IMPLICATIONS OF THE PERTH PUBLIC TRANSPORT FLAT FARE SYSTEM

G.A. SHEA

ABSTRACT: *In Australia, Perth is the only capital city with a flat fare system, introduced in August 1974 together with the integration of the suburban rail and the bus system. This paper assesses the impact of the introduction of the flat fare based on before and after data; i.e. the impact on the operator as well as the impact on the public transport riders. Immediate and long-term benefits and flow-on future possibilities to enhance the efficiency of public transport operation are discussed. Public attitudes towards the new fare system are also presented based on on-board bus and rail interviews.*

PERTH FLAT FARE SYSTEM

On 1st July, 1974 the W.A. Government empowered the Metropolitan (Perth) Passenger Transport Trust with the overall responsibility for managing the public transport system, thus facilitating the operation of an efficient and integrated public transport service in the metropolitan area. In addition to operating its own bus and ferry services, the Trust requests Westrail to provide railway services and reimburses Westrail the full cost of doing so. Thus all revenues and expenses from providing urban public transport appear in the one set of Trust accounts.

With this new arrangement, the stage was set to simplify the then existing complex fare system. Thus on 4th August, 1974 the existing section fare system was replaced by the flat fare system.

THE PAST AND PRESENT FARE SYSTEM IN PERTH

Before 4th August, 1974, both the Metropolitan (Perth) Passenger Transport Trust and Western Australian Government Railways charged the same fare per section. The basic adult fare was 10 cents for the first section, 20 cents for the second till third section and 25 cents for the fourth till fifth section. For every three additional sections five additional cents were collected.

On 4th August, 1974, the flat zone fare was introduced for the integrated public transport services. The Perth service area was subdivided into a number of zones and within any zone, the basic adult fare became 30 cents.

The inner zone consists of an area circumscribed by a 30-kilometre radius from the G.P.O. in Perth. Each

concentric outer zone consists of a 15-kilometre wide ring. In addition an approximately 8-kilometre wide ring within the inner zone represents the overlapping zone between the inner and second zone.

With the introduction of the flat fare, a free through-fare was introduced which allowed a through or return trip within two hours of ticket purchase.

The concession fare for children of half the basic adult fare was kept, so was the free Central Business Clipper service which operates from the Central Bus Terminal.

However, the multitude of different bus and rail concession fares were reduced to one set of concession fares for the total service area.

SOURCE OF DATA

To evaluate the impact of the introduction of the flat fare before and after, data had to be analysed and compared with one another. The Central Business District Employee Survey of January 1974, executed in connection with the Perth Central City Railway Feasibility Study, provided the before data.

The after data was collected during September 1975 by an on-board survey on selected bus routes and all rail routes. Interviewers supplied by the Trust and supervised by a Consultant, collected data on a sample of 12 main bus routes and on all 3 rail routes from 6.30 a.m. to 11.00 p.m. during 10 consecutive working days.

Passengers were questioned regarding their trip

origin and destination, trip purpose, transfer usage, fares paid and other trip characteristics, socio-economic characteristics, and attitudes towards the introduction of the flat fare.

A total of 2,400 questionnaires were found usable for analysis, representing a sample of 3.6 per cent of the 67,000 daily passengers travelling on the 12 main bus routes and 3 railway lines as interviewed during September 1975. It was then possible to compare work trips which were executed before and after the introduction of the flat fare system.

The following discussion lists some of the findings regarding the impact of the flat fare on the operator as well as on the passenger.

THE IMPACT ON THE OPERATOR

Before the change to flat fare, $28.14 was collected for 100 work trips by public transport. With the introduction of the flat fare, $29.43 was collected. Hence, the average fare for work trips rose from 28.1 cents to 29.4 cents, an increase of 4.6 per cent.

However, the introduction of the flat fare system changed the trip pattern because passenger demand was influenced by fare levels. If this pattern had not changed, then $29.99 would have been collected for 100 work trips, representing an increase of 6.6 per cent. Because of the elasticity in demand, however, less was collected.

A comparison of the total revenue collected by the Trust in basic fares during 12 weeks before the changeover and

during 12 weeks after the changeover, during the same months, show that total revenue increased by 4.2 per cent from $1,625,000 to $1,694,000.

It has been estimated that during the same period, the number of passengers paying basic fares dropped by 11.4 per cent from 10,477,000 to 9,279,000. However 13 per cent of all passengers amounting to 1.35 million now receive free travel by way of transfers and return within two hours.

In the past, the maximum revenue was collected for the 5 to 6 kilometre-long journeys; this amounted to 14.6 per cent of all the total revenue. At the same time, 80 per cent of all revenue was collected from trips less than 15 kilometres long. However, with the introduction of the flat fare, 12.5 per cent of revenue lies between 6 and 12 kilometre-long journeys and 80 per cent of all revenue is collected from trips less than 17 kilometres long.

In summary: with the introduction of the flat fare, the average basic fare rose by a small percentage, resulting in an increase in revenue to the operator. However, the total number of paying passengers dropped because of the transfer and return benefits offered.

THE IMPACT ON THE PASSENGER

With the introduction of the flat fare system, fare prices between 0 and approximately 2 kilometres were raised by 5 cents. Fares between 2 kilometres and 10 kilometres were raised by 10 and 5 cents. Fares between 10 and approximately 12 kilometres remained 30 cents. However, fares between 12 and 30 kilometres were lowered by between 5 and 15 cents; so

were the fares for all subsequent distances. This means that fares were raised up to 50 per cent for short distance travellers, but lowered for long distance travellers by up to 40 per cent.

However, the general increase or decrease in average fares was less severe. During January 1974, that is before the introduction of the flat fare system, the average fare for work trips up to 14 kilometres was 25.6 cents and for trips between 15 and 36 kilometres, the average fare was 38.6 cents.

With the introduction of the flat fare, the average fare for up to 14 kilometres rose theoretically up to 29.8 cents, and the average trip beyond 15 kilometres sank theoretically down to 30.9 cents. However, the passenger demand responded to the change in fare level, as was expected, by decreasing in the shorter distances and increasing in the longer distances.

80.2 per cent of all work trips were made in the distance range of up to 14 kilometres. The on-board survey during September, 1975 showed that this percentage had decreased to 72.0 per cent. On the other hand, the percentage of travel demand in the distance range beyond 15 kilometres had increased from 19.8 per cent to 27.0 per cent.

These are considerable changes in the characteristics of travel demand. However, they can not completely be attributed to the impact of the flat fare change alone.

The Perth metropolitan public transport network has been expanding outwardly serving an increasing passenger demand of long travel distances. At the same time, passenger

demand in the inner area has been decreasing. It has been estimated that the annual increase and corresponding decrease in passenger demand is approximately 1.5 per cent a year.

Taking this correction into account, the change in passenger demand in the distance range of up to 14 kilometres is -5.2 per cent of the total trips. However, in the distance range beyond 15 kilometres, it is +4.2 per cent of all passenger trips.

When comparing change in passenger demand with change in fare level, the elasticity of demand was determined as being 0.6 for trips up to 14 kilometres and as 0.9 of trips beyond 15 kilometres.

This generally suggests that for the Perth Metropolitan Region, a fare increase of 10 per cent resulted in a loss of 6 per cent of the passengers. However, a fare decrease of 10 per cent resulted in a gain of 9 per cent in new passengers.

However, it must be pointed out that the gains in new passengers were made on the long distances and the losses in passengers were made on the short distances.

As a result of the introduction of the flat fare, the average fare for the work trip increased from 28.1 cents to 29.4 cents, an increase of 4.6 per cent.

However, the inflation of approximately 17 per cent per annum as measured between the two survey periods has effectively reduced the real value of the flat fare. The average fare of 29.4 cents during September 1975 is worth only 22.6 cents when deflated to the base date of January 1974.

This means that after the flat fare was introduced, the inflationary tendencies have constantly decreased the cost of the fare, and finally the flat fare represents an average decrease in fare level for all passengers.

Table 1
CHANGE IN PASSENGER DEMAND

DISTANCE (km)	PASSENGER DEMAND: Before Change Q_o	After Change	Correction for Network Expansion	Notional After Change Q_1	Change $Q_1-Q_0=\Delta Q$
	(per cent)	(per cent)	(per cent)	(per cent)	(per cent)
0-14	80.2	72.0	+3.0	75.0	-5.2
15-36	19.8	27.0	-3.0	24.0	+4.2
TOTAL	100.00	99.0	±0.0	99.0	-1.0

Table 2
CHANGE IN FARE LEVEL

DISTANCE	FARE: Before Change F_0	After Change	Correction for perceived Inflation	Notional After Change F_1	Change $F_1-F_0=\Delta F$
	(cents)	(cents)	(cents)	(cents)	(cents)
0-14	25.56	29.76	-1.68	28.08	+2.52
15-36	38.57	30.91	-1.75	29.16	-9.41
TOTAL	28.14	29.99	-1.70	28.29	-0.15

Table 3

ELASTICITY OF DEMAND

DISTANCE (km)	Change In Fare Level ΔF (per cent)	Change In Passenger Demand ΔQ (per cent)	Elasticity of Demand $\Delta Q - \Delta F$
0-14	+ 9.9	- 5.6	0.6
15-36	-24.4	+21.2	0.9

RESULTING BENEFITS FROM THE FLAT FARE SYSTEM

The flat fare system is providing immediate benefits as well as long-term benefits yet to come.

Immediate benefits

The immediate benefits from the introduction of the flat fare system can be stated as follows:

(1) provides strong attraction to the long distance rider;

(2) tends to reduce fare collection time as a result of more public awareness of fares; and

(3) encourages increased ridership through the two hour unlimited use characteristic.

PERTH FLAT FARE SYSTEM

Long-term benefits

The most obvious of the long-term benefits of the flat fare system is the establishment of a solid core of riders who will view public transport as a viable alternative to the authombile.

In terms of cost/benefit relationships, the more a public transport is patronized, the greater its benefit to the entire community.

FUTURE POSSIBILITIES

With the flat fare system, the stage is set for future desirable possibilities since the flat fare system creates a climate in which other improvements can be incorporated which will enhance the efficiency of the operation without additional cost. A number of these future possibilities are discussed here as follows.

Elimination of hand collection of fares by driver - this can be accomplished through the use of locked fare boxes in which the passenger deposits the proper fare as he enters the bus and can be observed by the driver. The advantages of this method of fare collection are:

(1) Greater security of collected revenue with no need for the driver to prepare and make an actual cash turn-in to a cashier at the end of his work shift;

(2) Saves cashier time;

(3) Permits storage of revenue on the bus until normal shift hours for counting; and

(4) Allows accurate allocation of revenue to individual vehicles.

The above four advantages accrue through the use of a type of fare box that is non-registering, i.e., the money is deposited in a coin slot in the top of the unit, falls down an irregularly shaped chute on to a moving inspection belt or plate and then falls through another tube into a locked vault located in the lower part of the fare box cabinet. The vault can only be removed in the locked position for replacement by an empty vault, thus the person who changes the vault does not have access to the vault contents.

Registering fare box - a coin-registering version of the above mentioned locked fare box increases the advantages of this type of fare collection. In addition to the four advantages listed for non-registering boxes, the registering box will:

(1) Enable the driver to accurately record revenue collected for selected time periods or specific segments of any route;

(2) Can be designed to produce an audible signal in the event of short fare payment;

(3) Some styles will electronically display the amount registered for the benefit of inspectors and passengers alike and will retain the display in the event of shortages.

Both types of fare boxes discussed so far share

the coin retrieval characteristic that involves double handling i.e., each box requires two sets of locked vaults so that removal of the full vault demands replacement with an empty vault if revenue security is to be maintained. There is another type of fare box on the market that employs vacuum retrieval of the vault contents into a common container that can be moved directly to a bank for counting and deposit. This system has been refined to the point where the retrieval system will also extract data relative to the vehicle's engine hours of operation and quantities of coolant, cylinder oil, torque fluid, and fuel added. This information is directly stored in a computer system which can recall and print on demand. The computer will calculate fuel and fluid consumption on a daily basis which provides a valuable guide to the maintenance department for inspections and preventative maintenance programmes.

Since the initial cost of fare boxes would represent a substantial amount of money, the question of the disposition of approximately 800 ticket machines now in use presents itself.

The ticket machines should be retained and used for the printing of transfers as required. Tickets produced by the machines are particularly well-adapted for use as transfers in as much as each ticket is imprinted with the necessary data required for a transfer or return trip ticket, namely: time of issuance, route of origin, and date.

Considerations for the future

1. Install registering, lock-type fare boxes on all buses.

2. Passengers deposit own fare.

3. Drivers issue tickets on demand only. (For transfer and return trips.)

4. Drivers do not make cash turn-in at the end of shift.

With the use of fare boxes on all buses, the way is clear to implement a very important aspect of public transport fare collection - the exact fare plan.

The original rationale behind the exact fare concept was to reduce the risk of robberies on the theory that, if the driver has no change and all fares are deposited in a locked box secured to the bus, there is little reason to attempt a theft.

In the U.S., the Unions promoted the idea of exact fares as a safety measure and in many cases it became part of Union-Management Contracts at Union instigation.

While there have been recent incidents involving attacks on M.T.T. drivers to the extent that a number of buses on certain routes were equipped with special alarm devices, it is not felt that robbery of the driver was the primary objective.

The goals of an exact fare plan for Perth would be:

a) Facilitate speedy collection of fares from boarding passengers.
b) Eliminate the need for drivers to carry a working fund or give change.
c) Free the driver to concentrate on the safe driving aspects of his work.

PERTH FLAT FARE SYSTEM

ATTITUDE TOWARDS THE FLAT FARE SYSTEM

The Trust places above all else service to the public transport passenger. It is therefore most important to know the attitude of the passengers towards the introduction of the flat fare system.

Attitudes are generally verbally expressed in so-called opinions, or they can be expressed by the actions of the persons involved. Verbally expressed attitudes do not always coincide with action-expressed attitudes.

Verbally expressed attitudes can be misleading, for example most persons are of the opinion that public transport is desirable; however, only approximately 15 per cent of all person trips in the Metropolitan Region of Perth are made by public transport.

The September 1975 on-board survey showed that 78 per cent of bus passengers and 84 per cent of train passengers prefer the existing flat fare system to the previous section fare system. For both modes together, 78 per cent do prefer flat fare, 7 per cent prefer the section fare and 15 per cent were undecided.

A look at the action-expressed attitudes as found by the before and after surveys for work trips shows that approximately 5 per cent of passengers travelling less than 14 kilometres voted against the flat fare by ceasing to use public transport to travel to work; but approximately 5 per cent who were travelling longer than 14 kilometres opted for public transport.

With the introduction of the flat fare, only fares for up to 10 kilometres were increased. This means that 61.4

per cent of all passengers who travel less than 10 kilometres, were affected by the fare increase. However, of the passengers preferring the flat fare (78 per cent), at least 17 per cent, probably more, prefer the flat fare despite its resulting fare increase. An obvious explanation of this is that the flat fare is strongly preferred above the section fare because of its simplicity in handling by the passenger.

It can therefore be stated that the travelling public as a whole has endorsed the flat fare experiment.

The introduction of the flat fare system resulted in immediate as well as long-term benefits. The immediate benefits are here to stay. The long-term benefits however, have to be capitalized upon. It is the intention of the Trust to keep up the momentum of rationalizing public transport services in the Perth Metropolitan Region and to introduce further improvements to the public transport system, as flow-on from the introduction of the flat fare.

MTT —IMPORTANT NOTICE—
TO ALL METROPOLITAN BUS, RAIL AND FERRY PASSENGERS

As from Sunday 4th August, the Trust will introduce a completely new but simple fare schedule. As from that date also, metropolitan bus and train tickets will be interchangeable

30 CENT FARE

For a distance of approximately 30 kilometres from the Perth G.P.O., patrons will be able to travel on a flat 30 cent fare The boundary for this fare is shown on the map below

Patrons holding a 30 cent ticket can change from bus to bus, bus to rail, rail to bus and bus to ferry and travel any distance within the stated boundary as long as the last change can be made within TWO HOURS of the time shown on the ticket The time will be imprinted on tickets (as shown in sample) to the nearest quarter of an hour.

Patrons may return on the same ticket as long as the two hour qualification is met. The time on the ticket will be the sole factor in judgment and NOT the timetabled departure times of buses or trains.

15 CENT FARE

A 15 cent fare will be available for ONE section travel or within the city block bounded by King Street and Victoria Avenue in an east-west direction and Wellington Street and Barrack Street Jetty in a north-south direction (City Clipper services are still free).

The 15 cent fare is for one trip only and does NOT allow for transfer travel.

45 CENT FARE

A 45 cent fare will apply for a journey crossing over the 30 kilometre boundary to a point within the No 2 zone boundary (approximately 45 kilometres) or vice versa. The 15 cents fare for one section and 30 cents for more than one section will apply for travel which is wholly within the No 2 zone

The 45 cent fare has the same transfer facilities as the 30 cent fare. The transfer also has to be made within the TWO HOURS of the time shown on the ticket.

OVERLAPPING ZONE

To enable those patrons who wish to journey from the outer zones to a point just inside the inner zone boundary or vice versa, an overlapping area has been fixed as shown on the map The adult fare from No 2 zone to a point within the overlapping zone will be 30 cents.

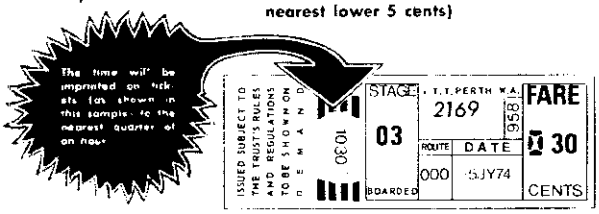
OUTER AREAS

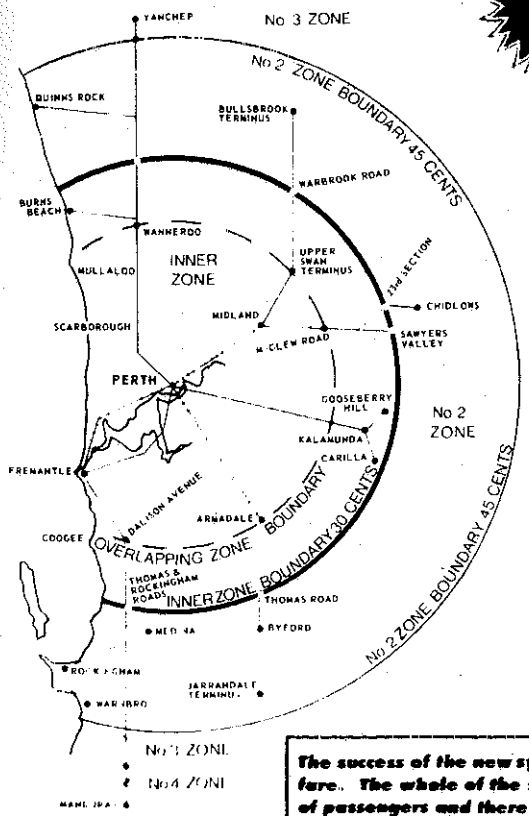
Mandurah (No. 4 zone) and Yanchep (No. 3 zone) ARE NOT considered to be within the metropolitan area and special fares of 75 cents and 60 cents respectively will apply

CHILD'S FARE

This will be half the adult fare (to the nearest lower 5 cents)

PLEASE KEEP THIS ADVERTISEMENT HANDY





28 DAY PERIODICAL TICKETS

A ticket valid for 28 days can be purchased for $12 to travel ANYWHERE at ANY TIME within the 30 cents and 45 cents zones. Students periodical tickets will be available for $9.00 for travel within these two zones. Periodical tickets costing $24 for adults and $18 for students will be available to Mandurah residents Special outer zone tickets will also be available on application.

Tickets may be purchased at Perth Central Bus Station, M.T.T. Information Bureaus at 125 St. George's Terrace and Cantonment Street, Fremantle, all manned railway stations and by mail They will also be available from existing newsagency outlets at Kelmscott, Maddington and Mosman Park.

SCHOLAR'S CONCESSIONS

Term Tickets — available to full time scholars attending approved day schools for transfer travel between home and school on school days only to 6.30 p.m. Price: $6.00 per term. 5 cent Concession Fare — The existing 5 cents scholars concession will be extended to rail.

The success of the new system is dependent on passengers tendering the correct fare. The whole of the system will also depend a great deal upon the honesty of passengers and there will be severe penalties for wilful fare evasion.

METROPOLITAN (Perth) PASSENGER TRANSPORT TRUST