saturday and Sunday as well.

To collect the required survey data two basic methods described above were chosen. The first involved a large team of fieldworkers counting all passengers boarding and alighting trains in the Sydney metropolitan area . At the same time, self-completion questionnaires were handed out to passengers.

The logistics associated with conducting a survey such as this involve an enormous amount of team-work and organisation, as approximately 200 fieldworkers have to be rostered and deployed to cover every train and every station in the survey area whilst handing out approximately 550,000 questionnaires. Another difficulty was establishing a large enough fieldforce; the original intention had been to employ casual workers from outside the railway but again financial constraints dictated that an alternative was required. It was decided to use State Rail office workers for much of the fieldwork; to compensate for their lack of experience in this type of work it was agreed that supervisors from an established market research agency (AGB:McNair) would be hired to ensure that the necessary data collection standards were achieved.

As can be appreciated, a survey of this magnitude has to be managed from both a field level and head office level, to ensure the quality of data collected is high and any problems can be resolved at a local level. The survey team consisted of a head office team (responsible for the overall survey performance), field supervisors (each one responsible for a group of fieldworkers) and the fieldworkers themselves.

The fieldworkers and supervisors were drawn from all areas of State Rail and possessed a wide variety of backgrounds and skills. To overcome these differences and capitalise on their skills, it was necessary to provide a full day training course for all. The training concentrated on the possible methods for counting large volumes of passengers quickly and accurately; the correct way to fill out the count sheets, making sure all the required data was obtained; and touched briefly on how to deal with customers when handing out questionnaires. Whilst the importance of obtaining the most accurate data possible was emphasised, the fieldworkers were also made aware of their role as a representative of CityRail in customer relations. For a large proportion of our fieldworkers who had previously spent much of their time in railway offices it was the first time they had found themselves in the "front-line", studying the product and meeting the customers first hand. Hopefully, these experiences will have benefits in other areas of the CityRail business.

Two techniques were used in counting passengers - on-train and on-station counts. On-train counts were largely used for off-peak and little used train services (e.g. trains to Bomaderry (Nowra) or after 11.00 PM or Saturday or Sunday) and involved fieldworkers riding the train for the full journey and counting people boarding and alighting at each station. This approach gives precise loading figures for each train services along each section of its journey. However it is clearly not suitable for high volume stations and trains, in these situations fieldworkers were placed on station platforms where they chose a good vantage point from which they

could count passengers. To allow each count to be balanced by train the fieldworker was also required to ask the guard for the trip number of the train journey.

At very high volume stations there may be two or three fieldworkers counting each platform. In this instance they would use a "buddy" system when counting passengers, dividing up responsibilities. The two most common approaches devised by fieldworkers were:

1. one buddy would count all passengers boarding trains with the other buddy counting all passengers alighting from trains and
2. one buddy would count the first half of the train with the other buddy counting the last half of the train, making sure they knew how many carriages to count for different car formations e.g. 4,6,8 or 10 cars.

The method chosen is at the discretion of the fieldworker, with the proviso that the division of responsibilities are clear and that no passenger be counted twice. Methods of counting may change throughout the day in response to passenger flows (different techniques needed for peak times and off-peak times) and preferences of the individual fieldworker.

The distribution of questionnaires by fieldworkers was undertaken between trains to passengers waiting on platforms. Ballot boxes were placed at each station within the survey area for the completed questionnaires.

No survey of this magnitude can be achieved without the assistance of the customer. Consequently, to facilitate the quality and quantity of customer response to the questionnaires, it was necessary to undertake a limited program of advertising, outlining the survey dates and the need for accurate customer information to help in the planning of CityRail for the future.

Passenger Counting

All information collected on the survey count form is required for one of two purposes, validation of trip details or to provide base data. There is no superfluous data collected and the form design has been simplified to reduce fieldworker and data entry error. A separate form is used to distinguish on board counts from station platform counts. A copy of each form follows.

Figure 1: Count Sheets

STATION PLATFORM COUNT **PASSENGER SURVEY 89**

STATION: _____ ☐☐☐ FIELDWORKER NAME: _____

DAY/MONTH/YEAR: ___/___/___

DAY SIGNED ON: WEDS ☐ 1 SAT ☐ 2 SUN ☐ 3

PLAT NO.	TRIP NO.	SET NO.	ARRIVAL TIME	NO. OF CARRIAGES	CARRIAGES COUNTED	PASSENGERS ON	PASSENGERS OFF	SCHOOL CHILDREN * ON	SCHOOL CHILDREN * OFF	HOW MANY COUNTERS	COMMENTS
			:__ am 1 pm 2	2 3 4 6 8 8 10	1 2 3 4 5 6 7 8 9 10						
			:__ am 1 pm 2	2 3 4 6 8 8 10	1 2 3 4 5 6 7 8 9 10						
			:__ am 1 pm 2	2 3 4 6 8 8 10	1 2 3 4 5 6 7 8 9 10						

*NOTE: SCHOOL CHILDREN COUNT IS A SUB-GROUP OF TOTAL PASSENGERS.

ON BOARD COUNT **PASSENGER SURVEY 1989**

FIELDWORKER NAME: _____ TRIP NUMBER (TRAIN): _____

SET NUMBER: _____

DAY/MONTH/YEAR: ___/___/___ NO. OF CARRIAGES: _____

DAY SIGNED ON: WEDS ☐ 1 SAT ☐ 2 SUN ☐ 3 HOW MANY PEOPLE COUNTING: _____

STATION	ARRIVAL TIME	CARRIAGES COUNTED	PASSENGERS ON	PASSENGERS OFF	SCHOOL CHILDREN * ON	SCHOOL CHILDREN * OFF	COMMENTS
☐☐☐	:__ am 1 pm 2	1 2 3 4 5 6 7 8 9 10					
☐☐☐	:__ am 1 pm 2	1 2 3 4 5 6 7 8 9 10					
☐☐☐	:__ am 1 pm 2	1 2 3 4 5 6 7 8 9 10					

*NOTE: SCHOOL CHILDREN COUNT IS A SUB-GROUP OF TOTAL PASSENGERS.

Table 1 : Count Sheet Data Description

FIELD	DESCRIPTION	PURPOSE
STATION	Station name	Data, Validation
DAY/MTH/YEAR	Day of actual survey	Validation
DAY	Day of week	Data, Validation
FIELDWORKER NAME		Validation
PLATFORM NO.	Platform at station	Validation
TRIP NO.	Train identifier	Data, Validation
SET NO.	Composition of carriages	Validation
ARRIVAL TIME	Time at station	Validation
NO. OF CARS	Train length	Data, Validation
CARS COUNTED	By fieldworker	Validation
PASSENGERS ON	People boarding train	Data
PASSENGERS OFF	People alighting train	Data
SCHOOL KIDS ON	Of total pass-on how many are school kids	Data
SCHOOL KIDS OFF	Of total pass-off how many are schoo kids	Data
NO. COUNTERS	No. fieldworkers on platform counting each train	Validation
COMMENTS	Any additonal incidents occurring in the field worth noting	Validation

To achieve our aim of high quality, timely data it is necessary to implement a few important tasks. At each full day training session, the first half of the day is spent on discussing the survey forms and the role of the fieldworker in the overall survey plan. The second half of the day is conducted in the field, with field supervisors instructing in the correct completion of forms, discussing the various methods of counting large passenger numbers (estimates vs accurate counts), practising both on-station and on-train counts and resolving any problems which may occur on this "trial run". In this way there will be least confusion when Day 1 arrives for the survey and the fieldworkers find themselves standing on a station platform at 4.00 AM.

As the success or failure of the survey depends on the data collected by fieldworkers, it is necessary to find incentives to motivate the staff in the field. For most, the overtime pay and chance to be out of the office talking to people is all they need, but in an attempt to reward those exceptional fieldworkers and motivate the others a new approach will be trialled for the 1990 survey later this year. Each field supervisor will be asked to nominate the two best fieldworkers on each day of the survey. These names will be placed into a hat, three names drawn out and prizes awarded.

We now had a solid basis of passenger data and after a few weeks of hectic schedules and fieldwork comes the job of validating the data to make into an accessible management tool. The real work must now begin with a combination of manual and computer validations.

Before data entry can begin, each sheet must be manually checked for any errors. It is at this time we pick up errors in form completion, including problems of incomplete forms, incomplete trip numbers, school children counts larger than total

passenger counts (school children count was a sub-group of total passengers) and flag any major incidents as noted in the comments field which may have bearing on the quality of data collected.

The computer validation checks have been refined over time. In 1986, as there was no comparable survey to learn from, validation checks were a matter of trial and error, with experience in train running being relied on heavily to point out errors. This procedure has improved considerably to date, as have our computer systems, with the current and all future surveys being processed in Dbase IV (the new CityRail standard).

Our computer validation is done in a series of phases. The first of these are data entry checks (to minimise data entry error), then periodical batch validations, followed by a final validation at the end of data entry. As the database is so large it is necessary to divide it into manageable lots. This ensures that the weekday information is verified first with Saturday and Sunday completed thereafter.

Data entry checks are made on the date (this is checked against a specified range of acceptable dates), the day (this is checked against the date), the station code (checked against a master list) and sheet number (no more than 16 entries are allowed against each sheet number).

Periodical batch validations are run throughout data entry. At this time the trip number and set number are matched, then the trip number is validated against the timetable masterfile and an exception report produced of incompatible trip numbers. In this way, validation is an ongoing process with all resources (data entry staff and survey team staff) fully utilised.

On completion of the first stages of validation, the final computer validation checks are run. It is at this time the base data is resolved into a single usable form. All buddy entries are matched up to ensure there is only one entry per station per train. All platform and on-board counts are matched up to further reduce the size of the database and delete multiple entries of each train at a station.

We now have a thorough picture of every train running in the survey area over the whole day with a single entry for each train as it passes through each station on each day of the survey.

All that remains is for some final checking to be carried out on the database. This is done using a few runs, testing the quality of the actual numbers collected by the fieldworkers. The database is sorted by trip number and departure time, then the train loading is calculated. It is from this that we can determine the number of passengers travelling on the train at any point in time, also if we have any passengers left on the train at the end of the run. Any problems identified in this way will be rectified by reference to the count sheet and/or a spot recount at the station if a major problem is detected.

At the end of the data processing activity the next major problem was establishing the validity of the information collected. The difficulty was to establish a valid benchmark against which to test the new data source. One possibility was to use the existing station revenue data which although imprecise about passenger flows was, because of audit requirements, accurate in terms of cash received. It was

assumed that the volume of money collected did represent a valid indication of the passenger activity at that station. There are of course exceptions to this; most notably are the unattended stations where no tickets are sold. Also CBD stations because they tend to be the most common destinations. Allowing for these shortcomings it was decided that a comparison of the rankings of station by level of activity would at least indicate that our count of passenger movement was consistent with the levels indicated by revenue takings. The test undertaken used the Spearman Ranked Correlation Coefficient, testing the relative ranking of passenger counts by station from the survey against the relative ranking of revenue collected at stations over the same time. In this way we obtained the result r_s = 0.8887 . Such a high rank correlation coefficient suggests the ranking of stations obtained through our survey counts is representative of the true relativity between stations of passenger usage. In addition the numbers at specific points on the network were cross-checked with the occasional on-train counts carried out by State Rails' Timetable Task Force. Finally route usage was also compared with forecasts from the State Transport Studies Group forecasts. In both cases the findings from the survey were consistent in nearly all circumstances.

As you can see, after a lot of effort (and approximately 6 months work), the end justifies the means and an accurate database is now available for use as a business tool in the planning of CityRail. Whilst the ultimate database would be one which is on-line and updated hourly, the practicalities of such a situation would be impossible. In this way, we achieve an operable system providing useful business data which represents the requirements and needs of the customer at a standard unbiased time of the year. The information we have collected represents the basic travel patterns of the majority of the travelling public and it is this we should use to structure our services.

The simplest and most frequently used information to be obtained from the count database relates to station usage and individual trip usage. The data is available by any timeband required but the most frequently used are the five(5) standard timebands. For example:

Table 2 : Passenger Movements – Hurstville Station

TIMEBANDS	PASS ON	PASS OFF	TOTAL
AM PEAK (06:01-09:30)	4,648	2,899	7,547
MIIDAY (09:31-15:00)	2,700	2,526	5,226
PM PEAK (15:01-18:30)	3,880	4,507	8,387
EVENING (18:31-23:00)	579	942	1,521
NIGHT (23:01-06:00)	145	105	250
TOTAL WEEKDAY	11,952	10,979	22,931
TOTAL SATURDAY	4,183	3,969	8,152
TOTAL SUNDAY	1,831	1,706	3,537

For the first time we have a quantitative measure of individual station usage. The data obtained allows us to design our stations more effectively, catering for the fluctuating volumes of passengers to be expected throughout the day, reassess ticket stock requirements and manning levels and plan for future station needs in conjunction with regional population growth rates. It is this station usage information which is also sought after by many retailers interested in establishing businesses in the vicinity of a station and requiring indications as to possible market volumes.

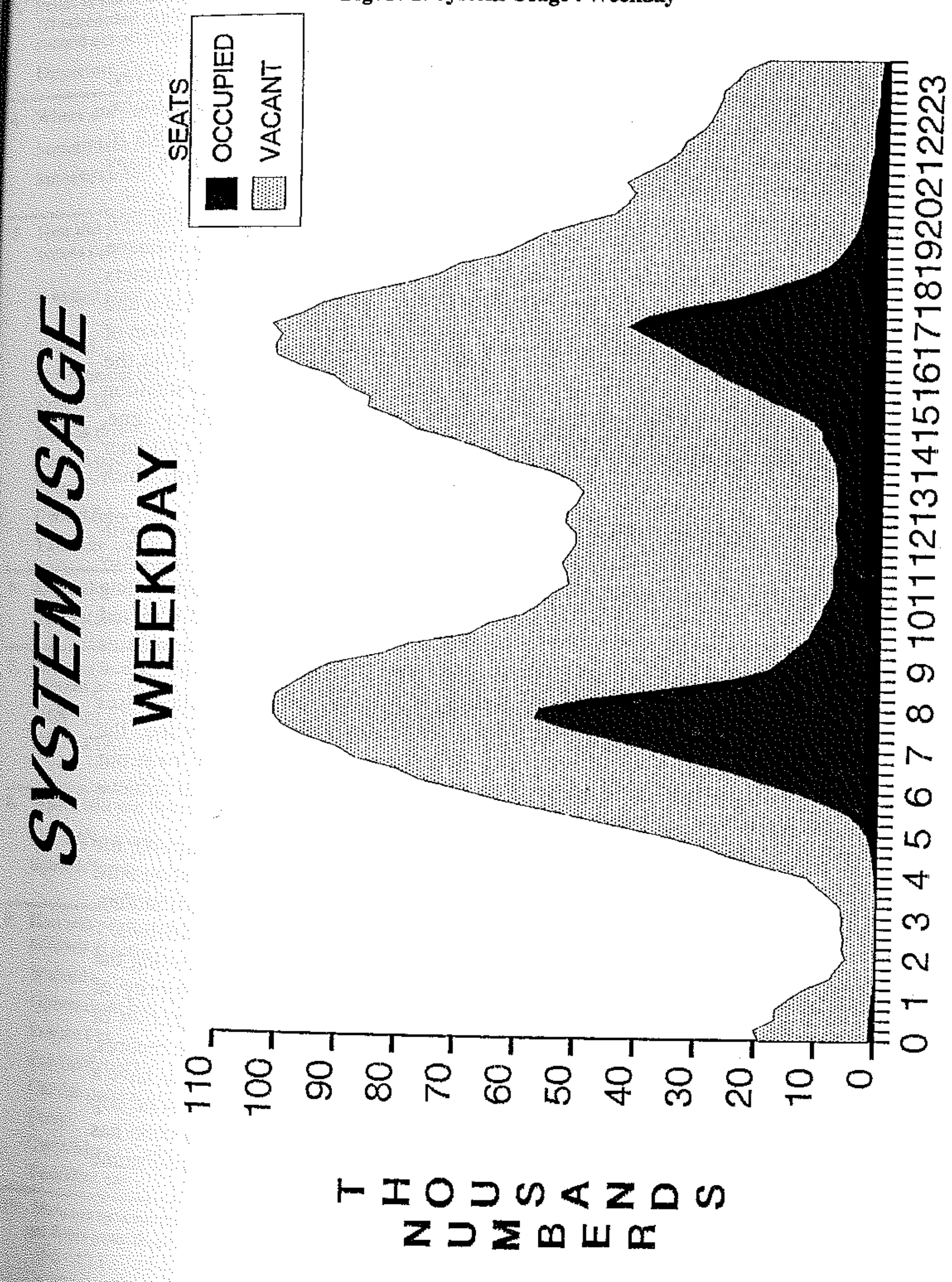
The data given below is obtainable for all trains in the survey area. It is now possible to identify high patronage and low patronage services. Timetables are being improved to provide extra services in peak times and less services in off-peak times to ensure supply meets demand. Decisions are made taking into account the total passenger journey including average passenger journey distance, average passenger journey time, the average load factor, customer standing time and improved rolling stock utilisation. These trends are identifiable on a train, line or system basis. The graph over indicates our system usage as it was in 1986 on a typical weekday.

Individual train data also allows for more effective allocation of our resources, to meet the needs of variations in customer usage. An example of a typical morning peak trains is as follows:

Table 3 : Details Of Trains Data

TRIP NO.	STATION	DEPART TIME	PASS ON	PASS OFF	TRAIN LOAD	SEAT CAPAC.	LOAD CAPAC.	PASS KILOM.	SEAT KILOM.	PASS MINS.
22-B	Waterfall	718	14	0	14	952	1%	78	5,340	70
22-B	Heathcote	723	62	0	76	952	8%	183	2,294	228
22-B	Engadine	726	230	0	306	952	32%	1,361	4,236	1,224
22-B	Loftus	730	96	0	402	952	42%	623	1,475	1,206
22-B	Sutherland	733	115	28	489	952	51%	982	1,913	978
22-B	Jannali	735	107	1	595	952	62%	1,398	2,237	1,785
22-B	Como	738	139	0	734	952	77%	1,534	1,989	2,202
22-B	Oatley	741	383	12	1101	952	116%	1,357	1,170	2,208
22-B	Mortdale	743	110	5	1209	952	127%	1,124	885	2,418
22-B	Penshurst	745	160	8	1361	952	143%	1,769	1,237	4,083
22-B	Hurstville	748	313	83	1591	952	167%	5,091	3,046	6,364
22-B	Kogarah	752	206	38	1759	952	184%	2,093	1,132	3,518
22-B	Rockdale	754	235	91	1903	952	199%	6,812	3,408	11,418
22-B	Sydenham	800	49	30	1922	952	201%	7,726	3,827	9,610
22-B	Redfern	805	4	41	1885	952	198%	2,469	1,247	5,655
22-B	Central	808	40	260	1665	952	174%	2,114	1,209	4,995
22-B	Town Hall	811	204	949	920	952	96%	763	790	1,840
22-B	Martin Place	813	60	819	161	952	16%	210	1,247	322
22-B	Kings cross	815	14	62	113	952	11%	137	1,161	226
22-B	Edgecliff	817	4	28	89	952	9%	176	1,884	356
22-B	Bondi Junction	821	0	89	0	952	0%	0	0	0

Figure 2. System Usage : Weekday



Survey Questionnaire

The passenger survey questionnaire is the sole controversial item of each survey. Even after gaining approval from the Privacy Committee as to the questionnaire content, there will always be some response from either the media or public to some of the questions, in particular, question 19 on personal total income. A copy of the questionnaire form can be found on the next page.

The survey content was chosen to provide a range of customer information currently unavailable in any other area of CityRail. It is representative of a single passenger journey requiring multiple forms to be completed for customers transferring en route. From the questionnaire we are able to obtain the origin and destination of each passenger journey. This does not just include the rail portion of their journey but the whole trip from doorstep to doorstep. We also find out the mode of access to the start station, the mode of departure from the destination station, if the customer is transferring trains en route, average journey time, purpose of journey, frequency of journey, ticket type being used and the customer descriptors of age, sex and income. In addition, there is space for comments which is nearly always completed.

The priority of all fieldworkers is to obtain accurate passenger counts with questionnaire distribution undertaken between trains. On busy stations (especially at peak times) it was necessary to have an additional fieldworker solely distributing questionnaires to ensure an unbiased sample of customer responses. To further aid this goal and obtain a good cross-section of the travelling public, issues such as multi-lingual forms are being considered.

All completed questionnaires can be placed in specially marked ballot boxes at all stations in the survey area. Of the total questionnaires distributed, the response rate provided approximately 10% of usable forms on which to base our analysis. Incentives designed to boost this response rate are difficult to achieve whilst retaining the anonymity of the customer.

Once again, all collected questionnaires are entered to the computer for analysis. However, the questionnaires are entered into a unique questionnaire package which allows for quick analysis on all questions for frequency distributions, cross-tabulations, preference ranking and absolute origin and destination analysis.

Questionnaire validation is once again an important aspect of ensuring the data obtained is of a high quality and truly representative of the majority of customers (not merely a select group of minority customers). On completion of data entry, checks are made on the data to ensure there are no incomplete records, no duplicate records (each sheet is consecutively numbered), that all records have a departure time, that the origin does not equal the destination (hence a round trip and incorrectly completed questionnaire), that the Railways of Australia code has been entered and that obvious mistakes such as a suburb name in the street name field are corrected.

PASSENGER SURVEY 1989

CityRail

1. At which station did you join this particular train?
STATION: ____

2. On which day are you starting this journey?
Weekday ☐ 1 Saturday ☐ 2 Sunday ☐ 3

3. What is the scheduled departure time of this train? (If scheduled departure time not known, record actual departure time.)
Departure Time ____ am/pm

4. Where did you begin this journey?
Street/Place only: ____
Suburb/Town: ____
(Please do not give your full address)

5. How did you travel to the station to join this train? (cross only one box)

Another train ☐ 1 → **At which station did you join this other train? (Current journey only)** ____
Walked ☐ 2
Government bus ☐ 3
Private bus ☐ 4
Car (as driver) ☐ 5 → **Was the car:**
Car (as passenger) ☐ 6 → driven away ☐ 1
Ferry ☐ 7 parked at station car park ☐ 2
Cycle/Motor Cycle ☐ 8 parked near station off street ☐ 3
Taxi/Hire car ☐ 9 parked near station on-street ☐ 4

6. At which station will you leave this particular train?
STATION: ____

7. Will you be catching another train to finish this current journey?
YES ☐ 1 → **At which station will you be leaving this other train?** ____
NO ☐ 2

8. Where will you finish this journey?
Street/Place only: ____
Suburb/Town: ____
(Please do not give your full address)

9. How will you travel from your final station to the address at Q.8.?

Walked ☐ 1
Government bus ☐ 2
Private bus ☐ 3
Car (as driver) ☐ 4 → **Was the car:**
Car (as passenger) ☐ 5 → driven to station to meet you ☐ 1
Ferry ☐ 6 parked at station car park ☐ 2
Cycle/Motor Cycle ☐ 7 parked near station off street ☐ 3
Taxi/Hire car ☐ 8 parked near station on-street ☐ 4

10. How many minutes do you estimate it will take to get from your final station to the address at Q.8.?
0-5 ☐ 1 11-15 ☐ 3 21-30 ☐ 5 61 or more ☐ 7
6-10 ☐ 2 16-20 ☐ 4 31-60 ☐ 6

11. What is the main purpose of your journey today? (Cross only one box)

To go to/from work ☐ 1
To go to/from college/ school as a student ☐ 2
To go shopping ☐ 3
To conduct work/ business ☐ 4
To visit friend/ relative ☐ 5
Entertainment/ sports event ☐ 6
Other leisure ☐ 7
Other ☐ 8
Please specify: ____

12. Are you travelling alone or in a group?

In a group ☐ 1 → **Including yourself how many:**
Alone ☐ 2 Adults in your group ____
Children in your group ____

13. How frequently do you make this journey?

Four or more times a week ☐ 1
Two or three times a week ☐ 2
Once a week ☐ 3
Once or twice a month ☐ 4
Less frequently ☐ 5
First time ☐ 6

14. How many cars does your family have regularly available for use?
None ☐ 1 One ☐ 2 Two or more ☐ 3

15. What type of ticket do you have? (Cross only one box)

Single ☐ 1
Return ☐ 2
Weekly ☐ 3
Monthly ☐ 4
Quarterly ☐ 5
Yearly ☐ 6
Offpeak ☐ 7
Combination (Zoo, Manly or Manly Underwater World) ☐ 8
Pensioner - Single ☐ 9
Pensioner - Return ☐ 10
Pensioner excursion ☐ 11
Student Pass ☐ 12
SRA/STA staff pass ☐ 13
Other ☐ 14

16. If in Q.15 you answered Weekly, Monthly, Quarterly or Yearly, what type do you have?
Rail only ☐ 1 Travelpass ☐ 2
How many journeys do you make each week with it? (i.e. 1 return trip is 2 journeys) ____

17. Are you:
MALE ☐ 1 FEMALE ☐ 2

18. How old are you?

Under 16 years ☐ 1
16-24 years ☐ 2
25-34 years ☐ 3
35-44 years ☐ 4
45-59 years ☐ 5
60-64 years ☐ 6
65 years or over ☐ 7

19. What is your personal total income per week, before tax?

None ☐ 1
Less than $221 ☐ 2
$222-$345 ☐ 3
$346-$550 ☐ 4
$551-$757 ☐ 5
$758 plus ☐ 6

20. Do you wish to make any further comment?
____
____
____

As the database we now have is only a sample of the total passenger utilisation of the CityRail network, it is essential to apply a factoring mechanism to the questionnaire sample data to allow simple analysis to be indicative of the total. This is done by applying the count data obtained throughout the survey to the responses received (both on and off counts separately) and normalised on an individual trip basis.

This customer profile information is invaluable when making changes to the CityRail system. Understanding our customer is the first stage in tailoring our services to meet their needs and it is the questionnaire which provides this insight. Analysis of the information contained on the questionnaire details vital origin/destination data, purpose of journey and customer profile data, all of which are important when agreeing indicators for use in Business Plans and plotting marketing strategies. As we understand the customer and their requirements of our system, we progress towards the provision of a world class rail system with a top quality service drawing new customers regularly. Cost savings are made in this way as we refine our services and tailor the product. The following graph shows a ranking of the top 19 destination stations for passengers who start their journey at Hurstville station during the morning peak with a typical customer profile over the page.

Figure 3: Major Destination Station for Journeys Originating at Hurstiville

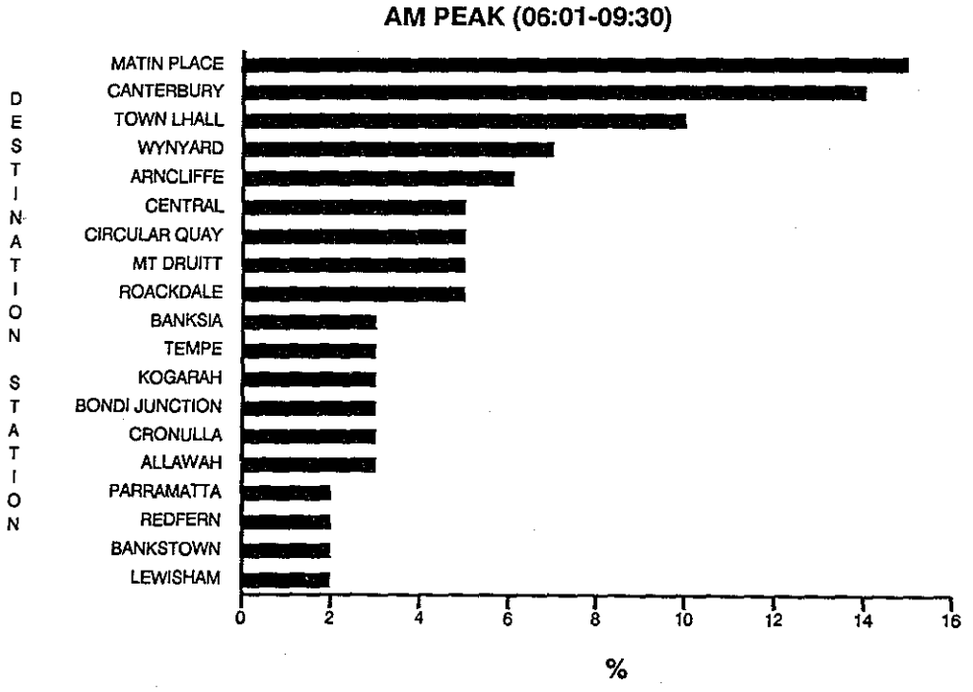
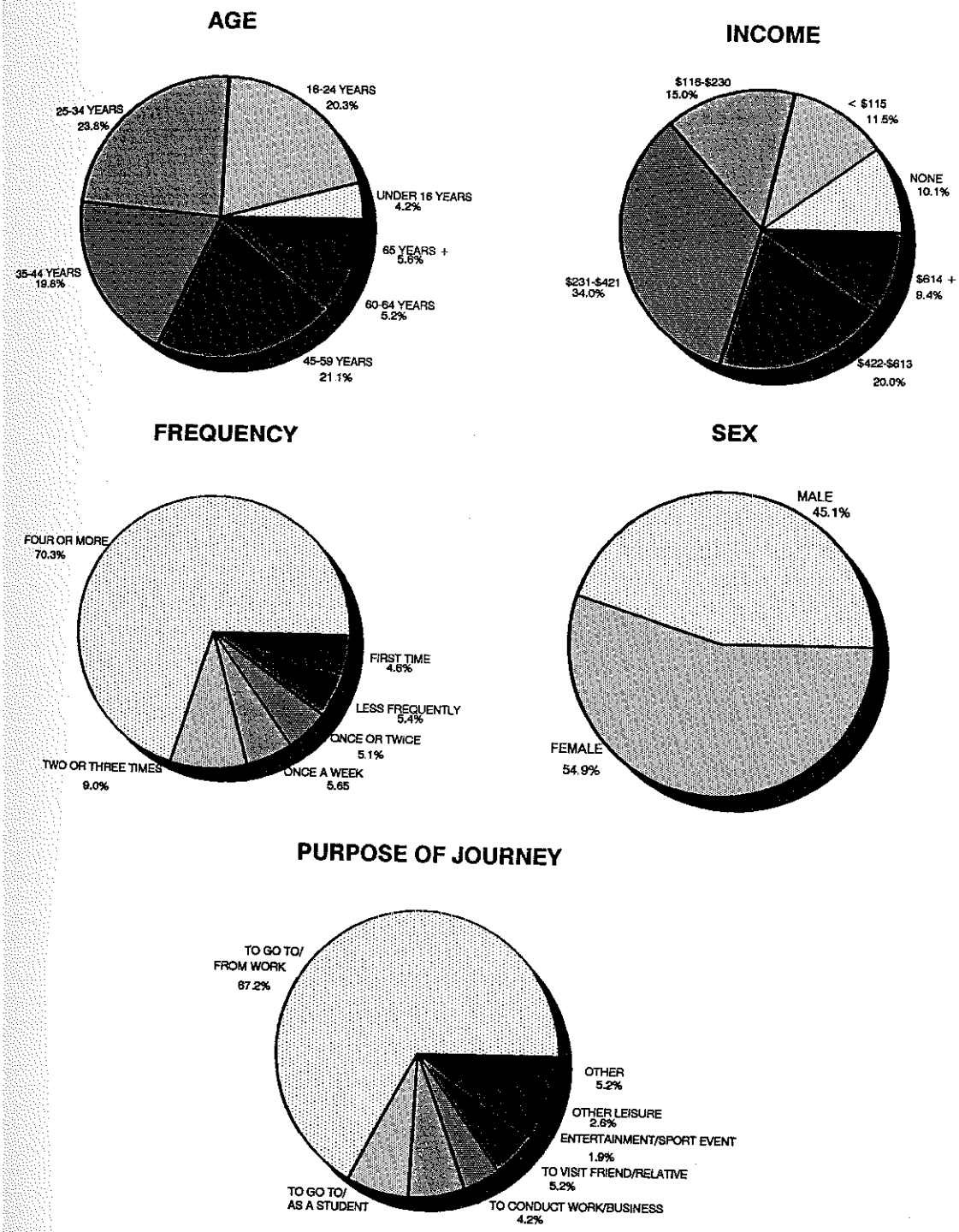


Figure 4 Customer Profile : Illawarra Line, Weekend



Conclusion

The data collected is used in our Business Plans generating a range of quantifiable indicators which measure attainable goals in customer service, product evaluation and resource utilisation. Initiatives such as the cessation of night services and introduction of Nightrider buses, the Automatic Fare Collection system, BusinessLink and the provision of more express train services with limited stopping patterns are now possible as we can define our customers' requirements and structure our product to meet demand.

Specific marketing strategies can be established to improve our market share. One such strategy is the new CityHopper ticket aimed at drawing customers back to our service during the off-peak.

As has been shown, conducting a survey of this magnitude and complexity is not a simple task, but is essential to ensure all business decisions made are proactive and not reactive to market trends. Once a definition of our customer is obtained, a picture of their travel patterns developed and the resources available has been resolved, we can model the scenarios available to provide a timely and efficient service which will meet the needs of the customer whilst being cost effective and efficient. In short, it is surveys like this one which will enable CityRail to achieve its' aim, to be classed amongst the top in the world.