

The Equity Incidence of the State Transport Authority Subsidy in South Australia: an update

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Abstract:

This paper assesses the equity incidence of the State Transport Authority (STA) subsidy by disaggregating the subsidy received by users into household income groupings, modal choice and time of travel. Consistent with the 1984 study on this issue, the results suggest that high income households receive a disproportionately high share of the subsidy, whilst the opposite is true for low income households.

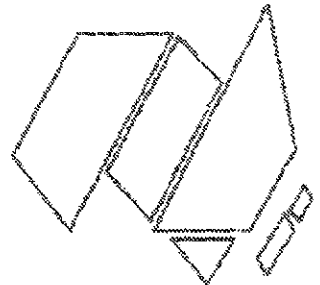
The main reason posited for this result is that high income households tend to use a disproportionately high share of urban public transport services both during the more costly peak hours (mainly "white collar" employees travelling to and from the CBD) and also predominantly via the rail network - the most costly (per unit) mode of transit operated by the STA.

Conversely, interpeak and weekend travel is dominated by low income earning households, who receive a disproportionately high share of the subsidy at these times

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1. INTRODUCTION

Background

The purpose of this study was to assess the equity incidence of the South Australian State Transport Authority (STA) subsidy. The data analysis commissioned by the Office of Transport Policy and Planning (OTPP), in collaboration with the STA, updated a 1984 Travers Morgan study on the equity incidence of the total government subsidy provided for metropolitan public transport in Adelaide (by disaggregating the subsidy received by users into household income groupings, mode of travel and time of use). Based on these results and overseas experience, this paper posits alternative solutions for the better targeting of this subsidy towards the "transport disadvantaged".

In 1991-92 the Government subsidy to the STA for the provision of public transport amounted to \$136.1 million or \$1.89 per passenger boarding compared to¹ \$0.84 per boarding in Sydney, \$1.49 in Melbourne and \$2.38 in Perth, although these comparisons should be prefaced by the caution that the results are affected by the different nature of each system and differing measures of government subsidy - in the case of the STA, defined as deficit funding plus payments for defined Community Service Obligations (CSOs). This compares with the Government subsidy provided in 1991-92 to other State business enterprises such as the Department of Marine and Harbours and Engineering and Water Supply Department of \$9.8 million and \$2.45 million, respectively.

Policy advisers seeking to determine the most appropriate mechanisms for achieving efficient delivery of public transport provision would ask: (i) why is the government subsidy of public transport so much more than that for other government business enterprises; (ii) how can it be justified compared with providing other services such as roads and non-government schools; and (iii) is this method of providing an "in kind" subsidy the most effective mechanism for achieving the Government's social justice objectives.

There is a view that public transit operations should be fully commercial like other public trading enterprises (are becoming) and therefore should either attract a minimum subsidy (if any) or return a dividend to the Government, with any Community Service Obligation (CSOs) clearly defined and explicitly funded in the budget. A counter view is that public transport is a social service catering for a market failure-induced need and that the level of subsidy provided by governments is a sound community investment. This latter approach is reflective of the South Australian Government's 1989 transport policy platform.

The commonly accepted justifications for subsidising public transport are as follows:

- to reduce road congestion, pollution, accidents and other externalities or spillover effects;
- to pay for an efficient scale of public transport operation given the potential for the attainment of economies of scale from this natural monopoly;
- to overcome the cost of providing services imposed by Adelaide's urban form, particularly its population spread along a North-South axis and the focus of much of the transit task on the CBD via a radial transit network;

¹ Sourced from 1993 Year Book of the Australian City Transit Association.

- to provide user economies of scale in that scheduled "lumpy" services like public transit may not be provided at optimum levels of frequency; and
- to promote equity by assisting the "transport disadvantaged" (defined as those people who have frequent mobility or access problems) to obtain access to employment, educational and recreational opportunities.

It is this last justification which is addressed in this paper, with the other propositions being the subject of further research and analysis by the Office of Transport Policy and Planning and the STA.

To procure "equitable outcomes" for those who are transport disadvantaged, the STA employs two main policy variables - *fare* and *service levels*.

The size and distribution of the STA subsidy is determined to a large degree by the (subsidised) fare structure (which includes a range of concessions) and the structure of the network (which focuses on the CBD commuter task in the morning and afternoon peaks). The importance of concession patronage is underlined by the fact that 65% of all passenger journeys are made by concession passengers. Furthermore the operation of poorly patronised off-peak services contributes significantly to the size of the government subsidy required.

Measuring the size and incidence of the government subsidy assists in determining whether the current policies are achieving equitable outcomes for low income households (the "transport disadvantaged"). By using household income as a proxy for passengers' ability to pay and the dollar subsidy per passenger of STA services as a proxy for measuring transit outcomes, the incidence of the subsidy (as opposed to the more broader concept of benefits realised from this net expenditure) can be measured to determine whether its impact is progressive, regressive or even neutral.

STA Social Justice Charter

In terms of its "core" business, the STA has the important role of servicing the public transport demand in metropolitan Adelaide (to be read as having "reasonable" access) at the least cost to the community, taking into account social, environmental and economic factors.

Its specific *social justice objectives* (soon to be the subject of negotiations with the Government as part of the process of meeting its designated CSOs) are broadly promoted through:

- the provision of a comprehensive integrated public transport service to all parts of the metropolitan area, in particular in those localities subject to locational disadvantage; and
- by providing cheap travel, via concession fares, to a wide range of social groups.

In 1991-92 the total contribution in these areas was \$99.3 million, representing 60% of the SA Government contribution to the STA (Annual Report 1992 p 23).

The social justice component of STA services is also strongly reflected in the commitment to providing basic services at off-peak times (evenings, weekends and public holidays) when services are less commercially oriented in terms of the recovery via fares of the significant (often fixed) operating costs. Recent changes in relation to fare structure and method of service delivery will be commented upon in section 4 in terms of their likely current distributional impact on the subsidy incidence results reported herein.

Concepts of Equity

The meaning of the term "equity" for transport policy formulation is multi-faceted, ranging from one whereby the most basic means of transport are provided to all members of society so that they can undertake their normal daily business, to one which implies utilising transport provision as a vehicle for welfare redistribution.

Trinder, Hay et al (1990), in their survey of the application of the concepts of equity, fairness and justice in the formulation and administration of British transport legislation over the period 1960-88, observed the use of the following ten equity concepts by practitioners in the field:

<i>Concept</i>	<i>Meaning</i>
• <i>procedural fairness</i>	- formal procedures treating "like cases alike"
• <i>expectations</i>	- the maintenance of conventional rules
• <i>formal equity</i>	- the treatment of like individuals in a like manner
• <i>substantive equity</i>	- equality of final outcomes
• <i>desert</i>	- on the basis of contribution to the common good
• <i>need as demand</i>	- a basic want backed by a willingness to pay
• <i>basic need</i>	- provision of at least minimal requirements
• <i>wider need</i>	- to participate fully in society
• <i>liberty rights</i>	- basic rights which should not be infringed upon
• <i>claim rights</i>	- to have a claim on the resource/property in question

In terms of their application (often implicitly) within the transport policy framework they concluded that the concepts of *basic need*, *formal equity* and *substantive equity* were those in most common usage, particularly in relation to the actual provision of transport to certain communities and groups, the cost burdens imposed on its users and the general community, and the treatment of externalities.

The concept of *formal equity*, however, was the most dominant interpretation in use, with the authors noting that this somewhat surprising result suggested a fairly narrow definition of equity in terms of both the principles and the issues concerned.

The STA could be said to be providing services in line with many of these concepts of equity. For example:

<i>Formal equity</i>	The spread of services is largely based on where people live, not necessarily on likely revenue to be earned; so like individuals are treated in a like manner
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<i>Substantive equity</i>	The services provide for equal transport outcomes, especially in terms of peak hour CBD accessibility
<i>Need as demand</i>	Public transport provision needs to be backed by some willingness to pay (although heavily subsidised)
<i>Basic need</i>	Weekend and night time services provide for at least minimal transport requirements
<i>Wider Need</i>	To provide a transport service to enable people to participate fully in recreational, educational and employment pursuits

Studnicki-Gizbert (1982) presents an alternative view of the equitable provision of transport using the concepts of *equality of opportunity* (applied regularly to the education debate), *equality of outcomes* and *equalisation of opportunities* to participate meaningfully in the decision-making process.

According to Studnicki-Gizbert, "equality of opportunity" is often responsive to community opinion at the time and should be modified to reflect these opinions. That said, according to this view if a government were trying to reduce the inequality of distributional outcomes for instance, transport could play a role in creating the transport opportunities which assist the unemployed find and access work. More specifically Studnicki-Gizbert refer to the concept that the poor, because of their poverty, have a high preference for immediate versus long-run consumption or investment in their future income-generating ability. Yet their prospects for escaping this poverty trap are embodied in their improvements to employability, with the provision of transport services being the mechanism for providing the access to the different sources of employment or search for employment

From this literature review it became apparent that the equity methodology to be adopted for this study in testing the incidence of the STA subsidy was to employ a hybrid of the notions of formal equity and substantive equity, as defined by Trinder and Hay (1990). That is, the study tests whether like cases are treated in a like manner, and whether equal transport outcomes result.

As noted earlier, in developing a measurable proxy for the ability of a household to pay for private transport services, the study has concentrated on household income and compared this with median household income in the general Adelaide population. The study method implies that members of low income households are transport disadvantaged.

2. PREVIOUS STUDIES

The Travers Morgan study *The Incidence of Public Transport Subsidies in Adelaide* (March 1984), using data from the Metropolitan Adelaide Data Base Study on the personal, household and trip-making characteristics of the population as a whole, and more specifically of public transport users as at 1976, found that for every \$1 of the STA subsidy that went to transit passengers from below average income households (defined then to be earning no greater than \$10,700), \$1.23 went to transit passengers from higher than average income households.

In aggregate terms the most significant finding was that on average about 55.3% of the total public transport subsidy was being spent on households with higher than average incomes (representing only 43.5% of all households), with those in the highest of the four income groups - as defined in Table 1 below - accounting for nearly a third of the subsidy.

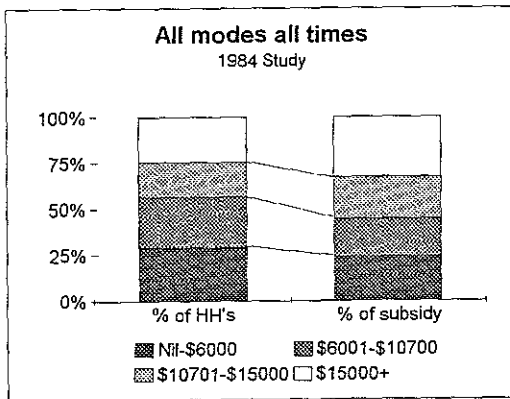
For rail users the situation was even more stark, with only 41% of the subsidy directed to rail passengers in the 57% of households with less than average incomes, a fact attributed to buses being proportionately more heavily used by lower income earners travelling off-peak relative to rail's emphasis on providing transport for higher income, peak commuters; a common world-wide phenomenon according to Barnard (1986) and supported by Pucher (1992) in his study on the socioeconomic characteristics of US urban travellers as revealed in the Nationwide Personal Transportation Study.

By income group (not divided equally into quartiles as per the current analysis) the 1984 study found the distribution of the total subsidy was as follows:

Table 1: Incidence of STA Subsidy (1984 Travers Morgan Study)

	% of Households	% of Subsidy
Low incomes (\$0-\$6,000)	29.1%	23.9%
Low to Average Incomes(\$6,001-\$10,700)	27.5%	20.9%
Average to High Incomes (\$10,701-\$15,000)	19.1%	22.6%
High Incomes(\$15,000+)	24.4%	32.7%

Diagrammatically these results are reproduced in Chart 1 below.



In terms of the time of travel within each mode the general subsidy per journey was found to be higher for the Weekday peak period than for other periods, largely because of the high avoidable costs (eg wages, fuel) associated with running these services.

In summary, Travers Morgan concluded that the subsidy provided for Adelaide's public transport network was regressive in that it favoured higher income groups at the expense of lower incomes; a fact commented upon by Amos and Starrs (1984) in their study examining the breakdown of the subsidy requirements of the STA. They suggested that as a means of redistributing economic welfare to the less well off, Adelaide's public transport subsidies were inefficient.

3. CURRENT STUDY

(i) Methodology and Data

The demographic, socio-economic and public transport usage data for the current study were drawn from an interrogation of the 1986 Adelaide Household Travel Survey (AHTS). A full explanation of the survey method used and more general results are available from the publication *Transport Planning Model Development Study* (Director-General of Transport, November 1990).

The AHTS was a 1.7% sample of the households in the Adelaide Statistical Division and involved interviews in 279 zones. The information collected was factored up to reflect the spread of the Adelaide population, using calibration techniques based on the 1986 ABS Census of Population.

Household income was adopted as the most useful basis for equity comparisons. This was for two main reasons. First the household is the most clearly definable decision making unit in society for which data is available. No particular social construction of "family" is necessarily implied in the use of households as the basic unit of the analysis. Second, household comparisons of income and public transport use avoid the distortions that might arise when very low or very high income persons use public transport, when in fact their income is shared within the household. This is a particular problem in the Adelaide public transport system, in which student travel represents 40% of morning peak travel, and non-government school student travel has a disproportionately high share of this grouping.

The 1986 demographic, socio-economic and public transport usage data may now be considered somewhat old, but it must be remembered that the 1984 Travers Morgan study was based on a similar survey of the Adelaide population in 1976. The AHTS is only performed every 10 years, with calibration checks in Census (every five) years. The main area of change in the data since 1986 is expected to be changes in the State Transport Authority service structure and usage.

The most recent public transport subsidy data were used from the State Transport Authority *Routes or Services Information System* (ROSIS) and relate to 1991-92. This is because the study is based on unit cost information from which is inferred the distribution of the subsidy and it is argued that unit costs are likely to be less dependent on variations in service and usage patterns than are total cost figures).

Clearly there are limitations in interpretation resulting from matching financial information from 1991-92 with demographic, socio-economic and public transport usage data from 1986. The same judgement was made as in 1984: that is, that the most recent data should be used in each case. Since 1984, for example, the STA system has been carrying higher proportions of both concession and long distance travellers. Concession ridership has risen from 61.0% of all journeys in 1984-85 to 65.4% in 1991-92, and there were 1.57 times more outer suburban passenger kilometres travelled in 1991-92 compared with 1984-85. Conversely, inner suburban passenger kilometres travelled dropped by 14%, particularly as a result of the decision to introduce Transit Link express commuter bus services (February 1992) and a change in the fare policy involving the removal of the third (outer) fare zone (January 1992).

Each trip by a household member was allocated a subsidy figure by applying the relevant subsidy per passenger for each mode (Bus, Tram and Rail) and day type (Weekday and Weekend). Concessions were included as a subsidy in the analysis, by allocating concession travellers an average concession reimbursement value in addition to the subsidy per passenger relevant to that particular mode and type.

The data were disaggregated principally by household income groups, which were defined as near as possible to quartiles, such that 25% of all public transport using households would be represented in each group. This was done primarily to avoid the problems of choosing arbitrary income bands. One alternative would have been to define the income groupings by some external factors such as the Poverty Line and/or Average Weekly Earnings. This was rejected, however, in favour of the ease of interpretation and presentation afforded by the use of quartiles. The quartiles also represent a reasonable spread of incomes compared with the total metropolitan population: the median value of the household income data from this study was \$21,000, compared with the \$21,600 median household income from the 1986 Census for the Adelaide Statistical Division. Note that the estimate of the Henderson Poverty Line for the "benchmark family" (Couple with Head in workforce and two children) as at June 1986 was \$245 per week, or an annual household income of \$12,740. Also rejected were groupings based on equal dollar band widths as these would be arbitrary and no more or less objective than quartiles. Note that the 1984 study had 56.6% of all households as below average, hence the median income was lower than the average.

(ii) Results

The results are presented in Table 2 and also in the three type of charts displayed in the Appendix.

Table 2: STA Subsidies Incidence - Current Study

	Nil - \$10000	\$10500 - \$21000	\$21500- \$35000	\$35000+	Total	(a)	(b)
All modes all times							
% of HHs ^(c)	25.0	26.1	24.6	24.3			
% of trips	22.2	23.4	25.9	28.6		1.25	1.32
% of subsidy	19.2	22.1	27.1	31.7		1.49	1.70
\$'s per trip	2.45	2.68	2.97	3.15	2.84		
Bus all times							
% of trips	23.3	23.9	25.5	27.3		1.17	1.20
% of subsidy	22.7	22.5	25.9	28.9		1.27	1.31
\$'s per trip	1.88	1.81	1.96	2.05	1.93		
Tram all times							
% of trips	21.1	15.2	15.9	47.7		1.83	2.32
% of subsidy	17.2	9.1	18.6	55.0		2.92	3.28
\$'s per trip	3.01	2.22	4.31	4.26	3.69		
Rail all times							
% of trips	15.5	21.7	29.9	32.9		1.76	2.18
% of subsidy	14.3	22.5	29.4	33.8		1.80	2.43
\$'s per trip	7.38	8.31	7.90	8.26	8.02		
All modes Weekdays							
% of trips	21.3	23.7	25.6	29.4		1.28	1.41
% of subsidy	17.3	22.8	26.7	33.2		1.56	1.97
\$'s per trip	2.17	2.58	2.79	3.02	2.67		
All modes Weekends							
% of trips	31.4	20.3	29.0	19.3		0.98	0.63
% of subsidy	31.2	17.4	29.2	22.3		1.11	0.73
\$'s per trip	4.61	3.98	4.67	5.37	4.65		
All modes Peak							
% of trips	11.2	21.5	29.7	37.6		2.15	3.44
% of subsidy	10.5	21.5	30.6	37.4		2.22	3.66
\$'s per trip	2.68	2.87	2.95	2.85	2.86		
All modes VPeak							
% of trips	37.2	27.1	19.3	16.4		0.58	0.45
% of subsidy	38.9	23.8	18.2	19.2		0.62	0.51
\$'s per trip	1.57	1.32	1.41	1.75	1.50		
All modes Evening							
% of trips	16.1	23.1	26.7	34.1		1.62	2.17
% of subsidy	14.7	25.9	23.7	35.7		1.53	2.48
\$'s per trip	8.35	10.21	8.09	9.55	9.12		

Notes:

- (a) Ratio of above median income households over below median.
 (b) Ratio of top quartile over bottom quartile.
 (c) Common to all groupings.

(iii) Conclusions

The main conclusion from the current study is that the incidence of STA subsidy **remains regressive** and skewed towards households with high incomes. For every \$1 of STA subsidy to below median income households, \$1.49 went to above *median* income households (compared with \$1.23 for above *average* income households in the 1984 study. The same results based on the *median* was estimated at \$1.61). For every \$1 of STA subsidy to households in the *lowest* income quartile, \$1.70 subsidy went to households on the highest income quartile. Diagrammatic presentations of these results are provided in the Appendix.

The *bar* charts show the relative shares of each income quartile in terms of proportion of trips undertaken and proportion of subsidy received, by mode and by type of day (Weekday and Weekend) and time of day (Peak, Interpeak and Evening). The width of the bars in the mode and day and time specific charts denote the share of each mode, day type and time of the total STA subsidy, so as to enable the reader to visually gauge the importance of the result in making up the total STA subsidy. Under this presentation therefore although the subsidy incidence disparity is greatest on rail in the peak, in absolute cash terms most of the subsidy is received by the higher income households using the bus network.

The *line* charts show the same data in the form of Lorenz curves, which some readers may find more familiar. For the purpose of interpreting these charts, a divergence of the trip or subsidy lines to the right of the 45% (household) line shows a degree of *regressiveness* in the incidence of trips undertaken and/or subsidy received. This is particularly pronounced for example in the Rail All Times and Tram All Times graphs. A trip or subsidy line to the left of the 45% (household) line shows a degree of *progressiveness* in the incidence of trips undertaken and/or subsidy received, such as is evident on Weekend and Weekday interpeak services.

Finally, the *variance* charts show the same data again but expressed as ratios, both of the above median income households over the below median income group, and of the highest income quartile over the lowest income quartile. Under this format, a figure greater than 1.0 indicates that the incidence of the subsidy is regressive with the subsidy incidence relative to the number of trips undertaken greatest for Tram users.

One reason why the STA's subsidies do not redistribute to the poor is because the services are radial and oriented towards meeting the needs of CBD (predominantly white collar) commuters and school transport. The people who gain the most from low fares are also those who travel the most, who travel furthest and who otherwise would pay the most; that is, generally white collar commuters to the CBD and students travelling to school in the mornings.

For example, the results from this study indicate a greater incidence of trip making by households with above median incomes: 1.25 times more trips than below median income households, with the top quartile undertaking 1.32 times more trips than the lowest income quartile. Also above median income households undertake more expensive trips: \$2.97 and \$3.15 subsidy per trip for the highest and second highest income quartiles respectively, compared with the \$2.45 and \$2.68 subsidy per trip for the lowest and second lowest income quartiles respectively.

The above median income households are also over-represented in the more expensive transport modes of Rail and Tram and the less expensive Weekday time period. That is, 48% of all Tram trips and 33% of all Rail trips are undertaken by members of households from the highest income quartile, whilst only 22% of all Weekend trips are undertaken by members from this same income quartile.

Time of day of Weekday travel was also an important factor. The peak hours subsidy dollar (7am to 9am and 4pm to 6pm) was heavily skewed towards *above* median income households, who gained 2.22 times more of the peak hours subsidy dollar than below median income households. Also, surprisingly, the evening travel subsidy dollar was skewed towards high income households (perhaps reflecting the reduced travel by students and pensioners during this period), with above median income households gaining 1.53 times more subsidy than below median income households, although this effect was most marked in the comparison between the highest quartile over the lowest quartile (some 2.5 times more subsidy in the top income bracket). Weekend travel and Weekday interpeak travel were the only day and time periods for which the subsidy dollar was skewed towards *below* median income households. The highest income quartile received only three quarters of the Weekend subsidy dollars received by the lowest income group, although there was no significant difference in the comparison of above and below median income households. The Weekday interpeak subsidy dollar was clearly skewed towards the low income households, with above median income households receiving only 0.68 of the interpeak subsidy dollars received by the below median income households.

All of the trip and subsidy proportions for each mode, day type and time are statistically significantly different from each income group's share of all households except in the case of Bus usage on Weekends by households in the second highest income quartile. This means that for all other cases, the percentage of trips undertaken and subsidy received by each quartile are statistically different from that income group's share of households.

These regressive results were also evident from British experience (Goodin and Le Grand, 1987) which showed that people in the top 20% of incomes have 3.7 times more public bus expenditure and 9.8 times more public rail expenditure spent on them per person than people in the bottom 20% of incomes; again a result attributed to the propensity of high income earners to use the higher cost peak hour commuter services. Conversely Barnard (1986) found there to be a *progressive* subsidy incidence in examining the net tax incidence for urban public transit subsidies in New Zealand.

4. SUBSEQUENT POLICY DEVELOPMENTS, OVERSEAS FINDINGS AND POLICY IMPLICATIONS FROM STUDY RESULTS

Subsequent Policy Developments

The recent changes involving the restructuring of public transport fares, reductions in night and weekend public transport services and the introduction of Transit Link express commuter services are likely to have impacted on the conclusions drawn from this analysis.

In so far as these developments have reduced the total net costs of servicing peak hour demand, the incidence of the subsidy will have become less regressive than the latest available results indicate.

Conversely to the extent that changes to the structure of fares and the reduction in night and weekend services has focused the network on servicing the requirements of the peak, the incidence of the subsidy could have become more regressive. The decision to limit free school student travel to low income households, however, serves to offset this impact.

Overseas Findings and Policy Solutions

Goodin and Le Grand (1987) posit the question (as a result of their findings of a number of circumstances in which higher income households have captured these type of government subsidies) as to whether the solution is to eliminate such pro-rich subsidies altogether and run the public transport for example on a break even basis. Redistribution, however, they acknowledge is of course only one reason for providing this subsidy with the promotion of social and economic efficiency objectives also important.

Rather Goodin and Le Grand recommend greater cost attribution in the pricing structures relating to road use travel (particularly during peak hour) with the consequent impacts of reduced road usage and congestion and higher patronage (and revenues) of the public transport network, thereby reducing the need for providing these public subsidies. Moreover they note that these road use costs would be borne primarily by the better off in society for car ownership and use in the UK is largely the prerogative of the higher income groups. Revenue raised by such schemes could then be used for instance to subsidise the capital (fixed cost) requirements of public transport, allowing the introduction of a more efficient pricing policy and generating returns consistent with the coverage of the SIA's operating costs. A more likely use of these funds, however, would be for general Government funding priorities.

These possible solutions follow from Goodin and Le Grand's overall conclusion that policies involving subsidies whose distribution is dependent upon people's decision to consume the good or use the service concerned favour the better off, for so long as consumption does not fall as income rises, the better off will always purchase more of a commodity than the worse off and hence, if it is subsidised, obtain more of the subsidy. Being better off also implies in general a better standard of education and hence a knowledge of the means by which the system can be used for your own benefit. Having a job also provides a predetermined number of trips per week to benefit from this subsidy. Redistribution objectives they suggest are therefore better achieved by focusing on other criteria than simply the individual's decision whether or not to consume.

A quote from Studnicki-Gizbert (1983) adds force to this argument:

"In many cases the alleged equivalence of public transport for the poor represents an act of faith rather than the reality. The general lesson is simply this: if one is to use urban transport (and transport subsidies) as an instrument to improve employment accessibility for the poor, the first step is to establish concrete accessibility needs (Studnicki-Gizbert, 1983 p 75)".

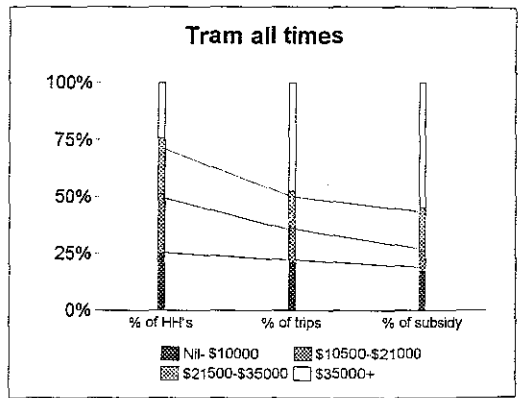
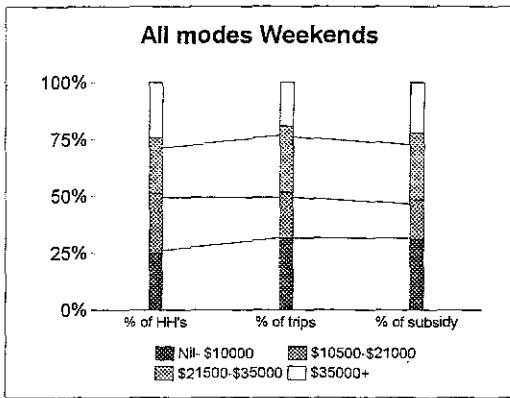
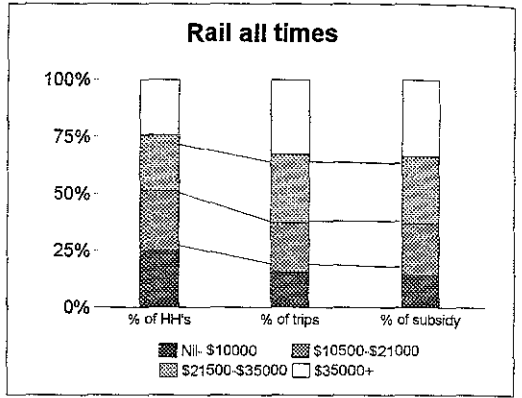
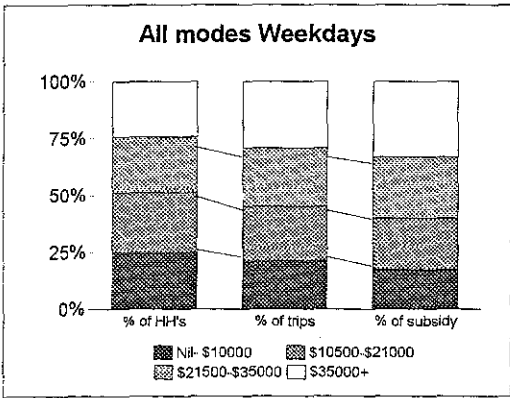
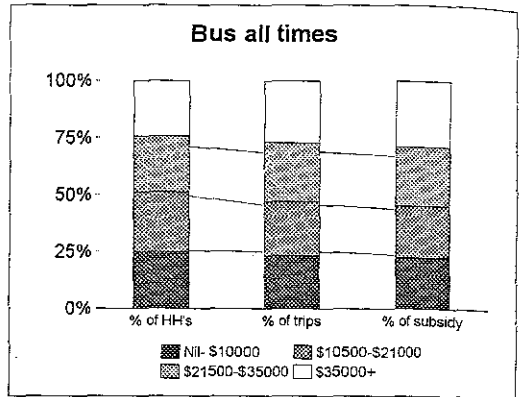
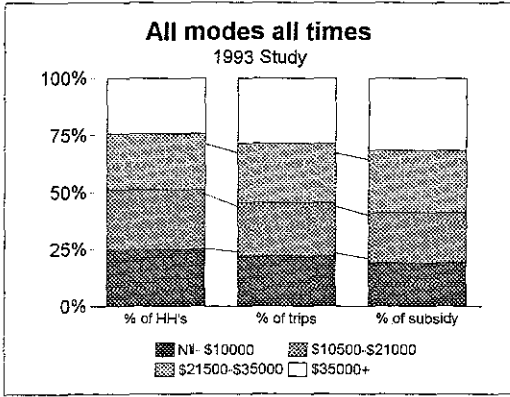
Although Amos and Starrs acknowledged that there could be good reason for supporting the then effective transfer (via the Government subsidy) from non-users to users of public transport, particularly to people earning above the average household income, this alone was not sufficient to justify the extent of the subsidy involved.

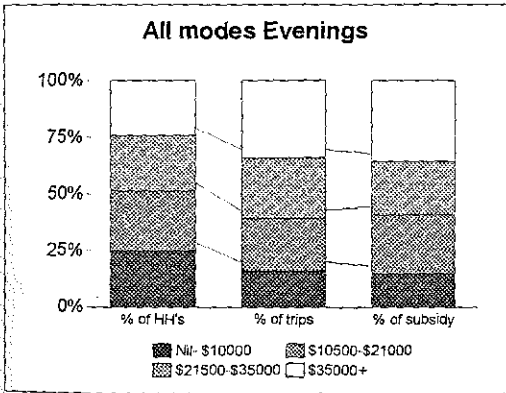
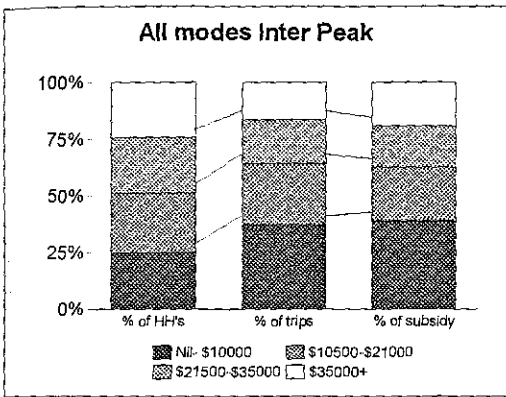
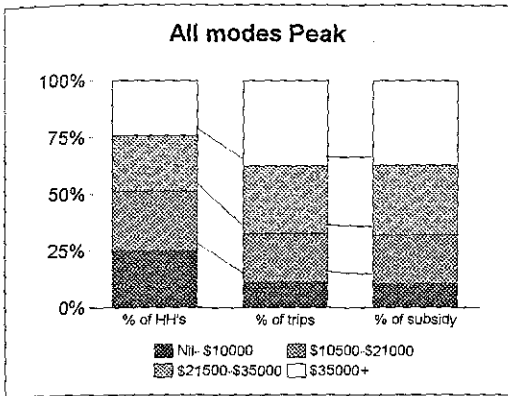
Together with the **regressiveness** results discussed throughout this paper, the question is raised as to the most appropriate means by which a better targeting of the redistributive aspects of this subsidy could be achieved. Apart from the earlier suggestion made of introducing more equitable road pricing structures, other options for meeting the Government's distributive goals more efficiently could include reforms to the transport pricing structure (which could see higher fares in peak times for example), the introduction of an income related ticketing system (addressing the difficulties in defining and measuring income between people), the introduction of a voucher scheme to better target concessions, or greater progressivity in the taxation system, or alternatively, in accordance with the recommendation made in the OTPP Report to GARG (1990), better aligning transport routes and therefore access to those areas of recognised lower socio-economic status.

Low income households still have access to a good system. Better targeting of the subsidy would, however, allow these needs to be serviced at a lower overall cost to the Government (through reducing/eliminating subsidies to the higher income households) and/or enhance the ability to provide an even greater share of the subsidy to these lower income groups.

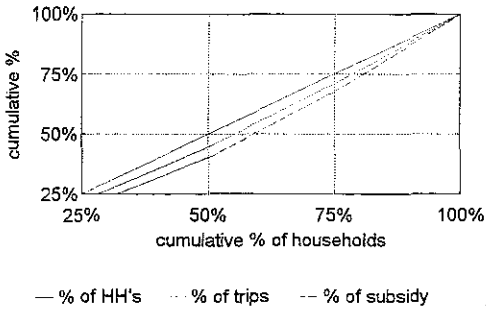
Acknowledgments

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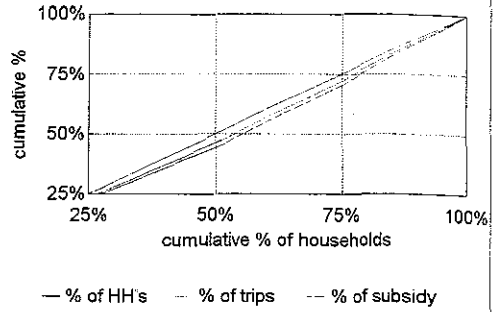




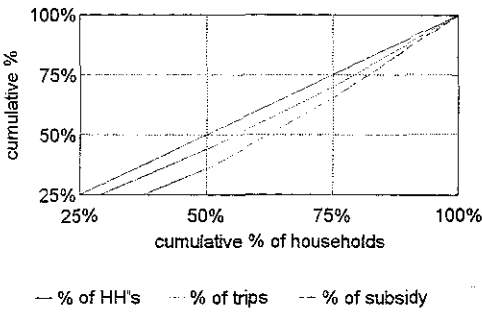
All modes all times



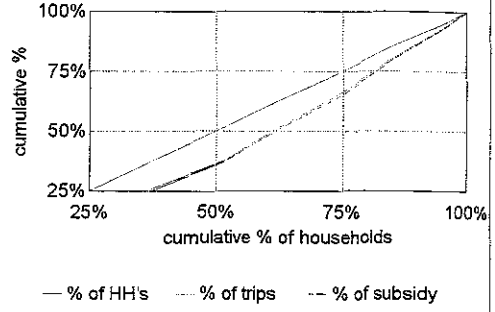
Bus all times



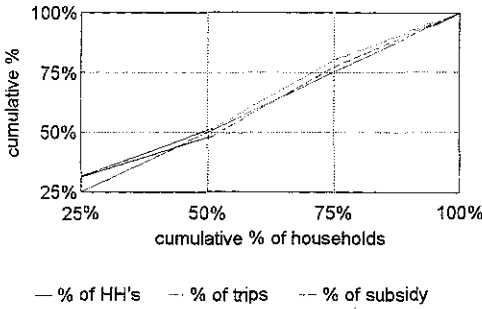
All modes Weekdays



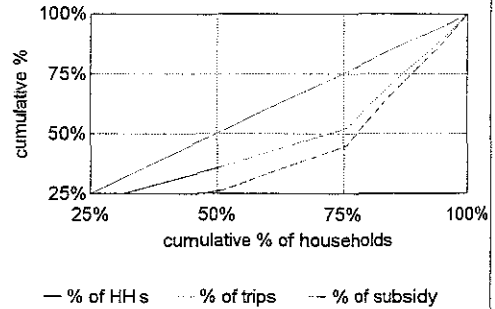
Rail all times



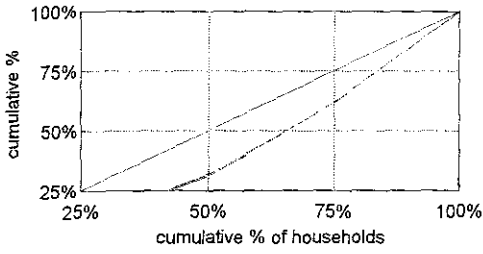
All modes Weekends



Tram all times

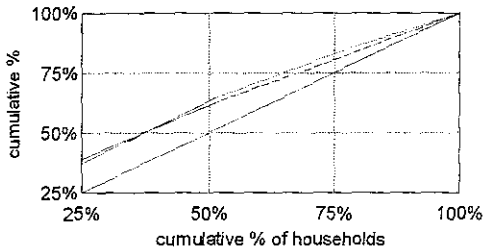


All modes Peak



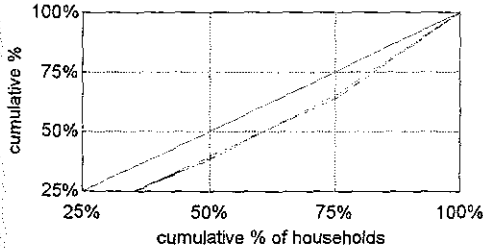
— % of HH's - - % of trips - - % of subsidy

All modes Inter Peak



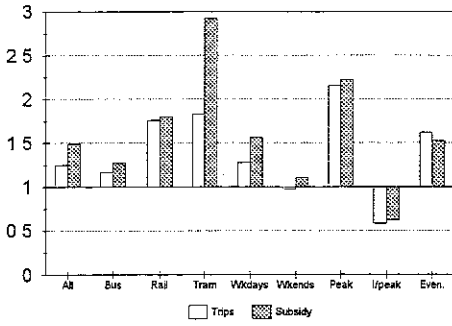
— % of HH's - - % of trips - - % of subsidy

All modes Evenings

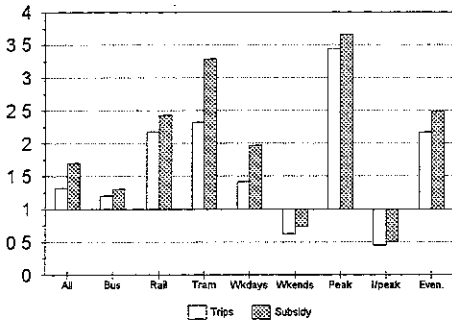


— % of HH's - - % of trips - - % of subsidy

Ratio of richest 50% over poorest 50%



Ratio of richest 25% over poorest 25%



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