

AN UPRIGHT SOLUTION TO A DOWNRIGHT PROBLEM

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ABSTRACT: The paper outlines a demonstration project undertaken in Hobart during the International Year of Disabled Persons. The experiment was aimed at establishing whether multi purpose taxis could provide a means of transport for severely disabled persons without the need of taxpayer support.

The results of the project provide some insight into user and operator characteristics of the experiment, and the performance of specialised multi purpose taxis as compared with conventional taxis.

AN UPRIGHI SOLUTION TO A DOWNRIGHI PROBLEM

Introduction

Lack of experimentation in the provision of public transport for disabled persons has been a feature of the user side of Australian transport. Despite the severe handicaps suffered by many disabled persons, there has been insufficient recognition by the community of the key problem of access. There is no question that access to transport is a major issue for disabled persons. Certainly the 1981 International Year has focussed attention on some access problems of the disabled. In Tasmania during 1981 considerable emphasis was placed on finding some solution to the access problems of severely disabled persons through the concept of multi purpose door-to-door taxis. Conducted in Tasmania initially as a three month experiment, the concept has now been introduced into the transport system and is expanding.

Objectives

The principal objective of the paper is to trace through the development of this concept of transport for disabled persons. Following an historical perspective, the paper develops the rationale for the experiment in Tasmania, examines the methodological framework and discusses the results of the monitoring process undertaken for the Transport Policy Unit by the Transport Economics Centre at the University of Tasmania. The paper then provides some insights into user and operator characteristics of the service and comments on the general direction for the provision of specialised services to the severely disabled.

Historical Perspective

The historical perspective on this experiment helps illustrate some of the real difficulties for researchers and planners in introducing new concepts to the transport system even when such concepts are privately financed. Institutional and territorial problems are the reality of implementation

The 'Maxi Taxi' experiment was inaugurated as a privately financed project with two vehicles in Canberra in June 1980. The vehicles operated, not as part of the city's taxi system, but as part of a Canberra based bus operation. The reasons as to why the vehicles were part of the bus system and not the taxi system related to the regulatory requirements of the ACT's transport administration. These requirements did not allow the vehicles the ability to pick up at city taxi ranks, stand at Canberra Airport or otherwise ply for hire. Essentially the vehicles operated as taxis only in respect of trips booked by telephone with the bus company, and hence the experiment was more related to a dial-a-bus than to a taxi operation. The experiment consisted of placing two 'Maxi Taxis' on a 24 hour on-call service basis throughout Canberra.

The project commenced with two Toyota Hi-Ace mini-buses, capable of multi purpose operation. The vehicles, fitted with a rear-end hydraulic ramp, were each capable of carrying one wheelchair confined person and six other passengers.

The aim of the project was to prove to both Government and the taxi industry that taxis designed with special facilities to transport wheelchair confined and other disabled persons can be operated on a viable basis in every town and city in Australia using conventional and unsubsidised taxi rates. Thus the objective of the concept was to see whether multi purpose taxis, which could be used for the carriage of unimpaired upright passengers, disabled persons, groups and freight, could be viably supported without need of taxpayer support.

The multi purpose function of the vehicles was expected to provide greater vehicle utilisation compared to conventional taxis. It was considered the opportunity provided for securing comparatively higher returns could persuade taxi operators to move into a more lucrative market situation thus satisfying the need for disabled transit and the industry's need for growth.

Due to regulatory difficulties in Canberra, the experiment was transferred to Hobart early in 1981 where, with the co-operation of government and the Taxi & Hire Car Association, the supply side, despite significant capacity problems, was not so constrained. The vehicles operated in Hobart under licensing conditions which enabled them to ply for hire from taxi ranks and to accept radio work in the Hobart area. One vehicle was issued with an unrestricted temporary licence for the duration of the experiment, and the second vehicle was licenced to operate on an as required basis for double bookings for disabled passengers and for back up to the first vehicle in case of breakdown.

Dimension of the Problem

The Hobart experiment was designed to produce a real life demonstration project that would attempt to provide data on revealed travel behaviour and operating results. It was considered this would assist in overcoming, at least to some extent, the absence of data on the nature and extent of transport problems faced by disabled persons unable or having difficulty in using public transport.

Implicit in the experiment was the hypothesis that mobility limitations and transport difficulties severely constrain the fundamental need of disabled persons for access to activities. Severely disabled persons are often considered to have more need for personalised door-to-door type transport and less likely to own vehicles suited to enhancing their mobility.

Conventional public transport was not seen as the solution to the movement of severely disabled persons since it

AN UPRIGHT SOLUTION TO A DOWNRIGHT PROBLEM

was considered this would be appropriate to only a small portion of the disabled community, and that access to fixed route systems imposed further problems for the disabled. Some less than severely disabled persons are capable of utilising public transport, although not without difficulty.

The Tasmanian Board of Enquiry into the Needs of the Handicapped reported (1980) concern at the acquisition cost of vehicles, special needs for personal transport, inadequacies in vehicle design and the high cost of vehicle modifications.

Experiment Period and Survey Problems

The demonstration project commenced early February 1981 and continued for three months. The trial could only be carried on for a short period and this interfered with the assessment of taxi operations, efforts to obtain statistical samples, survey methodology, and data collection.

Quasi scientific methods were used to generate interviews, conduct surveys, and obtain data on taxi operations. This meant that the results obtained could not be projected to the population of disabled in the target area nor to the taxi population. However, the survey results and operational data analysis offer some guide to the potential of specialised transport such as the 'Maxi Taxi'.

Following the official launching of the project on 28 January, the two vehicles were engaged in promotional work for one week prior to the commencement of operations. Free rides were given and visits made to local institutions from which business was expected. Commercial operations commenced on 2 February 1981 under a Project Manager appointed by the Project Sponsor on the recommendation of Transport Tasmania and the Taxi & Hire Car Association.

The two vehicles were assigned to one taxi company and the new service covered the Hobart metropolitan and southern Tasmanian areas. Users were not restricted to the one taxi company, since arrangements were made for bookings through any members of the Association. A vehicle was available for hiring between 6.00 a.m. and 12 midnight. Initially, two drivers were employed for the two shifts between 6.00 a.m. and 3.00 p.m., and from 3.00 p.m. to 12 midnight, with other assistance provided during the drivers' day off or to meet unforeseen circumstances.

The first week of trading was brisk with substantial support for the service coming from both the general public and institutional users, such as the Department of Social Security. This excellent response was however shortlived. During the second week the returns were so poor that both drivers resigned. A public holiday, combined with bad weather, reduced the demand for both regular taxis and the 'Maxi Taxi'. Many institutions closed their rehabilitation centres' activities for the week, thus further lowering 'Maxi Taxi' revenues. At the beginning of the third week, only a skeleton service could be provided.

By this time institutional difficulties had arisen by virtue of recent contractual commitments for taxi work entered into by some institutions, which, in the normal course of events could have been expected to provide support for the specialised service. Whilst in the initial planning stages some institutions indicated the 'Maxi Taxi' could replace proposed specialised vehicle acquisition, this did not eventuate.

The 'Maxi Taxi' also found problems with work generated at taxi ranks. In Hobart, taxi drivers do not mandatorily refer passengers to the front taxi if they first approach another cab in the rank. Had this been the case, the 'Maxi Taxi' would have obtained better rank business than it did, since the overwhelming majority of upright passengers by-passed it on the taxi ranks. Additionally there was some reluctance on the part of some taxi drivers to accept the experiment.

Following this disappointing start it was agreed that the problem of non-disabled customer acceptance appeared the greatest impediment. It was evident that marketing the 'Maxi Taxi' as a vehicle for the disabled was not the best strategy since non-disabled users were the key to financial success. It was decided to place a large plain "TAXI" sign on the side of the vehicle to increase public awareness of the vehicle's primary function and to conduct a survey at a city cab rank to find out why the public was averse to hiring the 'Maxi Taxi'.

The service recommenced in week four with one full-time driver providing a service from 8.00 a.m. to 5.00 p.m. The hours outside this period were covered only from bookings. The relief and backup work was provided by the Project Manager. This new level of service was continued throughout the remainder of the project (9 weeks), although the full-time driver changed three times. The demand for the service by disabled users ensured that both vehicles were generally working most of the mornings and early afternoons.

The second four weeks provided the best sample period for the study. It represented, on the average, the type of day that a driver would regularly expect, despite the occurrence of the Interdominion Racing Carnival, which boosted fares in week six, and several remunerative jobs transporting bushwalkers to the highlands. This period was the only reasonable length of time during which the same driver operated the vehicle. In addition, the collection of control data from regular taxis also coincided with this period.

Evaluation Procedures

The evaluation was directed at testing the potential of the 'Maxi Taxi' to fulfill the operating objectives of providing a transport service previously unavailable to the disabled community, of achieving economic viability based on a flexibility to serve different markets, and of making a net revenue contribution to the taxi industry vis-a-vis conventional taxis.

AN UPRIGHT SOLUTION TO A DOWNRIGHT PROBLEM

Questionnaires were designed to help evaluate the economic feasibility and acceptance of the 'Maxi Taxi'. The University's Psychology and Sociology Departments were consulted on the format and the adoption of the LIKERT scale on attitudinal questions. Additionally the Australian Council for Rehabilitation of Disabled assisted in the design and pilot testing of the questionnaire for the disabled.

The utility of the 'Maxi Taxi' to the disabled community was evaluated by surveying both disabled users and non-users. Through contact with the disabled, it became evident that a definition of disabled for transport purposes had to be devised. Most people classified as disabled have no ambulatory problems and therefore suffer fewer transport difficulties. Some disabled appear to find a regular cab less troublesome, and some others, including uprights, want to disassociate themselves from the disabled. For the evaluation, a disabled person was defined as any individual requiring at least a walking aid of two support canes.

Survey of Disabled Persons

The preferred survey procedure for disabled users was to obtain addresses and/or telephone numbers of all disabled people in the target area, select a random sample and project the results to reflect the response of the disabled community (which according to the 1976 census was 7,468 individuals). Unfortunately this was not possible as listings of disabled persons in the target area are regarded as confidential and unreleasable, even for a study which would preserve respondent anonymity and be of potential benefit to the disabled.

The next alternative was to survey disabled users while riding the 'Maxi Taxi'. This was ineffective because most disabled persons could not answer the forms unaided. This required an additional passenger to assist with the completion of the questionnaire which, in turn, created passenger reluctance to making the journey. Another approach attempted was to conduct personal interviews of disabled persons in institutions and hospitals. As very few 'Maxi Taxi' users were found, this provided only a small sample size.

The disabled user survey list was supplemented by addresses provided by 'Maxi Taxi' operating sheets. When a disabled person's address could be obtained, efforts were made to locate the phone number and conduct a telephone interview. If no telephone number was available, a questionnaire with a covering letter was mailed, together with a reply-paid envelope. A total of 31 disabled users of the service were surveyed by the following methods:-

	<u>Interviews</u>
Personal	12
Telephone	16
Mail	<u>3</u>
TOTAL	31

Of the individuals interviewed, 21 were confined to wheelchairs. The rest had an ambulatory disability which met the criteria established for the disabled.

From the 'Maxi Taxi' daily operating data it was estimated that about 200 disabled individuals used the service. This meant that a sample of 31 may have represented about 15% of total disabled users.

Disabled non-users were interviewed personally in institutions for the disabled and in hospitals. A total of 44 interviews was conducted. Eight interviewees were confined to wheelchairs.

Survey of Non-Disabled Passengers

The normal taxi market was investigated to obtain an idea of how regular taxi users perceived the 'Maxi Taxi'. Two different surveys were conducted, one on-board by the driver and one at the taxi rank. For the on-board user survey only passengers who requested a taxi by telephone were interviewed. This approach was chosen in order to avoid any predisposition on the part of the passenger since it was assumed a passenger who requested a taxi by phone would be expecting a conventional taxi. The survey's objective was to test the passenger's reaction when an 8 seat passenger van appeared.

The driver explained to the passenger the function of the vehicle and asked the passenger if they would fill out a questionnaire, which he gave them if they answered in the affirmative. A total of 29 passengers was interviewed.

The taxi rank survey was conducted to determine the reasons why passengers avoided the 'Maxi Taxi' when it was at the front of the rank. Every time a passenger by-passed the 'Maxi Taxi' in preference for another cab, the passenger was approached and interviewed. The responses fell into six categories. Fifty passengers were surveyed on two consecutive Fridays. During this survey, two passengers approached the 'Maxi Taxi' in preference to regular taxis.

Survey Results

Disabled User Survey

Of the 31 disabled users interviewed, half indicated they used the 'Maxi Taxi' three or more journeys per week, 36% indicated they would not have made the journey at all if the service were not available. In the absence of the 'Maxi Taxi', for the remainder 45% would have used regular taxis, 35% cars, 10% institutionalised transport, 5% ambulance, and 5% other.

Trip usage was dominated (65%) by trip making for medical reasons. Recreational and VFR travel each constituted 13%, and work journeys comprised 3%. Expected average weighted

AN UPRIGHT SOLUTION TO A DOWNRIGHT PROBLEM

trip making was 6.9 trips per month.

Some 50% of respondents were aged 65 and over, and 85% had incomes of less than \$101 per week. 74% of disabled users found the 'Maxi Taxi' comfortable, though 81% felt insecure whilst boarding the taxi.

Disabled Non-User Survey

A total of 44 interviews was conducted. The reasons given for non-use were as follows:- 32% preferred regular taxis, 30% were unaware of the service, 16% travelled by institutionalised transport and 11% rode as passengers in private cars. Respondents preferring conventional taxis had leg mobility problems and considered it would be difficult to access a passenger van. Interestingly the disabled non-user survey produced higher trip making rates than the disabled user survey. The reasons for this are assumed to relate to more extensive use of institutionalised transport and some survey concentration in institutionalised living.

64% had incomes less than \$101 per week and 47% were aged 65 and over.

Non-Disabled Passenger Survey

A total of 29 interviews was conducted. 80% regarded the 'Maxi Taxi' as no less comfortable than conventional taxis. Only 14% had not heard of the service. Some 24% indicated they would not use the service again.

Taxi Rank Survey

This survey attempted to discover the reasons why would-be passengers at taxi ranks avoided the 'Maxi Taxi'. Of the 50 persons interviewed, 42% indicated they were ignorant that the 'Maxi Taxi' was a regular cab, 16% indicated a preference for a regular cab, 12% indicated a preference for the closest taxi and 6% refused to ride in a vehicle suitable for the physically disabled. The non-response rate was 6%.

Operating Results

The operations of the 'Maxi Taxi' were monitored through daily running sheets which provided a record of distance travelled, trip category, trip origin-destination, notable occurrences, commission, and comments which drivers considered relevant. The outcome of the experiment produced the following results for trips and revenue:-

LYNCH, MACLEAN, MURRAY

<u>Category</u>	<u>Trips</u>	<u>Revenue</u>	<u>Average Revenue Per Trip</u>
		\$	\$
Wheelchair confined	475	2,856	6.01
Disabled, other	78	375	4.80
Passenger with excess baggage	54	229	4.24
Freight	22	147	6.68
Tours	1	3	3.00
Meet & Greet	441	1,179	2.67
Regular trips, 4 or less passengers, n.e.i.	102	838	8.21
Regular trips, more than 4 passengers, n.e.i.	<u>1,173</u>	<u>5,626</u>	<u>4.80</u>
TOTAL	<u>2,346</u>	<u>11,253</u>	<u>4.80</u>

Passengers confined to wheelchairs undertook 40.4% of all trips and contributed 50.8% of total revenue. Regular, non-disabled passengers contributed 42.6% of revenue, whilst disabled passengers contributed 57.4% of revenue. In respect to payment of fares some 70% of disabled passengers was institutionally based, and 30% was from family expenditure.

To compare the 'Maxi Taxi' with a regular taxi, observations of regular taxi operations were conducted. The regular taxi operating characteristics were obtained from a cross-section of the taxi firms. Each fortnight, twelve different cabs were required to record the length of shifts, breaks, pick up times, number of trips and fares. Unfortunately, the information was not always provided by the driver and the usage rate varied. Due to some compatibility problems with the comparison, only four weeks comparability were tested. The results of the four week evaluation showed that the average revenue of the 'Maxi Taxi' vehicle per hour was 14.6% higher than that for a regular cab. The 'Maxi Taxi' showed high revenue per hour during the 0800-1200 hour period and 1400-1600 hour period compared with the conventional taxis. Average trips per hour by 'Maxi Taxi' exhibited a similar trend as for conventional taxis.

During its experiment period the 'Maxi Taxi' produced a positive cash flow.

Conclusions

These results cannot be projected to apply to the population of the area studied. The evaluation of the 'Maxi Taxi' was conducted during a very short period which did allow sufficient time to overcome obstacles which otherwise would have been surmounted. Also peripheral problems such as driver turnover tended to substantially disrupt the

AN UPRIGHT SOLUTION TO A DOWNRIGHT PROBLEM

evaluation process since small time discontinuity represented too large a relative percentage of such a short evaluation period.

The survey conducted was not based on random sampling because of a population list to generate the sample was not available. More data would be required to determine statistically significant relationships. However, some conclusions can be inferred from the results obtained from the demonstration project and these are as follows:-

- .. Disabled passengers are low income individuals, a matter which constrains their ability to access the taxi system.
- .. Approximately 70% of trips undertaken by the disabled were for medical reasons, which in effect meant that their taxi trips are already subsidised to this extent.
- .. It is clear from the disabled non-user survey that the 'Maxi Taxi' will not be able to capture all the disabled passenger market, as 32% of the sample expressed preference for regular taxis. Over time however, the number of disabled riders could be expected to increase significantly, particularly if a fares subsidy were to be introduced, and vehicle design improved.
- .. With regard to regular taxi users, the 'Maxi Taxi' is expected to gain acceptance. This can be concluded from the positive reactions towards the 'Maxi Taxi' from 80% of regular passengers surveyed, and from the 42% of the rank survey who expressed ignorance of the fact that the 'Maxi Taxi' provides regular taxi services.
- .. The trip productivity analysis indicates that the 'Maxi Taxi' holds its own against a regular taxi. The survey conclusions above imply that the productivity of the vehicle will increase as disabled and regular passengers become more informed about the existence of the service and its capacity for the movement of freight, small group tours and extra luggage becomes recognised.
- .. Such a vehicle should not be marketed for disabled persons, rather as a regular taxi which can accomplish additional tasks.
- .. During its first 12 weeks the 'Maxi Taxi' returned in a positive cashflow, thus pointing to its financial viability.

- . Average revenue per operating hour for the 'Maxi Taxi' was 14.6% above that of a conventional cab.
- . There is evidence that the vehicle has in part created a new market, thus assisting to generate new revenues rather competing with other taxis for existing markets.
- . Trip generation for disabled users showed a degree of complementarity to use. The 'Maxi Taxi' peak was shown to be between 8.00 a.m. and 9.00 a.m. and early afternoon as opposed to regular taxi peaks of late morning and late afternoon.
- . Subjectively, increased access to non-institutionalised venues has resulted. Some 30% of 'Maxi Taxi' trips were made for non-medical reasons.
- . Future ramp designs should avoid the need to turn wheelchairs 90° before entering the vehicle.
- . Particular care should be taken in such experiments to ensure drivers are well trained in handling disabled persons.

AN UPRIGHT SOLUTION TO A DOWNRIGHT PROBLEM

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